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SURGICAL ANATOMY OF THE SUPERIOR EPIGASTRIC ARTERY

Hayder H. Abdul-Ameer[1] *FICMS,* **Akram A. Jaffar**[1] *Ph.D.,* **Hassan A. Hassan**[2] *FRCS*

Abstract:

Background: The superior epigastric artery and its preservation during surgical procedures are now gaining more importance. Anatomical studies regarding variations in the epigastric vessels have not been conclusively reported. More emphasis was directed towards the inferior epigastric artery on the expense of its superior counterpart.

Objective: To illustrate the gross anatomy of the superior epigastric artery with special emphasis on laparoscopic cholecystectomy entry sites in order to map a safety zone.

Method: Fifteen embalmed cadavers were dissected. Complications pertaining to the superior epigastric artery were reviewed in 90 patients who underwent laparoscopic cholecystectomy.

Results: Gross arterial communication between the superior and inferior epigastric arteries was observed in (33%) of the cadavers where it was located above the umbilicus. In the epigastric region, the main stem of the superior epigastric artery was located within a longitude not extending laterally away from 5 cm off the midline. The inferior epigastric artery was commonly larger than the superior. In only one cadaver (7%) the caliber of the superior epigastric artery was comparable to that of the inferior. In (4.4%) of the cholecystectomy cases, bleeding occurred when the laparoscopic port was extended laterally beyond the 10-12mm wide incision at the point 5cm inferior to the xiphisternum.

Conclusion: A variably large superior epigastric artery should be kept in mind during surgical interventions; the absence of accompanying arterial anomalies indicated that the large size of the artery is a normal anatomical variation. In the epigastric region, a safety zone could be determined lateral to 5cm off the midline. In laparoscopic cholecystectomy, the port incision in the epigastric region should not be extended laterally beyond 12mm off the midline. If circumstances dictate then the port should be enlarged using a dilator.

Key words: Superior epigastric artery, anatomical variation, laparoscopic cholecystectomy

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Introduction

The superior epigastric artery is a terminal branch of the internal thoracic (mammary) artery. According to some, it passes through a space limited medially by the sternal part of the diaphragm, laterally by the costal part of the diaphragm, and anteriorly by the musculoaponeurotic plane formed by transversus thoracis and transversus abdominis (Larrey"s space or trigonum sternocostale), therefore through a diaphragmatic orifice[1]. According to others it passes in front of the diaphragm, anterior to transversus thoracis and transversus abdominis and thus in front of the musculoaponeurotic plane[2].

Entering the rectus sheath, at first behind the rectus abdominis muscle and then perforating and supplying it. The superior epigastric artery usually anastomoses with the inferior epigastric branch of the external iliac artery. Branches perforate the sheath to supply the abdominal skin. The artery supplies the diaphragm; on the right small branches reach the falciform ligament to anastomose with the hepatic artery[3]. A xiphoid branch contributes to the supply to

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the lower sternal region and may be of special importance when used as a conduit in coronary artery by-pass grafts[4]. At the intersections of the rectus abdominis muscle there are transverse arcades arising from either the superior or inferior epigastric arteries, which send branches supplying muscle or the overlying skin[5].

The epigastric arterial "system" is of considerable interest because of the grossly demonstrable direct arterial communication between the superior epigastric and the inferior epigastric arteries in 40% of a series of cadaver dissections. In atherosclerotic occlusion of the common iliac artery this must certainly be one of the important collateral pathways for blood to reach the ischemic extremity[6].

Anatomical studies regarding variations in the epigastric "system" of vessels have not been conclusively reported. More emphasis was directed towards the inferior epigastric artery on the expense of its superior counterpart[7-9]. This study aims at illustrating the anatomy of the superior epigastric artery relative to common surgical incisions and laparoscopic entry sites on the anterior abdominal wall in order to map a safety zone.

Methods

Fifteen embalmed adult cadavers (originally used for teaching purposes at the Department of Human Anatomy, College of Medicine, Al-Nahrain University) were dissected for the contents of the rectus sheath with emphasis on the epigastric vessels. The basic procedures for dissection were based on the method outlined in Sauerland[10].

The origin, course, and the distance from the midline of the superior epigastric artery were noted. The site and mode of anastomosis between superior and inferior epigastric arteries were clarified by tying a cannula at either end of the epigastric arterial "system": internal thoracic or inferior epigastric arteries. Tap water was pushed through this cannula till the vascular anastomosis became clear.

Complications pertaining to the superior epigastric artery were reviewed in 90 patients who underwent laparoscopic cholecystectomy by using the American technique at Al-Kadhmiya Teaching Hospital. The latter implies a puncture site 5cm inferior to the xiphoid process. At that point, a transverse incision about 10-12mm was made for the insertion of the laparoscopic port.

Results

The superior epigastric artery was seen on dorsal surface of the rectus abdominis muscle in all the cadavers (Fig.1). Gross arterial communication between the superior and inferior epigastric arteries was observed in 5 (33%) of the cadavers dissected. The anastomosis between the inferior and superior epigastric arteries was located at a level above the umbilicus in all the cadavers. In the epigastric region, the main stem of the superior epigastric artery was located within a longitude not extending laterally away from 5 cm off the midline. No discrepancy was observed on both sides of the body regarding the origin, course, anastomosis, and caliber of the superior epigastric arteries.

The inferior epigastric artery is larger than the superior epigastric artery in 14 cadavers (93%). In only one cadaver (7%) the caliber of the superior epigastric artery was equal in size to that of the inferior epigastric artery (Fig.2). This unusually large superior epigastric artery was observed on both sides of the body and was not accompanied by any arterial anomaly elsewhere in the trunk. The accompanying inferior epigastric artery was neither atrophied nor has an unusual course or origin.

Out of 90 surgical cases only 4 (4.4%) had bleeding when the laparoscopic port was extended laterally beyond the 10-12mm wide incision at the point 5cm inferior to the xiphisternum. In one of the four cases, the

bleeding was to the inside the rectus sheath. In the cases when the port was enlarged by using a dilator no such bleeding occurred.

Fig.1: Posterior aspect of the anterior thoraco-abdominal wall showing the terminal branches of the internal thoracic artery at the left 6th intercostal space. 1: internal thoracic artery, 2: superior epigastric artery, 3: musculophrenic artery, 4: back of the sternum, 5: back of the 7th costal cartilage, 6: transverses thoracis.

Fig.2: The epigastric arterial "system" on the dorsal aspect of the rectus abdominis muscle. Note that the superior and inferior epigastric arteries are of comparable caliber. 1: superior epigastric artery, 2: inferior epigastric artery, 3: rectus abdominis muscle, 4: posterior wall of the rectus sheath reflected medially.

Discussion

The superior epigastric artery and its preservation during surgical procedures involving anterior abdominal wall is now gaining more importance in view of its significance in planning muscle-flap reconstructive surgery[11-14] its possible insult in laparoscopic procedures, its role in establishing a collateral circulation following aortico-iliac occlusions[15], and the possible sequels of its injury on wound healing after surgery[16,17].

The feasibility and the safety of endoscopic cholecystectomy for symptomatic cholecystitis are widely accepted. Cosmetic advantages are evident and are important in young woman. Endoscopic abdominal surgery also reduces postoperative intestinal and parietal adhesions. Overall this surgical procedure provides a very simple postoperative course with reduction of pain and rapid recovery of abdominal transit[18].

In this study, the superior epigastric artery was seen on dorsal surface of rectus abdominis muscles in all the cadavers; however it should be noted that when the artery is not seen in its commonest location, it may either be absent or buried in the muscle tissue. In a very rare occasion (0.6%) did the superior and inferior epigastric arteries anastomose on the anterior surface of the rectus muscle[6].

The frequency of a gross arterial communication between the superior and inferior epigastric arteries as observed in the cadavers dissected in this study (33%) is closely related to the 40% occurrence observed elsewhere[19]. The location of the anastomosis at a level above the umbilicus coincides with the observation of O'Dey et al.[20].

The inferior epigastric artery is usually larger in diameter than the superior epigastric artery[21]; this was mostly observed in this study as well. Only in one case (7%) in this study, the superior and inferior epigastric arteries were comparable in size. The absence of accompanying arterial anomalies indicates that the larger size of the artery is normal anatomical variation and is not a compensatory sequel of a pathological obstruction of the normal conduits. This variation should be born in mind as it may be the source of considerable bleeding should the artery be injured during surgery.

In the epigastric region, the location of the superior epigastric artery within a longitude not extending away from 5cm off the midline could determine the safe zone of entry of the anterior abdominal wall at this region. The location of the artery within this limit is closely related to the mapping study of Saber et al.[22] Damage to the superior epigastric artery intraoperatively resulting in a rectus sheath hematoma has been reported as an early consequence of percutaneous endoscopic gastrostomy[23]. In planning laparoscopic cholecystectomy, the incision of the laparoscopic port should not be extended laterally beyond 12mm off the midline lest considerable bleeding would be faced. If circumstances dictate, as when extracting a gall bladder with a large stone impacted inside, then the port should be enlarged using a dilator. Preservation of the superior epigastric artery not only could avoid a serious bleeding during the operation but also decreases the inflammatory reaction and formation of scar[16].

In the one case of bleeding inside the rectus sheath, injury may have involved the main stem of superior epigastric artery. In the other three cases where bleeding was to the outside of the rectus sheath, injury may have involved a branch of the superior epigastric or a collateral branch of an intercostal artery.

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CYTOCHROME OXIDASE ACTIVITY IN THE VENTRAL HORN CELL OF THE SPINAL CORD IN THE RABBIT: ULTRA STRUCTURAL STUDY

Ali .A. A. Al-Taii *MBChB MSc PhD*

Abstract

Background: Dynamic property of the neurons in the ventral horn cells of the spinal cord in the rabbit were partly treated utilizing the activity of cytochrome oxidase, a mitochondrial enzyme which is responsible for electron transport in oxidative phosphorylation needed for vital processes.

Objective: It has been known recently that the vital role of this enzyme was clearly evident in the apoptosis. This study high lightens a point on a part of the metabolic map of the anterior horn cells with the use of cytochrome oxidase activity as a tool.

Methods: Healthy adult New Zealand rabbits in resting condition were used. After Laminectomy slices of cord tissue obtained from the lumbosacral region precisely its gray mater of the anterior horn, then they were treated with a histochemical method based on the oxidative polymerization of diamino-benzidine, then examined under electron microscopy.

Result: Results revealed different intensity of final reaction products at both cellular and subcellular levels.

Conclusion: This reflects that the oxidative metabolism was varied in this area of the CNS, the majority of this activity were due to effect of the higher centers. At subcellular level the initiation of retrograde cell reaction "apoptosis" correlates positively with intensity of the FRP.

Key word: Cytochrome oxidase, Enzyme commission number, Central nervous system, Final reaction product

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Introduction

In order to understand the dynamic properties of neurons, there is a certain fact must outlined from the study of an important energy-deriving oxidative enzyme in the mitochondria. Cytochrome oxidase, **(C.O.)** (Enzyme commission number 1.9.3.1) is a perfect tool for this study. Mammalian Spinal cord precisely its gray matter is composed of a heterogeneous population of neurons whose physiological characteristics often elude morphological identification. The anterior horn cells of the spinal cord contains alpha, gamma motoneurons, Renshaw neurons, and interneuron's[1].

This study high lightens a point on a part of the metabolic map on the anterior horn cells of the mammalian spinal cord with the use of **(C.O.)** activity as a tool. This method is easily to be handled and not coasty in our laboratory, as traditional histochemical methods are still in use for the detection of **(C.O.)** activity because they are rapid, inexpensive and more specific.

The cytochrome oxidase is responsible for electron transport in the oxidative phosphorylation needed for vital processes such as protein synthesis, rapid axoplasmic transport within neurons and maintenance of the resting membrane potential[2]. It is a characteristic enzyme of the mitochondrial membrane which is firmly bound to it. In a highly active cell large amounts of mitochondria can be seen. Thus, the activity of **(C.O.)** is used as an index of the oxidative metabolism in these cells[3]. However morphological, physiological and biochemical properties of neurons, reflects the endogenous system of enzymes.

This system is intimately associated with neuronal metabolic machinery, which is closely related to the level of neuronal activity[4]. This confirmed the finding of many workers, that oxidative metabolic capacity following the ablation of rat

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sensorimotor cortex on the **(C.O.)** activity which shows that in the injured animals there is a significantly reduced activity throughout the cerebral cortex and in 5 of 11 subcortical structures. This injury-induced depression of oxidative capacity was most pronounced in regions of the hemisphere ipsilateral to the ablation[5].

However, the vital role of **(C.O.)** was evident in neurons of the injured segments of the spinal cord of rats which shows a substantial amount of **(C.O.)** released into the cytoplasm from the mitochondria of the injured neurons suggesting a trigger for apoptosis through the activation of proteases, such as caspase 3[6, 7].

Material & Methods

Cytochrome oxidase was examined in the ventral horn cell of 10 New Zealand rabbits weighting 3-3.5 Kg. They were killed by sectioning of the great vessels of the neck without anesthesia. Laminectomy was performed, dura and arachnoid opened in the lumbo-sacral region. Cord segments with roots of sciatic nerve of both right and left sides were removed then placed in a small Petri dish containing 30 ml of saline solution at 37ºC. Serial coronal sections with a sharp razor were cut through the ventral horn of the cord and then minced into a small slices. Immediately, those slices were transferred to a small containers that contained a cold fixative containing 2% paraformaldehyde, 1-2% glutaraldehyde in a 0.1 M sodium phosphate buffer at pH 7.3 for 10 min. then washed with phosphate buffer for 10 min prior to incubation.

The histochemical method used was that of Seligman[8] with modification. The method is based on the oxidative polymerization of diamino- benzidine (DAB). It gives very precise localization of the enzyme activity, and the reaction product is permanent and clearly evident.

Tissues slices were incubated in a Columbia jar containing 5 mg Diaminobenzidine (DAB) (Sigma) in 9 ml of 0.05 M, pH 7.4. To this solution, Cytochrome C (BDH) 10mg as substrate and 1 ml Catalase (20µg/ml) (BDH) were used to eliminate the presence of any endogenous H_2O_2. Sucrose (BDH) 750mg was also added. Control sections were treated in the same way without addition of Cytochrome C. Time of incubation was ranged from 30 minutes to 2 hours. The tissue slices were removed when brown reaction product appeared, and then washed overnight in phosphate buffer, treated with 1% osmium tetroxide for 1.5 hours, stained with 1% uranyl acetate, and embedded in Epon. Semi thin sections (0.5–1 µ) were obtained, stained with 1% methylene blue. Those sections were used for selecting the most adequate areas to be examined for the ventral horn neurons. Ultra thin sections (60–90 nm) were taken and examined in Philips CM10 electron microscope operating at 60 kV; some sections were examined without staining.

Results

Good results were visualized within 2 hours of incubation by the DAB reaction as the color of the minced tissues slices became dark - brown in color. Examination of the semi thin sections (0.5–1 µ) treated with 1% methylene blue, delineated different sizes of ventral horn neurons. Electron microscopic examination revealed that those neurons are richly endowed with a variety of organelles. With a higher magnification we overcome the failed of the somata and mitochondria can be easily visualized. Reactive mitochondria were varied in their intensity of the FRP from moderate to dark, although light ones have also been observed (Figures 1 & 2).

In addition to that different intensity of the FRP at cellular level was also observed. With higher magnification single mitochondria was clearly seen with a heavy precipitates of a black dots of the FRP. This activity was localized to the inner mitochondrial membrane and their intracristal spaces (Figure 3).

Examination of tissue sections treated with DAB reaction without the

addition of the substrate shows no reactivity i.e. any black dots in the mitochondria (Figure 4).

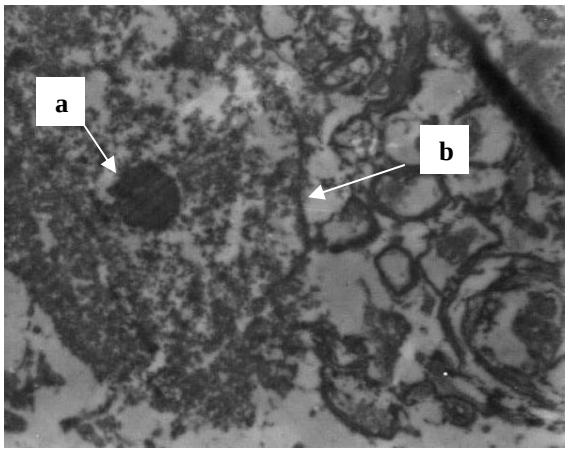

Figure 1: Motoneuron (a: nucleus, b: cell membrane) x 3000

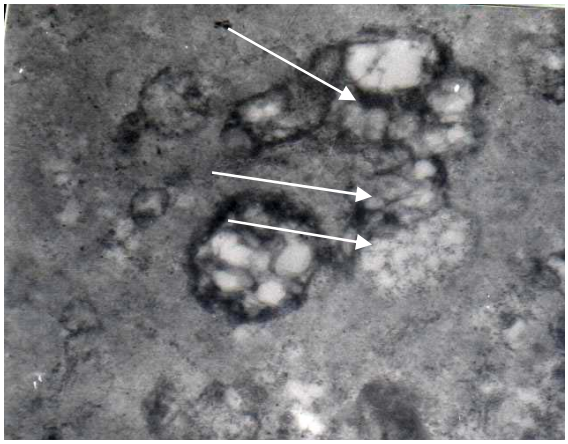

Figure 2: Arrows shows different intensity of the FRP in the mitochondria. x 12000

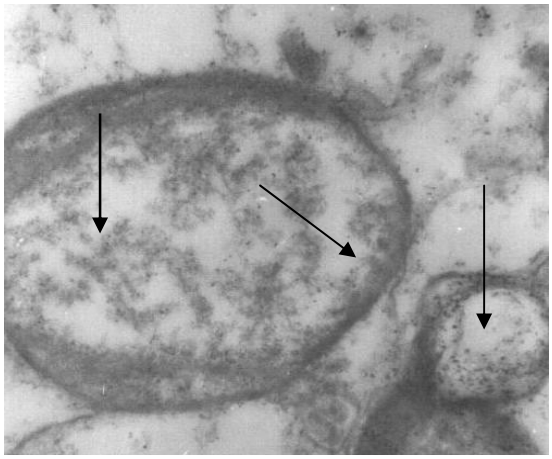

Figure 3: Higher magnification of mitochondria. Arrows show FRP of (C.O.) activity mainly confined to the inner mitochondrial membrane and their intracristal spaces. x 40 000

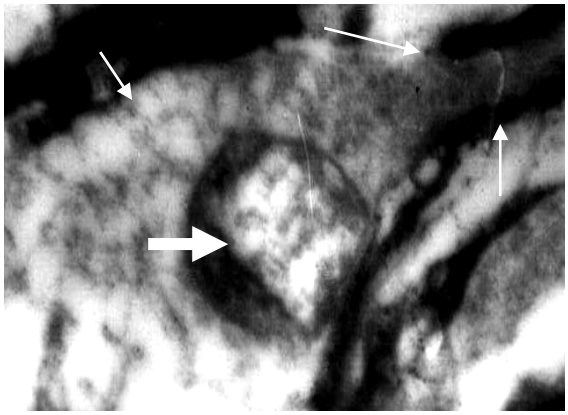

Figure 4: Section obtained from tissue slices without addition of substrate. Thin arrows show boundaries of axonal terminal. Thick arrow shows mitochondria. x 40 000.

The most active area seen in the sections were in the neuropil (dendrites and axon terminals) of the different size somata. However the activity of (**C.O**.) were found nearly in all sections examined within the mitochondria of the somata regardless their size with the exception that, the small size somata exhibit more reactivity in comparison to the large size ones.

Darkly reactive, moderately reactive, and /or lightly reactive mitochondria were evident in dendrites, axonal trunks and axonal terminals of myelinated axons. However the more intense reactivity was observed in the mitochondria of the axonal terminals than those of the dendrites , It is hardly to detect lightly reactive mitochondria in the axon terminals. (Figures 5 & 6).

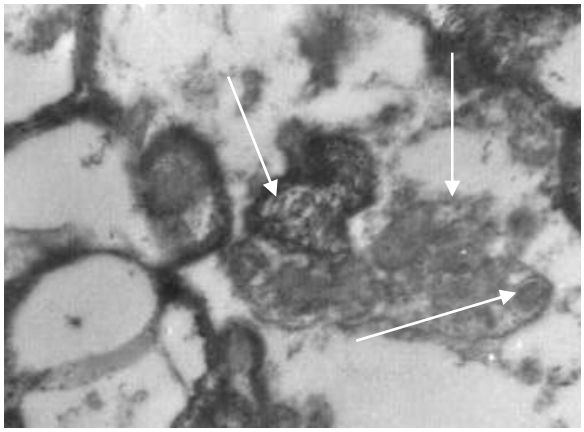

Figure 5: Arrows reactive mitochonderia at dendritic terminals.Several of these synapses show different intensities of C.O. activity. x 12000

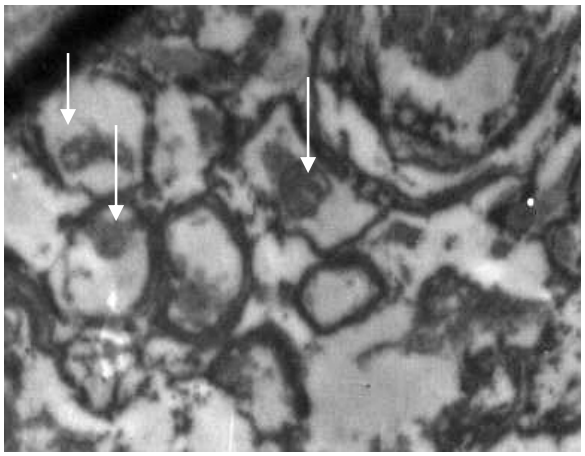

Figure 6: Arrows show highly reactive mitochondria in the axonal terminal. x 12000

Discussion

The results of this study show that the DAB method used, specifically demonstrated the **(C.O.)** activities. Among other things this assumption is supported by ultrahistochemistry showing FRP only in the mitochondria and the reaction was completely absent with omission of the substrate (Figure 4) .In addition, mitochondria show slightly swelling due to the method of the incubation used in this work (Figure 3) ,since this shows perfect visualization of the FRP. With the use of a computer image processing system inhibition of enzyme activity by chemical fixation was variable in single motoneurons of the rat spinal cord[9]. However, those workers concluded that quantification of enzymatic activity in chemically fixed tissue provides an imprecise estimate of enzyme activities found in fresh-frozen tissues, this idea was omitted in our study.

Different intensities of the FRP .in the mitochondria in the somata of the ventral horn neurons have been observed (Figure 2). This indicates that the entire neuron is often not metabolically homogeneous. This is in agreement with finding of Wong-Riley in 1989[10].

The production and requirements of energy reflect the differences in cellular activity in this part of the central nervous system, as small size neurons i.e. interneuron's and Renshaw neurons shows more reactivity than those of large size one i.e. motoneurones, since the large metabolic demands of the ventral horn neurons are clearly evident as their known involvements in the majority of synaptic interactions to keep muscular tone and movements[1].

The subcellular distribution of (**C.O.)** activity in the motoneurons of the ventral horn cells primarily to profiles within the neuropil rather than somata, as the highly reactive mitochondria were mainly localized in the axonal terminal rather than that of dendrite ,as the later region contain different forms of reactivity (Figures 5 & 6). This observation differs from that observed by Wong-Riley and Kageyama in 1986 that the reactive mitochondria in the ventral horn neurons were found in the neuropil, mainly in dendritic profiles and some axon terminals. However the high metabolic activity required by dendrites is consistent with the notion that, as the principal postsynaptic targets in most **CNS** regions. Their high energy consumption is required for membrane repolarization, since there are differences in the in the metabolic activity between regions of the ventral horn cells neuropil where in the large sizes cells the axonal terminals gain more reactivity which elude the higher metabolic effects of the higher centers on those neurons.

Many tools have been used for metabolic mapping of nervous tissue. These are 2-deoxy-glucose autoradiography, cytochrome oxidase histochemistry and positron emission tomography. However these methods have been used to map the brain during normal or resting conditions, and during conditions of particular interest such as sensory stimulation, development, ageing and disease[11].

In this study we examined **(C.O.),** a mitochondrial enzyme which is a marker for neuronal functional activity. However the enzyme was distributed in a characteristic patterns and amounts that differed among various neuronal pathways in this region of the **CNS**. Mapping was done quantitatively by enzyme histochemistry on resting"

animals**.** However this issue needs further study using optical densitometry of stained sections and biochemical assays of spinal cord tissue homogenates. The metabolic map of cytochrome oxidase activity reveals patterns of normal spinal cord function, and may be used as a marker for comparison in studies of spinal cord development and plasticity.

Intrasomatic densities of enzyme histochemical reaction product were employed as indicators of relative mitochondrial activity (**C.O.**)[12].The present results revealed different intensities of **(C.O.)** in different site of the ventral horn neurons and neuropil. This reflects different responses to injury as it creates a depression of oxidative metabolism capacity. However, retrograde cell reaction in the ventral horn cell of spinal cord regarded as apoptosis structurally[13]. Thus, the site initiation of this phenomenon in the ventral horn neurons was positively correlated with the **(C.O.)** activity, since this point needs further investigation.

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CANDIDA ALBICANS INFECTION AMONG IRAQI WOMEN: SOME EPIDEMIOLOGICAL VARIABLES

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Abstract:
Background: Several studies were carried out on candidiasis among several groups.

Objective: This study was held to study the prevalence of candidiasis in women complaining of vaginal discharge.

Methods: A total of 100 female patients attending the gynecological clinic at Baghdad teaching hospital through the period from January 2004 to September 2004.

Results: Candidiasis was detected in 38% of the studied groups. It was in 50% of women complaining of vaginal discharge and 15% of diabetic women without vaginal discharge. *C. albicans* infection was significantly associated with age, menstrual status and marital status of women.

Conclusion: Candidiasis is a common infected agent among married women with vaginal discharge.

Key words: *C. albicans*, women, vaginal discharge, Iraq

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Introduction

Infection of the vulva and vagina is among the most common medical problem throughout the world. The most common type of vulvovaginitis is candidiasis[1]. Vaginal candidiasis caused *Candida albicans* is more than other species of candida[2]. The term candidiasis was used for commensally state, and could be used to describe pathogenic state[3].Others suggested that candidiasis should be used in the terminology of other mycotic disease[4]. Also, term thrush is commonly used referring to candidiasis of the vagina or mouth[5]. In Iraq, several studies were reporting on candidiasis among selected groups[6-9].

This study was carried out to study *C.albicans* infection among the Iraqi women attending gynaecological and obstetrics clinic for consultation of vaginal discharge.

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Materials and Methods

Vaginal swabs were obtained from 100 women by trained nurse. They were: 70 women complaining of vaginal discharge attending gynecological and obstetrics clinic in Baghdad teaching Hospital, and 30 married women without vaginal discharge (20 diabetic and 10 non diabetic women) as control group attending clinics for other diseases, through the period from January 2004 to September 2004. The groups were aged matched. Direct examination and culture were done. Cultures were made on Sabourauds dextrose agar (Difco) USA, incubated at 37°C and examined at 48-72 hours. Identification of isolated *C.albicans* was confirmed by Gram-stain, Sabourauds dextrose agar, Chlamadospore, germ tube production and API-yeast-identified system (Bio Merieux9) France, according to Elmer and Macke and McCartney[10,11].

Chi-square and Yates correction were used to examine the association between infection with *C.albicans* and studied variables. The value less than 0.05 was regarded as statistically significant.

Results:

Table 1 shows that 38% of the studied women having *C. albicans*. It was detected in 35 of 70 women complaining of

vaginal discharge (50%). It was detected in three (15%) out of 20 diabetic women without vaginal discharge and none (0.0%) of non-diabetic women without vaginal discharge. A significant statistically difference was demonstrated in the infection rate between the studied group ($p<0.05$) .

Table 1: Incidence of *C. albicans* among different groups of population

Groups Examined		Total No.	Candidiasis	
			No.	%
Women complaining of vaginal discharge		70	35	50
Control	**Diabetic women**	20	3	15
	Non diabetic women	10	0	0
Total		100	38	

Age distribution of *C.albicans* infection is shown in Figure1. Two peaks were noticed at extremes of the age of the studied women, 20-24 and 55-59 years. A predominate infection rate at the age 20 to 60 years.

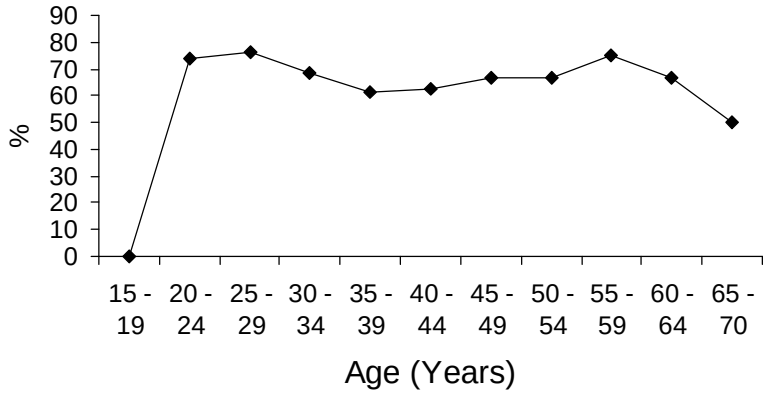

Figure 1: Age distribution of candidiasis among the studied women

It was found that 25 (83.3%) of pregnant women had *C .albicans* infection, 8 (17.7%) of non-pregnant married women (menstruating); 3 (20%) of lactating women and 2 (20%) of postmenopausal women had *C .albicans* infection. A significant statically association was observed between *C. albicans* infection rates with menstrual status of women ($P<0.05$). These findings are shown in table 2.

Table 2: Menstrual history in relation to infection with *C. albicans*

Menstrual history	Total No.	Candidiasis	
		No.	%
Non-pregnant (menstruating)	54	8	17.7
Pregnant	30	25	83.3
Lactating	15	3	20
Postmenopausal	10	2	20
Total	100	38	

Infection rates in married, divorced and widowed were 87.6%, 9.2% and 3.1%, respectively (Table 3). *C .albicans* infection rates were significantly association with social status of the studied women (P<0.05).

Table 3: Material status in relation to the infection with *C. albicans*

Material status	Total No.	Candidiasis	
		No.	%
Married	73	30	41.1
Divorced	16	6	37.5
Widowed	11	2	18.2
Total	100	38	100

Discussion

This study revealed that 38% of the studied women were infected with *C.albicans*. This result is higher than that reported by Al-Kaisi[6] and Al-Hadithi[7]. They reported that 24.58% and 27.3%, respectively. This difference may be attributed to sampling.

The finding that 50% of women complaining of vaginal discharge had *c. albicans* infection is similar to that reported in Tanzania (45%)[12]. Lower figures were reported in Europe (12.1%)[13] and Uganda (18.6%)[14].

Our finding that 15% of studied diabetic women had candidiasis is in agreement with that of Al-Omer[8]. Diabetes mellitus is one the factors associated with candidiasis[12].

This study shows higher rates of infection with *C.albicans* among young than older women. This is in agreement with the finding of Al-Omer[8]. Reproductive age correlated positively with candidiasis[12], which is considered as sexually transmitted infection[14,15].

The finding that 83.3% of pregnant women had candidiasis is consistent with that of Al-Hashime[9]. Pregnancy is positively correlated with candidiasis[12].

An infection rate *C. albicans* among lactating women was to that among postmenopausal women. This result is in agreement with that of Hiller and Lau[17]. Our finding that candidiasis was demonstrated in all the studied groups may be attributed to the fact that *C.albicans* is a common pathogenic in vaginitis[18].

The finding that a high infection rates among married women than the other groups may be attributed to role of husband in transmission of the infection as *C.albicans* infection is sexual transmitted microorganism[14,15]. Behaviour practices and sexual practices may affect the infection rate of candidiasis[19], which could not be explored in Iraq.

It can be concluded that candidiasis is a common infectious disease in the reproductive age and high rate reported among married women.

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SERUM LEVELS OF CALCIUM AND MAGNESIUM IN PATIENTS INFECTED WITH *SCHISTOSOMA HAEMATOBIUM* AND THOSE WITH BLADDER CARCINOMA

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Abstract

Background: Schistosomiasis is an ancient human disease with universal correlation between the endemicity of *S. haematobium*, genitourinary schistosomiasis and the frequency of bladder carcinoma. Calcium is the fifth most abundant mineral element in the human body and clearly correlated with T-cell activation. Magnesium is the fourth most abundant cation in the body with suggested a role of magnesium in the humoral antibody responses.

Objective: To correlate the serum levels of calcium and magnesium during S. haematobium infection and the immunosuppression state associated with this disease in addition to their possible role in the development of bladder carcinoma.

Methods: 200 individuals were included in this study (56 patients with acute schistosomiasis haematobium, 18 with chronic schistosomiasis, 20 with chronic schistosomiasis with bladder carcinoma, 50 with bladder carcinoma and 56 healthy controls). Venous blood was collected from each individual and the levels of calcium and magnesium were estimated in the serum of each individual.

Results: Calcium levels were found to be significantly lower in patients with acute schistosomiasis and significantly higher in patients with chronic schistosomiasis with bladder carcinoma when compared to the healthy controls. No significant difference was found between the levels in patients with chronic schistosomiasis and the healthy controls. Magnesium levels were found to be significantly lower in patients with acute schistosomiasis, chronic schistosomiasis with bladder carcinoma and bladder carcinoma, whereas no significant difference was found in those with chronic schistosomiasis, when compared to the healthy controls.

Conclusion: Because calcium and magnesium were found to be vital in the immune responses, the alteration in their levels might be one of the factors for the development of bladder carcinoma in patients with schistosomiasis.

Key words: *Schistosoma haematobium*, calcium, magnesium, bladder carcinoma.

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Introduction

Schistosomiasis is an ancient human disease, representing today a major public health problem. It is endemic in 76 countries, including Iraq, with an estimated total population of 200 million people affected. Still there are about 600 million people at risk[1,2]. In addition to the long survival of the parasite in humans, there is universal correlation between the endemicity of *S. haematobium*, genitourinary schistosomiasis and the frequency of bladder carcinoma[3].

Calcium is the fifth most abundant mineral element in the human body[4]. In addition to its obvious importance in skeletal mineralization, calcium plays a vital role in such basic physiologic processes as blood coagulation, platelet activation, neural transmission, enzyme activity, maintenance of normal tone and excitability of skeletal and cardiac muscle[5,6]. Moreover, a correlation was found between calcium levels and T-cell activation[7]. Hypocalcaemia has also been found to occur secondarily to magnesium deficiency and renal failure[8]. On the contrary, hypercalcaemia has been associated with various tumors, including epithelial ones[4,9,10].

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Magnesium is the fourth most abundant cation in the body and is essential to many physiologic processes. It is an activator of various enzymes[9,11]. Animal experiments suggest a role of magnesium in the humoral antibody responses[12].

This study was conducted to correlate the serum levels of calcium and magnesium during *S. haematobium* infection and the immunosuppression state associated with this disease in addition to their possible role in the development of bladder carcinoma.

Materials & Methods

Subject selection

The individuals studied were divided into 5 groups:

Group 1: Those with acute schistosomiasis haematobium (56 individuals). They were diagnosed as so by finding viable ova in their urine. Those individuals were inhabitants of Belad-Rouz in Diyala Governorate, about 50 kilometers northeast of Baghdad.

Group 2: Those with chronic schistosomiasis (18 individuals). They were diagnosed as so by finding calcified ova in the bladder wall during cystoscopic examination. Those individuals attended the Al-Kadhimiya teaching Hospital, Al-Karama Teaching Hospital and private clinics in Baghdad.

Group 3: Those with chronic schistosomiasis who had developed bladder carcinoma (20 individuals). They were diagnosed as so by finding calcified ova in the bladder wall and the presence of the tumor during cystoscopic examination and histopathological examination of biopsies obtained by transurethral resection of bladder tumor. Those individuals attended Al-Kadhimiya teaching Hospital, Al-Karama Teaching Hospital and private clinics in Baghdad.

Group 4: Those with bladder carcinoma (50 individuals). They were diagnosed as so by cystoscopic examination and the diagnosis being confirmed by the histopathological examination of biopsies obtained by transurethral resection of bladder tumor. Those individuals attended Al-Kadhimiya teaching Hospital, Al-Karama Teaching Hospital and private clinics in Baghdad.

Group 5: Healthy controls. 56 healthy individuals were selected for this study, 28 males and 28 females. Their ages ranged from 2-80 years.

Any individual who is a smoker, alcohol consumer, under any kind of therapy or with any other diseases (s) was excluded from the study.

Blood collection

2ml of venous blood was collected from each individual after disinfecting the anti-cubital fossa with 70% ethanol (Riedel-de Haen). Venipuncture was performed with a 2ml disposable syringe with a 23-gauge needle. Serum was obtained by centrifugation of the blood, after standing for 30 minutes at room temperature, at 2000rpm, 4^{o}C for 10 minutes.

Estimation of calcium and magnesium levels

The serum calcium and magnesium levels were determined using flame atomic absorption spectrophotometer (Perkin-Elmer 400) using acetylene as a fuel gas. The wavelengths used were 422.7 nm and 285.2 nm for calcium and magnesium respectively. Calculations were made using the best-fit line of regression equation of standard concentration curve.

Statistical analysis

The data were analyzed statistically using Student's t-test[13].

Results

Table 1 shows the levels of calcium and magnesium in the serum of individuals in the five groups. The levels of calcium in patients with acute schistosomiasis were found to be significantly lower ($P \leq 0.01$) than those in the healthy controls. On the

contrary, the levels in those with chronic schistosomiasis with bladder carcinoma and bladder carcinoma were found to be significantly higher (P ≤0.01) than those in the healthy controls. However, no significant difference was found between the levels of calcium in patients with chronic schistosomiasis and the healthy controls.

Magnesium levels were found to be significantly lower (P ≤0.01) in patients with acute schistosomiasis, chronic schistosomiasis with bladder carcinoma and bladder carcinoma, when compared to the healthy controls. No significant difference was found in the levels of magnesium when comparing the patients with chronic schistosomiasis and the healthy controls.

Table 1: Serum levels of calcium and magnesium (mg/dl ± standard error) in the serum of patients infected with *Schistosoma haematobium* and those with bladder carcinoma in comparison to the healthy controls.

Group / Elements	H.C.	A.S.	C.S.	C.S & B.C.	B.C.
Calcium (mg/dl)±S.E.	10.0±0.08	5.5±0.13	9.5±0.17	14.0±0.49	14.6±0.23
Magnesium (mg/dl)±S.E	1.50±0.04	0.60±0.04	1.35±0.10	0.62±0.10	0.59±0.05

H.C.= Healthy controls, A.S.=Acute schistosomiasis, C.S.=Chronic schistosomiasis,
C.S. & B.C.= Chronic schistosomiasis with bladder carcinoma, B.C.=Bladder carcinoma
S.E.=Standard error

Discussion

The significant decrease in the calcium levels in patients with acute schistosomiasis might be related to the immunosuppression state associated with this disease as proved by the decrease in the lymphocyte kinetics and adenosine deaminase activity of these patients[14]. A correlation was found between calcium levels and T-cell activation[7]. Hypocalcaemia can also occur secondarily to magnesium deficiency, renal failure and alkaline phosphatase increase[8]. Magnesium deficiency is revealed in our results and renal abnormalities might be a possibility in those patients[15], whereas alkaline phosphatase was found to be increased in such patients[14]. Moreover, calcium levels have long been associated with zinc bioavailability[16]. Zinc was found to be decreased in such patients[17].

The decrease in the immune responses in patients with acute schistosomiasis might also be due to a defect in certain hormones like 1, 25-dihydroxychlecalciferol hormone, which is responsible for calcium homeostasis. This hormone is derived from renal metabolism of vitamin D3 that is known to activate macrophages[18]. Abnormal renal metabolism has been associated with schistosomiasis[15], hence the defect in the immune responses. In addition, the relative distribution of calcium is altered as a result of changes in the protein concentrations[4,6,19]. Altered protein concentrations might result from renal function abnormalities.

The significant difference between the levels of calcium in patients with chronic schistosomiasis and the healthy controls might be due to the decrease in the antigen shedding during the chronic phase of the disease and so the physiologic activities become unaffected by the parasite.

The significant increase in calcium levels in patients with bladder carcinoma with or without schistosomiasis might be due to the malignancy-associated hypercalcaemia that occurs in various

tumors including epithelial tumors of the genitourinary tract. The parathyroid hormone related protein, secreted mainly from solid tumors, was found to be responsible for the hypercalcaemia mediated primarily via an increased renal re-absorption of calcium and secondarily by bone resorption[4,9,10].

The significant decrease in magnesium levels in patients with acute schistosomiasis chronic schistosomiasis with bladder carcinoma and bladder carcinoma might be one of the causes of immunosuppression recorded in these patients for magnesium is essential for the preservation of the macromolecular structure of DNA, RNA and ribosomes[4,20]. Therefore, the decrease in magnesium might lead to the destruction of the immune cells responsible for the host defense against schistosomiasis and tumor development. Animal experiments have suggested the role of magnesium in humoral antibody responses. It is unclear whether this is actually at the level of the B-cells or secondarily to a T-cell defect[12]. Moreover, the magnesium decrease might be due abnormal renal excretion, known in schistosomiasis[15]. Renal excretion is responsible for magnesium homeostasis[4]. Hypomagnesaemia is also a cause of early chronic renal disease[4,5,8] and certain malignancies like acute lymphoblastic leukemia[10].

The return of magnesium levels to the levels of the healthy controls in patients with chronic schistosomiasis might again be due to the decreased antigen shedding and so exerting no effect on the physiologic activities of the body.

The alteration in the calcium and magnesium levels in patients with schistosomiasis might play a role in the development of bladder carcinoma in such patients

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PURIFICATION AND PROPERTIES OF ASPARTYL PROTEINASE FROM *CANDIDA ALBICANS*

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Abstract

Background: Aspartly proteinase, EC.3.4.23 isolated from leukemic patients with candidermia.

Objective: Purification and properties of proteinase from Candida albicans.

Methods: The enzyme was purified from Candida albicans by Ion exchange chromatography and gel filtration Sephacryl S-200 column.

Results: Different strains of ***C.albicans*** isolated from leukemic patients with candidemia were used for production of proteinase enzyme. Wheat bran incorporated in Sabouraud s broth to increase production of proteinase by the organism. The specific activity of purified enzyme was 400 unit/mg, fold of 19.68, and a yield of 8.48 % .The molecular weight of enzyme is 57676 daltons when estimated by using Sephacryl S-200. Stability of proteinase enzyme and its activity at different pH and temperature were studied in details.

Conclusion: Consecutive elevation of the enzymes specific activity values with the respective steps of purification. A more virulent strains the more reproducible of proteinase enzyme

Keywords: Aspartyl proteinase ; C. *albicans'*. Purification; Sephacryl S-200.

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Introduction

The extracellular proteolytic activity is one of several hydrolytic enzymes produced by C. albicans[1]; aspartyl proteinase is one of these enzymes. Aspartyl proteinase plays an important role as a virulent factor[2]. The potential virulence factor of C. albicans have been studied by a number of investigators. The proteolytic activity is associated with a 42-45 KDa; acid carboxyl enzyme has broad substrate specificity. It is active in the range of ph 2.0-7.0 with pH optimum varying from 2.5 to 5 depending on the substrate[3].

The enzyme is secreted in vitro, when the organism is cultured in the presence of exogenous proteins, usually bovie serum albumin[3,4].

Different methods of purification of C. albicans proteinase enzyme were used such as DEAE-cellulose and Sephadex G75. These are used for removing the majority of contaminating mannproteins and other proteins[5].

Aspartyl proteinase, which appears to be glycoprotein consisting of single polypeptide chain with glutamine at the N-terminus. Its molecular weight is about 45KDa, and its isoelectro point is pi 4.6. At pH 5.0, the proteinase is stable at 45°C for at least 15 min[6].

Materials and methods

Strains of *C.albicans* enzyme prepared: isolated strains from leukemic patients admitted to different hospitals in Baghdad. Wheat bran/Sabouraud s broth (1:5) was used to culture ***C,albicans.*** Inoculated cultures were incubated at 37C for 72 hrs.

Cultures were harvested with 0. IM of KH2PC[4] buffer, pH 7.2 by centrifugation.

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The activity of enzyme was tested according to Murachi[7] Protein concentration was measured according to Biuret method[8].

Crude enzyme was precipitated with 0-50% ammonium sulphate saturated, centrifugation at 3000xg for 15 min. The enzymes activity and protein concentration were estimated from broth precipitate and supernatant. Further precipitation with 50-75% ammonium sulphate was done at the same protocol. Purification of the enzyme was done by Ion-exchange chromatography with CM-cellulose which packed in column (32xl.5cm), the column was equilibrated with 0.1 M acetate buffer pH 5.0 with a flow rate of 60 ml/hr. A 20 ml of previous dialyzed crude enzyme was loaded into the column carefully until passed the exchange. A 50 ml of O.I M acetate buffer pH 5.0 was added. A 200 ml of gradient of O.I M acetate buffer pH 8.0 to 0.5M of NaCI was passed through the exchange at a flow rate of 60 ml/hr. Fractions of 5 ml were collected and the absorbance was monitored at 280 nm. The activity of the enzyme and its concentrations were estimated.

Gel filtration chromatography was used for the enzyme purification. Sephacryl S-200 column (75x2.0cm) was packed. The column was equilibrated overnight with 0.1 M acetate buffer pH 5.0 with a flow rate of 60 ml/hr. The void volume of the column was calculated by using 2 ml of blue dextrane 2000 solution. The elution volume of the enzyme was calculated. The enzyme was carefully passed through the column which equilibrated with 0.IM acetate buffer pH 5.0 with a flow rate of 60 ml/hr. Fractions of 5ml were collected. The enzymes activity and protein concentration were estimated.

Further purification was done. To determined molecular weight of proteinase enzyme, different standard proteins were used. (Bovine serum albumin (67000); Ovalbumin (43000); Chymotrypsinogen A (25000) and Ribonuclease A, (13700) Daltons , applied through Sephacryl S-200 column, then eluted with 0.1 M acetate pH 5.0 . The V(/Vo ratio was calculated for each standard protein and for the proteinase enzyme, and then standardization was done, by plotting the elution volume (Ve) of each standard proteins to the void volume (Vo) of blue dextrane.

To determine proteinase enzyme stability at 5°C and -20°C , the enzyme was kept at these temperature with 0.1 M acetate buffer pH 5.0, its activity was determined consecutively according to Murachi[7]. The optimum pH of *C.albicans* proteinase enzyme was determined using different buffers with different pH (3.5-8.0). The optimum temperature for enzyme was incubated at different temperature between(20-45)°C for 10 minutes .

Results

The activity of proteinase enzyme in the crude was 122 unit/ml, protein concentration was 6mg/ml, and the specific activity was 20.33 unit/mg (Table 1). The activity of the enzyme in the precipitate with 0-50 % saturated ammonium sulphate was 4 unit/ml; the protein concentration was 5mg/ml, while this of the supernatant was 60 unit/ml.

Table 1: Purification of protemase enzyme from C. *albicans.*

Step	Volume (ml)	Activity (unit/ml)	Protein (mg/ml)	Total activity (units)	Specific activity(unit/mg protein)	Fold	Yield %
Crude	145	122	6	17690	20.33	1	100
Precipitation by ammonium sulphate 50-75%)	20	425	2	8500	212.5	10.45	48.04
Ion exchange (CM-cellulose)	35	182	0.75	6370	242.6	11.94	36
Gel-filtration by Sephacryl S-100							
First step	20	160	0.45	3200	355.55	17.49	18.08
Second step	15	100	0.25	1500	400	19.68	8.48

In the second step of precipitation with 50-75% saturated ammonium sulphate, the activity of the enzyme was 104 unit/ml, while its activity in the dissolved precipitate was 425 unit/ml, protein concentration was 2mg/ml, and the specific activity was 212.5 unit/mg.

In the first step of purification (Ion-exchange chromatography), the activity of the enzyme was occurred in tube (4-7) which was 182 unit/ml, protein concentration was 0.75 mg/ml and the specific activity of 242.66 unit/mg. There was no enzymes activity in tubes no. (40-43) as shown in figure 1.

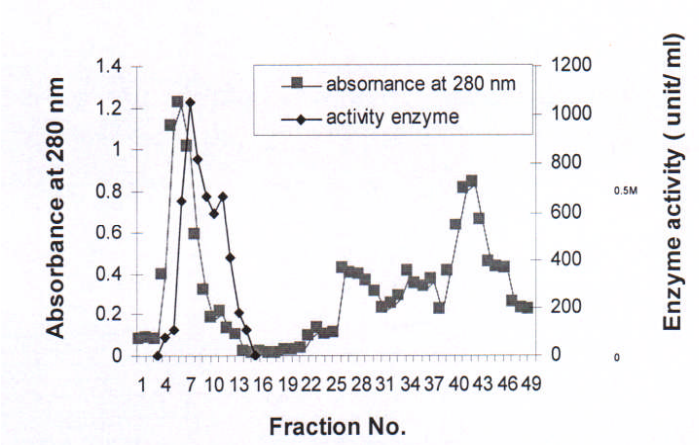

Figure 1. Purification of *C. albicans* proteinase enzyme with CM-cellulose column (32x 1.5 cm) washing with (50) ml of 0.1 M acetate buffer pH 5.0 and eluted with (200) ml of a gradient of 0.1 M acetate buffer pH 5.0 to 0.5M NaCI.

In the second step of purification (Gel filtration chromatography), the activity of the enzyme was occurred in tube no.(49-53) which was 160 unit/ml, the protein concentration was 0.45 mg/ml and the specific activity was 355.55 unit/mg. As shown in Figure 2.

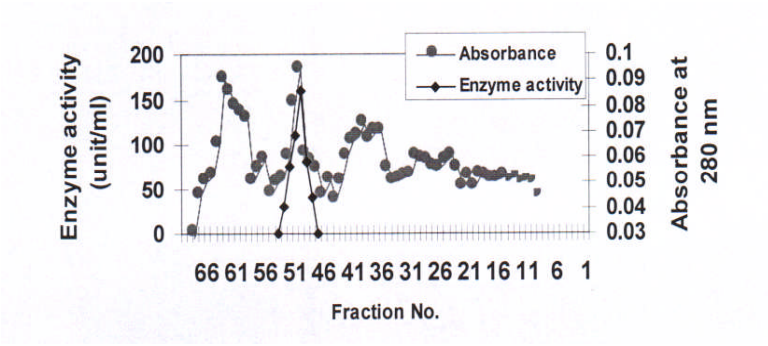

Figure 2: Purification of C. albicans proteinase enzyme with Sephacryl S-200 column (75 x 2.0 cm), eluted with 0.1 M acetate buffer pH 5.0, at a flow rate of 60 ml/hour (gel filtration chromatography-first step)

Further purification of proteinase enzyme with gel filtration chromatography was done; the activity of the enzyme was occurred in tube no.(49-52) which was 100 unit/ml, the protein concentration was 0.25 mg/ml; the specific activity was 400 unit/mg, with a fold of 19.68 and a yield of 8.48 % as shown in Figure 3.

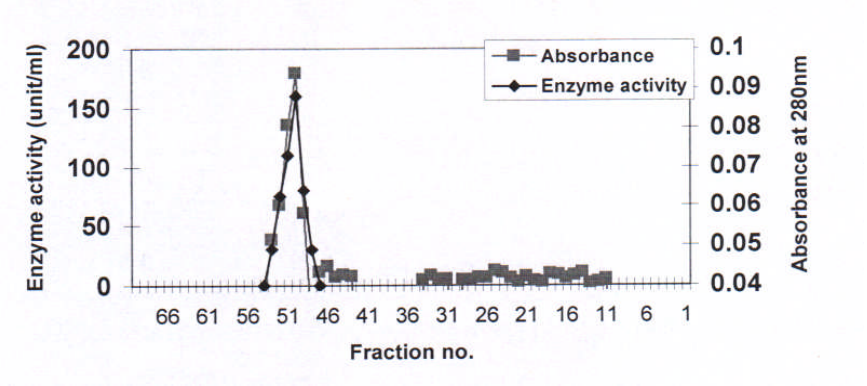

Figure 3: Purification of C. albicans proteinase enzyme with Sephacryl S-200 column (75 x 2.0 cm), eluted with 0.1 M acetate buffer pH 5.0, at a flow rate of 60 ml/hour (gel filtration chromatography-second step)

Figure 4 shows the determination of the molecular weight of proteinase enzyme against the standard proteins used for such purpose, and the molecular weight was 57676 daltons.

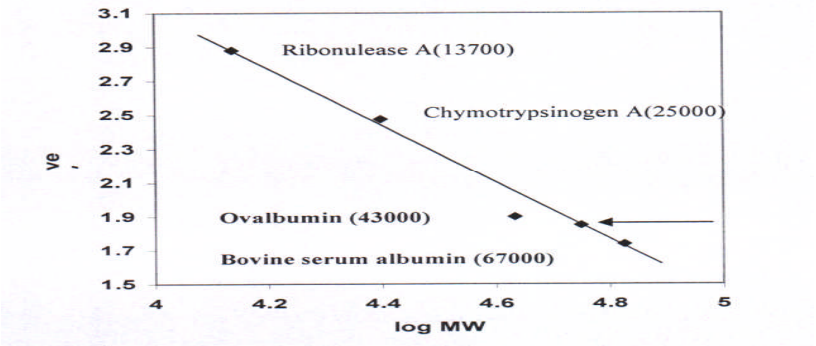

Figure 4: The molecular weight of C. albicans proteinase enzyme by gel filtration, using Sephacryl S-200 (75 x 2.0 cm)

The stability of proteinase enzyme at each of 5°C (refrigerator) and -20°C (freezer) was studied, as shown in Figure 5. The remaining activity of the enzyme at 5°C at the first day of purification was 100%; 90% and the activity was decreased to reach 9% at the eighth day. But at the same time the remaining activity of the enzyme at -20oC at the first day was 100% and reached 50% after 25 days.

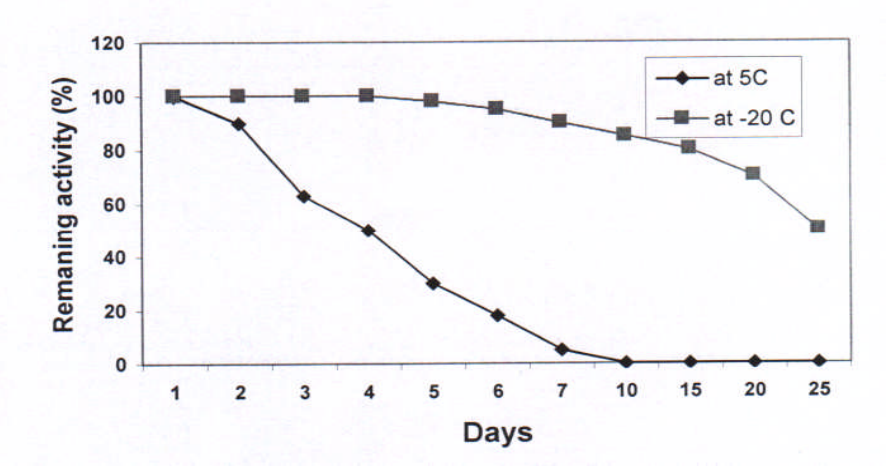

Figure 5: The stability of C. albicans proteinase enzyme at different temperature

The optimum pH of enzyme was determined, as shown in Figure 6, whereas the highest enzyme's activity were occurred in the pH (5-5.5). which were 100 and 92 unit /ml. And the enzyme lost its activity at pH (7-8) .

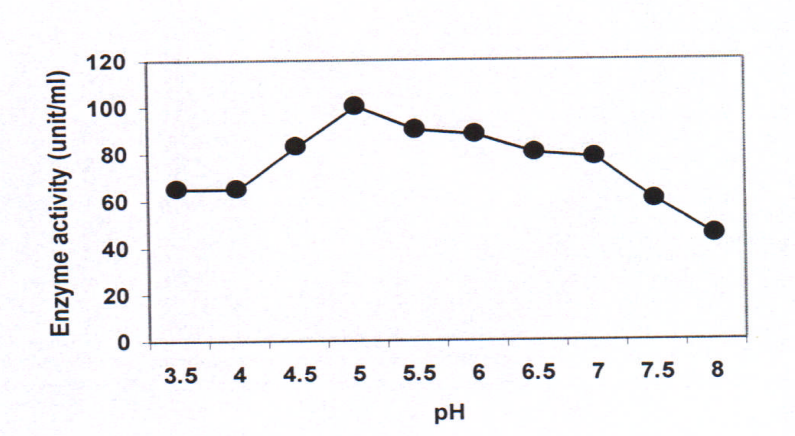

Figure 6: The optimum pH of C. albicans proteinase enzyme

Figure 7 shows the optimum temperature of proteinase enzyme was noticed at 35°C which was gave 100 unit/ml, while the lowest one was at 20°C which was 40 unit/ml.

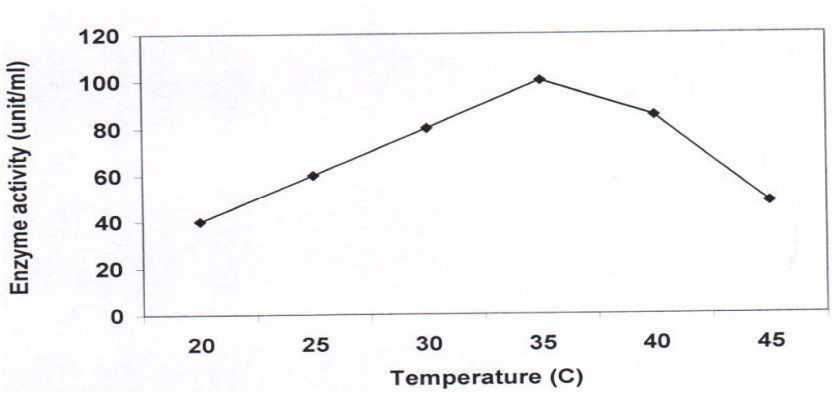

Figure 7: The optimum temperature of C. albicans proteinase enzyme

Stability of *C. albicans* proteinase enzyme according to the pH of substrate was determined , the results are shown in Figure 8, and the highest activity was seen at pH (4.5-5.0), which were (93-100)unit/ml, while the lowest ones were seen at pH (7.0-8.0) which were (60,43 and 23) unit/ml respectively.

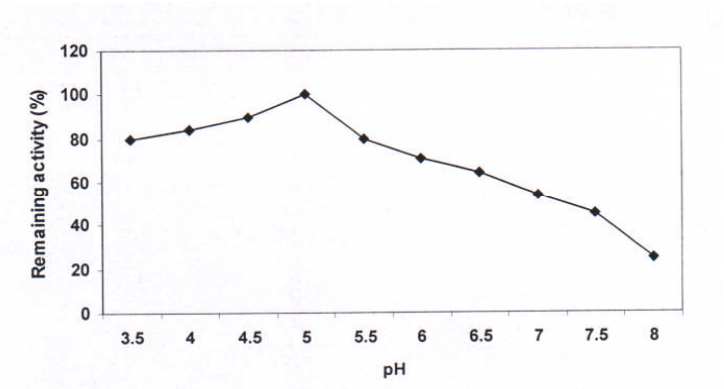

Figure 8: Determination of stability of C. albicans proteinase enzyme according to the pH of the substrate

Discussion

Different steps of purification of proteinase enzyme were used in this study: starting from crude enzyme with a specific activity of 20.33 unit/mg. In the second step which was the precipitation with ammonium sulphate (50-75 %) the specific activity was 212.50 unit/mg.

In the third step of purification with Ion-exchange chromatography the specific activity of the enzyme was 242.66 unit/mg. In the fourth step of purification which was Gel-filtration chromatography the specific activity of the enzyme was 355.55 unit/mg, while the last step of purification which was the further purification by Gel-filtration chromatography the specific activity of the enzyme was 400 unit/mg, fold of 19.68 and a yield of 8.48 % . From these results we can see the consecutive elevation of the enzymes specific activity values with the respective steps of purification.

These results disagree with that Morrison et al[5] who obtained pure enzyme

from *C.albicans*, with a specific activity of 174.9 unit/mg with a yield of 1.29 % by using different strains in both studies. Virulent strains of *C. albicans* isolated from leukemic patients were used in this study, while those used by Morrison et al[5] were standard strains carries no. AI15. This means the more virulent strains the more reproducible of proteinase enzyme[9,10].

The molecular weight of the enzyme was 57.676 Dalton and this results disagree with those obtained by other authors[4,6,11] which were ranged between 42000-45000 dalton , the differences in both results may come from: the variability among strains studied, and the techniques applied for determination of the molecular weight of the enzymes gel-filtration chromatography was used in this study, while they applied SDS-polyacrylamide gel electrophoresis for this purpose.

The optimum pH of C. *albicans* proteinase enzyme was 5.0, and this disagree with Yamamoto et al[11] who determined the optimum pH of proteinase enzyme 3.2. The optimum temperature of *C.albicans* proteinase enzyme was 35°C, and this is consistent with Bromelani[7].

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THE USE OF WATERY EXTRACT OF KUJARAT FLOWERS HIBISCUS SABDARIFFA AS A NATURAL HISTOLOGICAL STAIN

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Abstract

Background: Hibiscus sabdariffa is cultivated in many countries in the world, Iraq is one of these countries. Watery extract of kujarat flowers Hibiscus sabdariffa is red in color and acidic in taste. Previous investigations used watery extract of kujarat in medical studies and food industry. Others used its watery extract to stain blood film, fungi and plants. No previous studies use the watery extract of kujarat instead of eosin and together with hematoxylin stain in the routine H and E stain.

Objective: to see the possibility of using watery extract of kujarat as a natural histological stain and instead of eosin. This study proposed because of the similarity in some characters between kujarat and eosin stain.

Methods: watery extract of kujarat flowers was prepared in 20% concentration weight/volume. It was used to stain tissues from albino mice. It was used instead of eosin stain in the ordinary hematoxylin-eosin stain.

Results: Stained tissues reveal acceptance to kujarat stain. Erythrocytes, cytoplasm of epithelial cells of kidney tubules and smooth muscle fibers appear brownish in color. Nuclei of stained cells appear dark violet in color.

Conclusion: watery extract of kujarat flowers need chemical purification to separate its acidic from basic components. This study proposes the use of purified acidic part with the pigment instead of eosin. This part will have closer characterization (physical and chemical) to the eosin stain.

Keywords: Hibiscus sabdariffa, Roselle, kujarat flowers, natural histological stains.

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Introduction

Hematoxylin-eosin stain is the most important routine histological stain that has been used in most laboratories. It is combination of the natural hematoxylin stain and the synthetic eosin stain. Hematoxylin is a basic dye that stains acidic components of the cell, eosin is an acidic dye that stains the basic cytoplamic components of the cells. Nuclei of the cells take the hematocylin dye and appear dark violet or blue in color, cytoplasm of some epithelial cells, erythrocytes take eosin dye and stain pink[1].

Kujarat flowers *hibiscus sadariffa* belong to the family Malvaceae, which is commonly called roselle. Roselle is cultivated in India, Malaysia, Tropics, subtropics and central America[2,3]. Egyptians use to drink kujarat extract and call it karkadae, while in Iraq, it is called red tea. Studies in Iraq suggest using of kujarat extract in food industry, using it as a syrup and coloring agent[4]. Kujarat was found as a natural source of pectin, which solidify jelly and ice cream preparation[3,5].

Kujarat calyces contain per 100gm of edible portion, calcium (1.263mg), niacian (3.765mg), riboflavin (0.277mg) and iron (8.98mg)[2]. Chemical analysis in Iraq[5] of kujarat reported their values of 100mg. Of Ca and 9.55mg of Fe per mg of dry matter. Three water-soluble ploysaccharids have been isolated from flower buds of hibiscuse sabdaiffa (HIB, 1.2.3)[6].

Medical uses of these flowers are wide. Infusion of calyces are regarded as diuretic, choleretic, febrifugal, hypotensive, decreasing the viscosity of blood and stimulating intestinal peristalsis[2]. Other medical study proposed its effect in protection from induced cytotoxicity and genoetoxicity by different mechanisms[7].

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Other researchers proposed its use as a natural stain. They used extract to stain blood film, fungi and plant tissue[8-10].

Dried calyces of kujarat have dark red pigment. Chemical components of this pigment was reported in previous studies. It contains flavonoids gossypetine, hibiscetine and sabdaretine. The major pigment reported as hibiscin, that was identified as daphniphylline. Small amount of delphinidine 3-monoglucosides, cyanidin 3-monoglucosides (chrysanthenin) and delphinidine are also present[2].

This study is proposed because of the easy extraction of the pigment of kujarat flowers by boiling them in water. Other reasons is the wide cultivation of these flowers in Iraq. Dried flowers can be easily obtained from local markets and are cheap in price. The acidic taste of the kujarat extract is considered as another reason as compared with acidic eosin stain.

Materials & Methods

Dried flowers of kujarat were obtained from local market. They were washed with water to clean them from dust, boiled in water to prepare the extract in 20% concentration (weigh/volume) by boiling 20mg of dried flowers to 100ml water for minutes. The extract were filtered and kept in clean dried bottle at room temperature for 2-3 days. Few crystals of thymol were added to prevent fungal growth. The extract can be kept refrigerator for months[10]. Higher than 20% concentration of the extract results in solidification of the extract. PH of kujarat extract was calculated by PH meter to see its degree of acidity.

Two types of tissue were selected. These tissues are kidney tubules and muscular wall of blood vessels. That selection based on the basophilic components of these tissues and their possible ability to accept kujarat stain. Slices from kidney and medium sized artery of albino mice were prepared by the routine histological procedures[1,11]. Slides were stained by hematoxyline kujarat stain by the proposed steps:-

- two steps of xylene 5 minutes each.
- Dehydration by ethyl alcohol from absolute to 95% - 70% - 50%.
- Stain with hematoxylin 10 min.
- Running water 10 min.
- Dip in acid alcohol.
- Running water 10 min.
- Stain with kujarat extract 10 min.
- Wash with running water.
- Dip in xylene.
- Used D.P and cover the tissue and examine.

The prepared stained slides were examined by light microscope for evaluation and interpretation of results.

Results

Result of PH calculation of extract is 2.39. Result of preparation of watery extract of kujarat reveals solidification of the extract in higher concentration than 20%. Other results revealed that animal tissues have apparently reacted with the stain of kujarat when it is used instead of eosin. Interpretation of these findings in the accompanied figures as following:-

Figure 1: Muscular tissues in the wall of medium sized artery. The figure shows cross section in muscular artery. The most prominent histological features is the internal elastic membrane. It is dark violet wavy line stained by hematoxyline dye. The middle layer, tunica media is the widest region and composed of circular lamellae of smooth muscle fibers. Cytoplasm of these cells stains faint brown. Other histological features is the faint brown coloration of red blood corpuscles inside the lumen of a blood vessel which support the later finding of[9].

Figure 2: higher magnification of muscular tissue in the wall medium sized artery, the figure shows muscular fibers with dark violet nuclei and cytoplasm is faint brown in color.

Figure 3: kidney tissue. The figure shows cross section in kidney cortex. It shows prominent dark violet nuclei and faint

brown cytoplasms in renal glommeruli and tubules.

Figure 4: Higher magnification of kidney tissue. The most prominent feature is the dark violet nuclei of epithelial cell of renal tubules and endothelial cells of glommeruli. The other feature is the faint brown cytoplasm of tubular epithelium. The narrow lumen tubules are the proximal convoluted tubules and the wide lumen tubules are the distal convoluted tubules.

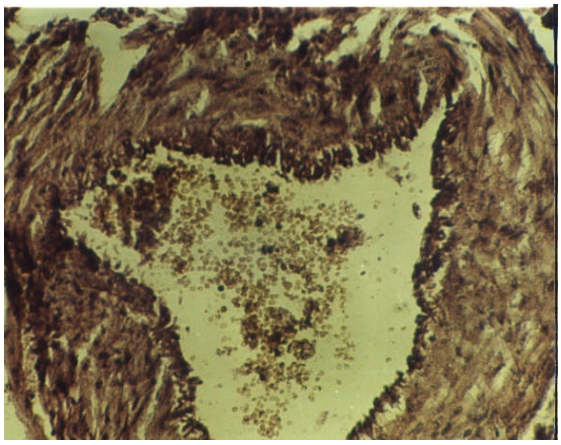

Figure 1: Cross-section in lung muscular artery. RBCs inside lumen stained faint brown. Hematoxylin & kujarat stain X50.

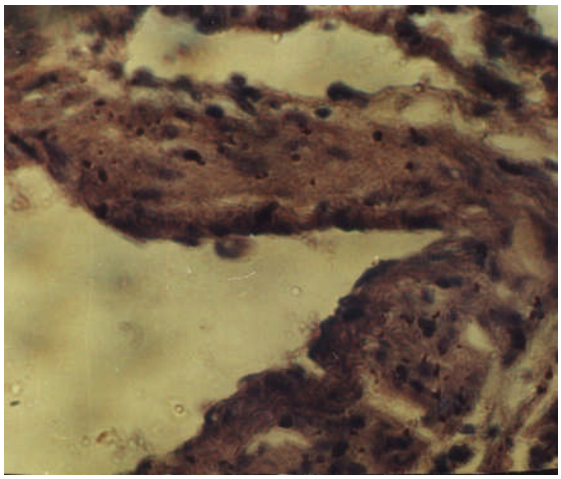

Figure 2: Higher magnification for Figure 1, nuclei of smooth muscle cells appeared dark violet, cytoplasm stain faint brown. Hematoxylin & kujarat stain, X450

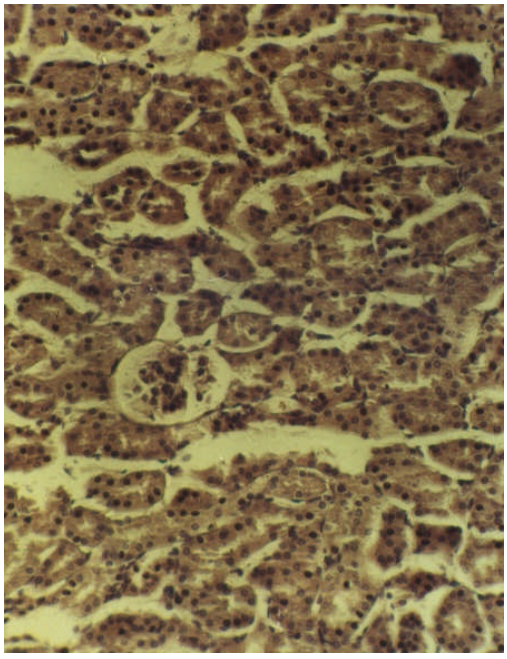

Figure 3: Cross section in kidney cortex, notice glommerruli and renal tubules hematoxvlin kujarat stain. X50.

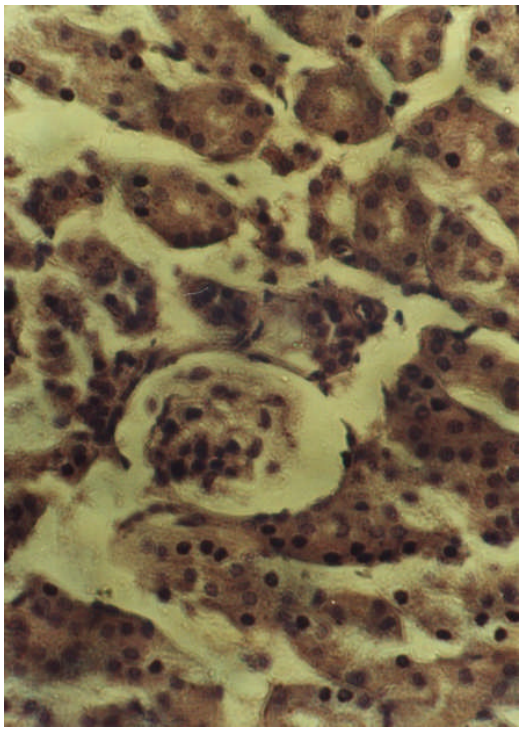

Figure 4: Higher magnification for Fig. (3) nuclei appeared dark violet. Cytoplasm stained faint brown. Hematoxylin and kujarat stain, X450.

Discussion

Result of PH calculation of the extract of kujarat is (PH = 2.39) that supports our proposed thought in using

kujarat instead of eosin as acidic stain. Previous studies proposed using of 20% conc. Of watery extract of kujarat in staining blood cells, fungi and plant cells[9,10]. We used the same concentration 20% weight/volume of kujarat extract in our study.

Previous studies didn't mention the risk of using higher than 20% conc. Of watery extract of kujarat. We noticed the extract will start to solidify as the concentration increase during boiling. That finding is based on the presence of pectin as suggested by[3,5]. Other results are the differences in color between the pigment of the extract of kujarat and the apparent color in slides after staining. The watery extract of kujarat is dark red and faint brown in tissues after staining.

Eosin is a synthetic dye. It is pure acid xanthene or phthalein pigment[1,11]. It stains specially the basophilic components of the cell[12-14]. Its watery or alcoholic solution appears bright, translucent orange in color. It stains cytoplasm of epithelial cells of proximal convoluted tubules of kidney, smooth muscle fibers and erythrocytes pink to red in color.

The watery extract of kujarat calyces is dark red in color, chemically it contains ascorbic acid, sugar (HIB 1,2,3) and other (Ca, Fe, niacin..etc)[2,5]. The chemical analysis is shown in table 1 and 2. According to these studies in Iraq and Guatemala, that natural fluid of kujarat has many chemicals associated with its pigments. These chemicals may alter its power of reactivity as tissue stain.

That chemical mixture may give a chance for many chemical reactions to occur during tissue staining and it may explain the difference in coloration between the extract and the stained tissue.

Our results in staining red blood corpuscles are in agreement with that results of[9]. Their study didn't discuss brownish coloration of these cells in stained blood film with kujarat.

This study proposed chemical separation of acidic part of kujarat extract. That purification may help the pigment to work more specifically with cellular components, and could result in close coloration between color of the kujarat extract with that of stained tissue.

Table 1: chemical analysis of Hibscus sabdarrifa in Iraq (Ali, 2000) chemical analysis for the kujarat caylces (dried) in Iraq.

Elements	Percent
Protein	1099%
Carbohydrate	71.93%
Moisture	5.65%
Ash	7.38%
Fibers	9.25%
Fat	3.80%
Element	mg/g of dried matter
Ca	100
Fe	9.55
K	120
Na	40
Mg	80
Cu	0.90
Mn	0.60
Ni	0.56

Table 2: chemical analysis of Hibiscus Sabdariffa (Rosselle) made in Guatemala (Morton, 1978). Food value per 100g of edible portion calyces, fresh of Hibiscus sabdariffa

Constituent	weight
Moisture	9.2 g
Protein	1.142 g
Fat	2.61 g
Fiber	12.0 g
Ash	6.90 g
Calcium	1.263 mg
Phosphorous	273.2 mg
Iron	8.98 mg
Carotene	0.029 mg
Thiamine	0.117 mg
Riboflavin	0.277 mg
Niacin	3.765 mg
Ascorbic acid	6.7 mg

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HISTOLOGICAL CLASSIFICATION OF CHRONIC MYELOID LEUKAEMIA IN IRAQI PATIENTS

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Abstract

Background: Chronic myeloid leukemia (CML) is a stem cell disorder, which progresses from a "benign" chronic phase to a refractory acute leukemia. It is characterized by the presence of Philadelphia chromosome (Ph), in more than 90% of the cases.

Objective: To analyze comparatively histological and cytological features of bone marrow in CML at diagnosis, and to confirm the validity of histologic classification from the clinical point of view.

Methods: All cases were retrospectively collected from the Teaching Laboratories of the Medical City during the period of January 1985 and April 1994. Special attention was paid to histopathology of the bone marrow of diagnostic biopsies of 72 patients with chronic myeloid leukemia (CML) at the time of diagnosis prior to any therapy with particular reference to haemopoietic cellularity , megakaryocyte (MKCs) per unit area, reticulin fibrosis, blood vessels per unit area, osteoblast index, and trabecular bone width.

Results: Based on the number and morphological characteristics of MKCs, cases were classified into 31 patients with common type-chronic myeloid leukemia (CT-CML), and 41 with increased megakaryocytes (MI-CML). Both groups showed relevant clinical, haematological and histologic differences between them. The MI-CML was characterized by mixed proliferation of neutrophile, eosinophile and basophile series besides the megakaryocytic component , while the CT-CML cases predominantly revealed neutrophilic proliferation.

Conclusion: The MI-CML accumulated cases with unfavorable prognostic criteria such as older age, larger spleen, anemia, leucocytosis, thrombocytosis, higher percentage of normoblast, basophile and immature precursors (blast and promyelocyte). Among the quantitative parameters obtained from the bone marrow biopsies the quantitative fibrous tissue was significantly higher in MI-CML cases.

Key words: Chronic Myeloid leukemia, Iraqi Patients, Histological Classification.

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Introduction

Chronic myeloid leukemia (CML) is a stem cell disorder. Its natural history is characterized by a bi or tri-phasic courses[1] and the presence of Philadelphia chromosome (Ph), which is a reciprocal balanced translocation of genetic material between the distal long arms of chromosomes 9 and 22 t (9; 22)[2], resulting in a chimeric gene with a protein product has unique properties among other myeloproliferative disorders[3].

Bone marrow trephine studies in CML at diagnosis have attracted the interest of a number of investigators. The bone marrow is markedly hypercellular, and haemopoietic tissue takes up to 70 - 90% of the marrow volume and fat is being reduced markedly[4-7].

Megakaryocytes (MKCs) are normal or increased in number and occasionally clustered in groups of three or more in central intertrabecular regions[8-12]. Megakaryocytes of CML are slightly smaller than normal (dwarf or micromegakaryocytes) with hypolobulated small nuclei and compact chromatin pattern and a relatively reduced rim of cytoplasm[10].

Some cases of CML present with decreased number of MKCs[11], and some authors proposed a subdivision of CML based on the number of MKCs[11-13]; common type (CT-CML), has a decreased, normal, or slightly elevated number of MKCs, whereas a marked increase in MKCs may be called megakaryocytic CML or (MI-CML: chronic myeloid leukemia with

increased MKCs). A clinical significance to this division has not been demonstrated[13].

In CT-CML type the hyperplasia affects the granulocytic cell line only, and erythropoiesis is reduced. Reticulin fibers were normal or only slightly increased, but fat cells were markedly reduced[14,15]. The MI-CML is characterized by quantitative and qualitative alteration of megakaryocytopoiesis, as shown by occurrence of highly polymorphic, heterotopic, as well as immature megakaryocytes, the MKCs whether single or in clusters were usually situated in the central intertrabecular areas and close to hyperplastic sinusoids, frequently in their lumen[14]. In some cases numerous small and micromegakaryocytes are present while in others coexistence of microform and giant cells, as well hypo- and hyperlobated nuclei, in addition to the pyknotic cells might be present[13].

Materials and Methods

Records and materials of from January 1985 - April 1994 of 72 patients with chronic myeloid leukemia (non-blast phase) were revised, 39 patients were male and 33 were female. All cases were collected from Teaching Laboratories of the Medical City. The following variables are estimated in each case:

Clinical features: include, patient's age, liver and spleen size in centimeters below the left costal margin, and pre-diagnostic symptoms duration.

Haematological parameters: include, hemoglobin concentration (Hb g/dl), total leucocyte counts (WBC x 10^9/l) and differential counts, and platelet counts (plt x 10^9/l).

Bone marrow aspirate: Adequate aspirated material were available in 42 cases, and the following parameters were estimated; myeloid: erythroid ratio, and the percentage of basophils, eosinophils , promyelocytes , and blast cells.

Megakaryocytes were given the following score[13]: (-) Totally absent, (+) Reduced, (++) Normal, (+++) Slightly increased, and (++++) Moderately-Markedly increased.

Marrow trephine biopsy

Biopsy technique and evaluation: All the biopsies were cores obtained from posterior iliac crests and processed in standard technique. The minimal size of the cores was 2 x 12 mm. Two sections were obtained each of 5 µm thickness, one stained with haematoxylin and eosin (H.&E.), and the other stained with Gomoroi's silver stain for reticulin fibers.

Cellularity (haemopoietic tissue)[16]:

The percentage area of marrow occupied by haemopoietic tissue, fat, and fibrous tissue (H&E, and reticulin stain) was measured by "Chalkley point array graticule.

MKCs number and Blood vessels: were calculated by using a window with a known surface area inserted in the eyepiece of the microscope[17].

Osteoblast index and Average trabecular bone width: were measured by special graticule (7x) calibrated at each magnification of the microscope[15,18].

Statistical Methods: t test was used for comparing the mean values of the clinical, haematological, and histological parameters.

Results

On the basis of histologic assessment of the trephine, the cases were divided into two groups: CT-CML (common type CML), and MI-CML (CML with increased megakaryocytes)[6-10,13,17,18]. CT-CML (31 cases): had predominant granulocytic hyperplasia, with normal or only slightly increase MKCs (MKC =< 42/mm^2).

MI-CML (41 case): had a mixed granulocytic and megakaryocytic proliferation, (MKC > 42/mm^2). All the parameters analyzed in this study were compared between the two groups.

Clinical features:

Patients with MI-CML, were older age and had larger spleen, also they had

larger liver, and longer pre-diagnostic symptom duration. The last two variables failed to reach a significant level with statistical analysis.

Haematologic parameters:

The mean values of WBC, platelet counts, percentages of basophils, immature cells (promyelocytes and blasts), and circulating normoblasts were significantly higher in those cases with MI-CML. The same group had lower haemoglobin concentration, while the cases with CT-CML had significantly higher percentage of mature neutrophil.

Bone marrow aspirate features

(Tables 1, and 2): Cases with MI-CML had higher percentages of eosinophil and basophil, and higher M: E ratio than cases with CT-CML. Bone marrow aspirates were also useful in distinguishing cases of CT-CML from MI-CML based on the number of MKCs. As can be seen in (Table II) CT-CML group had 17 bone marrow aspirates, 10 cases of them had normal MKCs (++),and 7 cases were slightly increase (+++). While in MI-CML there were 25 aspirates, 5 cases show slight increase in MKCs, while the other 20 had moderate-marked increase MKCs (++++), and there was statistically significant difference in MKC number in the aspirates of CT-CML, and MI-CML, as P-value was < 0.001. The same Table demonstrates significant correlation between the number of MKCs in aspirates and biopsies.

Table 1: Bone marrow aspirates findings of CT-CML and MI-CML.

Bone marrow aspirate	CT- CML.(19)* Mean ± SD	MI-CML.(23) * Mean ± SD	P-value
Basophil %	2.74 ± 2.68	5.04 ± 2.51	.005**
Eosinophil %	2.16 ±2.69	5.30 ±2.84	.031**
Promyelocyte%	4.32 ± 2.31	4.78 ± 2.13	.327[NS]
Blast %	2.83 ± 2.15	3.05 ± 2.22	.739[NS]
M:E Ratio* **	19.3 ± 6.9	23.7 ± 12.3	.036**

* Number of cases in each stage. ** Significant. *** Myeloid: erythroid ratio. [NS]: Not significant. CT-CML: Common type chronic myeloid leukemia. MI-CML: Chronic myeloid leukemia-megakaryocytes increased.

Table 2: Semiquantitative of MKCs in bone marrow aspirate of CT-CML and MI-CML and its correlation with subjective estimation of MKCs in bone marrow biopsy.

		Subjective MKC in bone marrow biopsy				Total
		CT-CML (17)		MI-CML (25)		
		normal	Slightly increase	moderately increase	Markedly increase	
MKC in bone marrow aspirate	++	8	2			10
	+++	1	6	2	3	12
	++++			8	12	20
Total		9	8	10	15	42

++ Normal , +++ Slightly increase , ++++ moderately – markedly increase. P – value < 0.001
CT-CML: Common type chronic myeloid leukemia.
MI-CML: Chronic myeloid leukemia – megakaryocytes increased.

Bone marrow biopsy parameters

(Table 3): The percentage of marrow area occupied by fibrous tissue, and the average trabecular bone width were significantly higher in cases with MI-CML, than those with CT-CML, while the quantitative cellularity was higher in CT-CML but failed to reach a significant level.

The frequency of MKC clustering was higher in MI-CML (10 cases vs. 1 case), and the P-value was < 0.001. Also, there were highly significant differences in the morphology of MKCs, as in CT-CML 21 cases had normal morphology, and 10 cases showing abnormalities including hyposegmentation of the nuclei, and dwarfism. In MI-CML only three cases present with normal morphology of MKC and 38 cases exhibited the abnormalities mentioned earlier, and P-value was <0.001.

Table 3: Bone marrow biopsy features of CT-CML and MI-CML.

	CT- CML.(31)* Mean ± SD	**MI-CML.(41) * Mean ± SD**	**P-value**
Q. Cellularity (%)	84.0 ± 14.3	75.4 ± 19.2	0.062[NS]
Q. Fatty tissue %	5.6 ± 8.3	3.9 ± 5.6	0.333[NS]
Q. fibrous tissue (H.&E.)	10.4 ± 11.6	20.68 ± 18.35	0.009**
Q. fibrous tissue (Reticulin stain) (%)	29.1 ± 23.7	59.0 ± 27.1	<0.001**
MKC/mm^2			
Blood vessels /100mm^2	26.1 ± 7.1	81.7 ± 38.8	<0.001**
Osteoblast Index	2970.5 ± 1291.0	3627.9 ± 1424.2	0.071[NS]
Average trabecular bone width (μm)	0.74 ± .19	0.79 ± .25	0.581[NS]
	73.8 ±11.8	81.7 ± 12.0	0.013**

Q. : quantitative. * Number of cases in each stage. ** Significant. [NS]: Not significant. CT-CML: Common type chronic myeloid leukemia. MI-CML: Chronic myeloid leukemia – megakaryocytes increased.

Discussion

The results of present study indicate that it is possible to distinguish on histologic grounds two forms of CML according to criteria described in previous studies[6-10,13,17,18]. There are relevant clinical and haematological differences observed between the two groups of the patients.

The group of patients who presented with megakaryocytic hyperplasia MI-CML was older, and had larger spleen. The older age of MI-CML group are only reported by (Georgii, 1979,1980)[19,20], but not by others[13,21] , and larger spleen in the same group also reported by Rozman, 1989[21], who reported also that MI-CML associated with larger liver which was not proven statistically significant in the present study.

The MI-CML group differs significantly from the CT-CML, in their haematological parameters. The first group had lower haemoglobin concentration, higher M: E ratio in their bone marrow aspirates (which may be related to suppressed erythropoiesis), these finding agree with that reported by Lorand, 1987[13], and Burkhardt, 1982[18], but differ from what had been reported by Knox, 1984[6], Rozman, 1989[21], and Bartl, 1982[14]. The platelet count was higher in MI-CML than that of CT-CML, and this agrees with the results obtained by Rozman 1989[21], and Burkhardt, 1982[18]. The leucocytes were higher in MI-CML, confirming the results obtained by Lorand 1987[13], but differed from the finding of higher WBC counts in CT-CML group mentioned by Burkhardt 1982[18], and also differ from the results of Rozman, 1989[21], and Knox, 1984[6], who mentioned that there was no significant differences between the two groups.

Basophil percentage is higher in MI-CML, in both bone marrow, and peripheral blood, while eosinophil percentage approaches higher level in bone marrow of MI-CML but not in their peripheral blood. So MI-CML could be characterized as a CML with mixed proliferation of eosinophil, basophil, and megakaryocyte besides the neutrophil proliferation while

the CT-CML show predominantly neutrophilic proliferation. This is similar to the result of Lorand, 1987[13], Burkhardt, 1982[18], and Rozman, 1989[21]. Burkhardt reported a combination of eosinophilic and megakaryocytic proliferation seen in bone marrow sections but not association of the proliferation of all 3 cell lines in MI- CML. While Frisch, 1985[22] mentioned the reverse as he reported more eosinophilia in CT-CML.

Immature granulocytes (blast and promyelocyte) were more in MI-CML, and this is similar with the results obtained by Lorand, 1987[13], Razzarino, 1986[17], and Rozman, 1989[21]. But differ from what reported by Bartl, 1982[14], that the blast percentage was higher in CT-CML. The bone marrow aspirate parameters analyzed also permitted a differentiation between the two types of CML by the number of MKCs, as in both aspirate and biopsy there is a continuous spectrum ranging from cases with few normal looking MKCs to cases with a considerable proliferation was found, so this study showed that the parameters obtained from both the aspirate and biopsy were complimentary in classification, but in previous studies the classification was based on the histologic features of the trephine sections. Lorand, 1987[13], depend on cytological features of bone marrow obtained from the imprints in classifying CML not from the aspirate as in the present study.

MI-CML showed striking qualitative and quantitative alteration in MKCs which were highly polymorphic, and had higher frequency for clustering.,associated with higher incidence of fibrosis, which may be related to higher MKCs counts especially those with atypical morphology, as there is a strong correlation between MKCs counts and development of myelofibrosis[23]. In the present study, as in previous studies[13,14], MI-CML seems to concentrate cases with known unfavorable prognostic factors, such as older age, larger spleen, higher leucocyte and platelet counts, more frequent basophils, higher immature granulocytes, higher circulating erythroblast, higher MKCs, and more frequent increase in reticulin fibers. However follow up of the cases is justified to predict the reliable survival rate.

Conclusion

Two types of CML, CT-CML, and MI-CML can be identified by the aid of histologic assessment of the trephine biopsy. MI-CML cases characterized by mixed proliferation of neutrophil, eosinophil, and basophil series, beside the proliferation of MKCs. While CT-CML showed a predominantly neutrophilic proliferation. The results of this study confirm the validity of histologic classification from the clinical point of view. The type MI-CML accumulates cases with unfavorable prognostic factors.

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RELATIVE PLASMA VISCOSITY: A SIMPLE TEST FOR THE BED SIDE DIAGNOSIS OF MULTIPLE MYELOMA

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Abstract

Background: The measurement of plasma viscosity (PV) has long been recognized to be important for the diagnosis of paraproteinemia and it is widely used recently for the assessment of peripheral vascular disorders, diabetes mellitus and malignant diseases. The WHO recommended method for measuring PV is the electronic Harkness viscometer, but it is expensive and not widely available.

Objective: A simplified, cheaper and accurate technique using the red cell pipette is worth trying as a rapid bedside test.

Methods: The relative plasma viscosity (RPV) was measured in 30 patients with multiple myeloma and 150 healthy adults. The method applied was that of Wright and Jenkins in which a comparison of the vertical flow of plasma to distilled water using the red cell pipette is used to measure the relative viscosity of plasma. The erythrocyte sedimentation rate for both the patients and control was performed for comparison.

Results: The mean RPV in multiple myeloma patients was highly raised compared to normal and that increment is highly significant statistically ($p<0.001$). These results are considered highly supportive of the diagnosis of myeloma. In the other hand, although the results of ESR were statistically significant, it cannot be differentiated from those due to other disorders.

Conclusion: The measurement of RPV has proved to be simple and reliable and may be used at the bed side to detect the activity and to assess the diagnosis of multiple myeloma.

Key words: Plasma viscosity, multiple myeloma.

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Introduction

The viscosity of a bulk liquid is its intrinsic resistance to flow, which arises because of the internal friction between its molecular and particulate components[1]. For protein solutions, this resistance to flow is influenced by both concentration and intrinsic viscosity of individual proteins, and the intrinsic viscosity, in tern, is affected by the molecular size and shape of that protein[2].

The plasma viscosity (PV) is directly correlated with the concentration of large sized plasma proteins namely fibrinogen and some immunoglobulins (secretary IgA and IgM)[3].

The prompt recognition of the potentially fatal hyperviscosity syndrome in Waldenström's macroglobulinemia and multiple myeloma is of great clinical importance since dramatic relief of symptoms may result from the lowering of viscosity by plasmapheresis[4].

The usual technique for measuring PV i.e. The Harkness viscometer is relatively simple but require equipment frequently not available in clinical laboratories[4]. Therefore the present study was undertaken to prove that the measurement of relative plasma viscosity (RPV) can serve as a rapid and accurate screening test, adaptable even to the hospital ward.

Patients and Methods

RPV and erythrocyte sedimentation rate (ESR) were measured for 30 patients with multiple myeloma (proved by bone marrow study and protein electrophoresis), attending Al-Kadhimiya Teaching Hospital for the period of five years (2000-2004).

A hundred and fifty health adults were selected as control, half of these are

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males and the other is females. All healthy adults are 20-40 years of age. Venous blood was collected with minimal stasis and anticoagulated with di potassium EDTA for RPV or sodium citrate for ESR. The ESR is measured immediately in Westergren tubes for one hour.

For RPV testing, plasma is immediately separated by centrifugation (3000g for 5 minutes) then kept in stoppered plastic tubes were it could be stored in room temperature (not the refrigerator) for one week without change in viscosity[4]. The method applied was that described by Wright and Jenkins[4] and modified by Falih et al[5], using the red cell pipette (Figure 1).

Student's t-test was utilized for statistics with p value less than 0.05 was considered statistically significant.

Results

The mean RPV for the healthy (control) subjects was 1.81±0.19 with a range of 1.58-2.1 as it shown in table 1.

Table 1: Mean ±SD of RPV and ESR values in healthy subjects.

Control group	No. of cases	Mean RPV±SD	Mean ESR±SD
Males	75	**1.79**±0.11 (1.58-1.98)	**6**±3.9 (2-13)
Females	75	**1.83**±0.16 (1.61-2.1)	**10**±6.2 (2-18)
Total	150	**1.81**±0.19 (1.58-2.1)`	**8**±6.6 (2-18)

Table 2: The RPV results of the thirty multiple myeloma patients with their corresponding ESR values.

Patient number	RPV	ESR
1	2.09	80
2	2.17	105
3	2.48	95
4	2.52	100
5	2.59	90
6	2.61	93
7	2.65	110
8	3.00	104
9	3.09	105
10	3.10	115
11	3.11	100
12	3.15	120
13	3.21	137
14	3.28	125
15	3.32	166
16	3.40	145
17	3.46	119
18	3.50	132
19	3.69	125
20	3.75	136
21	3.77	171
22	3.86	105
23	3.88	129
24	3.94	144
25	4.00	118
26	4.2	142
27	4.37	180
28	4.43	146
29	4.51	170
30	4.84	175
Mean	3.399	126.06
Range	2.09-4.84	80-180
SD	0.710	27.31

A comparison of the results of RPV and ESR of normal and multiple myeloma patients is shown in table 3.

Table 3: Comparison of RPV and ESR results of control and myeloma group

Group	No. of cases	RPV	ESR
Control group	150	**1.81**±0.19 (1.58-2.1)	**8**±6.6 (2-18)
Myeloma patients	30	**3.39**±0.71 (2.09-4.84)	**126.06**±27.31 (80-180)
P value		< 0.001	< 0.001

Discussion

The ESR and plasma viscosity usually increase in parallel, and therefore has long been used as acute phase reactant[6,7]. Plasma viscosity is, however, primarily dependant on the concentration of plasma proteins, especially fibrinogen, and it is not affected by anemia[6]. Changes of viscosity seem to reflect the clinical severity of disease more closely than does the ESR[8]. Furthermore changes in ESR may lag behind those of viscosity by 24-48 hours[6]. Unlike the ESR, the test in RPV could be delayed for one week without change in viscosity[6,11].

The results of plasma viscosity are highly reproducible, and there are no significant differences in plasma viscosity between men and women, or in pregnancy[6,9]. It is remarkably constant in health, with little or no diurnal variation, and it is not affected by exercise, therefore a change of only 0.03-0.05 mPa/s is likely to be clinically significant[6].

This study assesses the use of a simple instrument i.e. the red cell pipette which is usually available in every laboratory to aid in the diagnosis of multiple myeloma at the bed side.

Falih et al (2000)[5] confirmed the work of previous authors[4,8] that the results of plasma viscosity could be classified into three zones, a control, chronic, and a myeloma zone.

According to Falih et al the control zone was 1.56-1.95, and the myeloma zone is 2.09-4.43. Both of these ranges are comparable to ours[5]. The control zone in our study was 1.58-2.1 relative units with no male to female differences. The normal range for the ESR was 2-18 mm/hr.

The RPV values of the myeloma patients ranged from 2.09-4.84 relative units which is highly statistically significant ($p<0.001$). The results of the ESR for these patients ranged from 80-180 mm/hr with a p- value <0.001.

More than 86% of patients showed ESR values more than 100 mm/hr (26 patients); however these results cannot be differentiated from the high ESR seen in a wide range of acute and chronic disorders[5,6,11].

In contrast to the results of the ESR, myeloma patients showed very high results of RPV with 23 out of the 30 cases (76.67 %) had RPV more than 3 relative units consistent with the myeloma zone described by previous authors[4,5,8]. In 1984, the international committee for standardization in hematology (ICSH) recommended that an RPV value greater than 3 relative units should be considered diagnostic of paraproteinemia and requires further establishment of its cause[1,2,10].

In addition to the above mentioned advantages of RPV measurement, the technique of using the red cell pipette has only few limitations including the need of thorough cleansing after each test since dried proteins may impede the flow of fluids thus resulting in false high RPV. Another cause of false high results is the use of red cell pipettes with cylindrical; type of beads which may occlude the opening and reduce the flow of plasma, therefore it is recommended to use pipettes with star shaped beads for more accurate results. The

non verticality of the apparatus may adversely affect the results and should be avoided.

Conclusion and Recommendations

Technically, the measurement of RPV by this method appears to be easy, accessible, cheap and rapid and can be used at the bed side to test for the presence of paraproteins.

The test may yield values which are diagnostic of myeloma unlike ESR in which the high values could be seen in a variety of disorders, therefore cannot be considered diagnostic of myeloma[3,5,10].

A much simpler device to measure RPV can be tried by using a technique which do not require cleaning, possibly using a disposable apparatus is recommended to be used which may prove to be more helpful for the rapid and bed side diagnosis of paraproteinemia.

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MEDICOLEGAL POSTMORTEM STUDY OF SOME ANATOMICAL VARIATIONS IN THE THYRIOD GLAND AMONG BAGHDADIANS

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Abstract:

Background: Up till now no postmortem study was done in our country about the anatomical variations in the thyroid gland and their prevalence.

Objectives: To determine the presence of certain chosen anatomical variations in the thyroid gland among Baghdadians and to clarify the importance of forensic pathology in different medical studies.

Method: A prospective study was done in the medicolegal institute of Baghdad for 6 months duration. The thyroid gland was studied grossly in 122 randomly chosen cadavers to reach the above mentioned objectives.

Results: The presence of pyramidal lobe was the most prevalent anatomical variation (5,7%) while the absence of the isthmus was found in 4.9% of cases and the presence of the thyroid ima artery was seen in 4.9% of cases. There were no significant statistical differences between male and female.

Conclusion: The presence of pyramidal lobe was the most prevalent anatomical variation followed by the absence of the isthmus and the presence of the thyroid ima artery.

Key words: Postmortem, thyroid gland, anatomy, variation.

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المقدمة

الغدة الدرقية هي غدة صماء توجد في الجزء السفلي للوجه الأمامي للرقبة وتقع مقابل الفقرات العنقية الخامسة والسادسة والسابعة والفقرة الصدرية الأولى[١]. وتتكون من فصين جانبيين مرتبطين ببرزخ (Isthmus) ويقيس كل فص ٥ x ٢.٥ x ٢.٥ سم. أما البرزخ فيقيس ٣.٧ x ١.٥ سم[٢]، وبذلك يحاكي شكل الغدة شكل الفراشة (Butter fly)[٣].ويوجد أحيانا فص إضافي يتصل بأعلى البرزخ في الوسط ويمتد إلى الأعلى ويسمى الفص الهرمي (Pyramidal lobe) نظرا لكون قاعدته واسعة وقمته حادة وقد يصل إلى مستوى العظم اللامي(Hyoid bone) أو يمتد خلفه[٤]، وقد تصل نسبة تواجده إلى ٥٠ % كما إن البرزخ قد لايتوجد أحيانا[٥].

تحاط الغدة الدرقية باللفافة (Fascia) ذاتها التي تتصل بالغضروف الدرقي (Thyroid cartilage) والغضروف الحلقي (Cricoid cartilage) مما يجعلها تتحرك مع الحنجرة أثناء البلع والتكلم وتساعد ذلك في تمييز التورمات الحاصلة فيها عن تلك الحاصلة في التراكيب المجاورة، وأعمق من اللفافة المذكورة تقع المحفظة الليفية للغدة (Fibrous capsule) وتتوضع بينهما شرايين الغدة والشبكة المتفاغرة (anastamosing network) لإروائها[٦].

ويقع الفصان الجانبيان للغدة الدرقية على جانبي ألرغامي والمرئ تحت غطاء عضلات الأسار (Strap muscles) ويمسك بأعلى كل منهما الجيبة (Pocket) المتكونة من العضلة القصية الدرقية (Sternothyroid muscle) والغضروف الدرقي فلا يرتفع في حالة تضخمه فوق الخط المائل ألمواز لتلك الجيبة، لكنه يزيح الغمد ألسباتي (Carotid sheath) جانبيا مسببا تمطط عضلات الآسار المارة فوق الغدة[٧].وتتباين الغدة الدرقية في حجومها وهي نسبيا كبيرة في النساء والأطفال[٦]، ويزداد حجمها أثناء الحيض والحمل ويبلغ معدل وزنها ٢٥ غم[١]، ولقد ذكر بأنه قد يصل إلى ٤٠ غم عند الشخص الاعتيادي الذي يزن ٧٠ كغم[٨،٩].

والغدة الدرقية مجهزة بكثير من مدد الدم إذ يغذيها ٤ شرايين درقية اثنان من كل جهة وهي كل من الشريان الدرقي الأعلى الذي هو فرع من الشريان ألسباتي الخارجي (External carotid artery) والشريان الدرقي الأسفل وهو فرع من الجذع الرقبي الدرقي (Thyrocervical trunk) ويغذيها أيضا عدد من الشرايين الصغيرة الأخرى، أما أوردتها فهي الوريد الدرقي الأعلى الذي يصاحب الشريان الدرقي الأعلى والوريد الدرقي الوسطي ويختلف حجمه من شخص لآخر ويمتد عرضيا إلى الوريد الوجي الداخلي (Internal jugular vein)، أما الأوردة الدرقية السفلى فهي مجموعة غير ثابتة العدد من الأوردة التي تنحدر إلى

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المنصف الصدري (Mediastinum) لتصب في الوريد العضدي الرأسي (Bracheocephalic vein) [٤]. و في ١٠% من الناس تقريبا يوجد شريان صغير هو الشريان الدرقي المفرد (Thyroid artery) و ينشأ من الجذع العضدي الرأسي أو من القوس الابهري (Aortic arch) أو من الشريان ألسباتي المشترك الأيمن (Right common carotid artery) أو من الشريان تحت الترقوي (Subclavian artery) أو من الشريان الصدري الداخلي (Internal thoracic artery) [٥].

و بالنسبة للتزويد العصبي فهنالك الأعصاب الودية (Sympathetic nerves) القادمة من العقد الرقبية (Cervical ganglia) العلوي و الوسطى و السفلى و المرافقة للشرايين الدرقية. أما الألياف العصبية اللاودية (Parasympathetic nerves) فتنشأ من العصب التائه (Vagus nerve) [١٠]. و للغدة الدرقية علاقة بعصب مهم يمر خلفها هو العصب الحنجري الراجع (Recurrent laryngeal nerve) و هو فرع من العصب التائه و يعد العصب المحرك للعضلات الداخلية للحنجرة[٤،١٤،١٥].

و للغدة الدرقية تزويد غني بالأوعية اللمفية و التي تترتب كأقنية حول الأوعية الدموية لتكون المسالك اللمفية الشعرية (Capillary lymphatic pathways) [١١]. و يتصرف معظم اللمف إلى المجموعة الأمامية العلوية و المجموعة الخلفية السفلية من العقد اللمفية الرقبية العميقة[١].

المواد وطرائق العمل

أجريت الدراسة في معهد الطب العدلي ببغداد خلال الفترة من ٢٠٠١\١٠\١ إلى ٢٠٠٢\٣\٣١ شملت ١٢٢ جثة لمختلف أسباب الموت أختيرت عشوائيا من الجثث الواردة إلى المعهد المذكور خلال تلك الفترة. استبعدت فيها الجثث غير الكاملة التي وردت مثلا على شكل مجموعة عظام أو أشلاء نقصت منها تراكيب العنق و بضمنها الغدة الدرقية أو التي أحيلت من المحافظات الأخرى خارج بغداد.

تم إجراء الفحص الطبي العدلي التشريحي الأصولي (Full autopsy examination) على كافة الجثث المشمولة بالدراسة مع التركيز على فحص الغدة الدرقية في موقعها و بعد فصلها لدراسة صفاتها، و اخترنا تعيين بعض الفوارق التشريحية فيها و هي:

١. وجود الفص الهرمي
٢. غياب البرزخ
٣. وجود الشريان الدرقي المفرد

إحصائيا تم استخدام الوسائل الإحصائية التالية:

١. النسب المئوية لمعرفة الفرق النسبي بين النتائج.
٢. اختبار (t) لمعرفة الدلالة الإحصائية لفرق المتوسط الحسابي لأحد القياسات بين المجموعتين و الذي استخدمناه في دراستنا على الفوارق التشريحية في الغدة الدرقية بين الذكور و الإناث.
٣. كما تم الرجوع إلى إحصائيات معهد الطب العدلي عن المدة ذاتها التي أجريت فيها الدراسة لمعرفة العدد الكلي للوفيات و بنسبة كل من الذكور و الإناث بشكل عام.

الإجراءات الأخرى: تم إجراء التصوير الفوتوغرافي لبعض الحالات.

النتائج

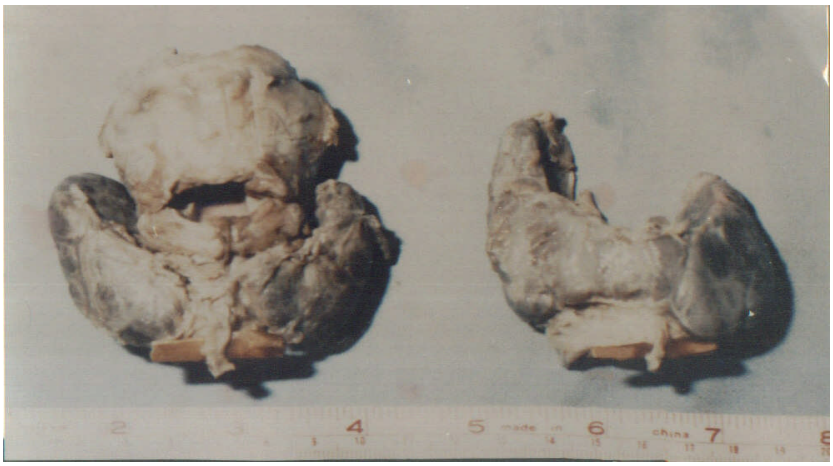
شمل بحثنا الميداني دراسة بعض الفوارق التشريحية في الغدة الدرقية في ١٢٢ جثة لمدة ٦ أشهر للفترة التي امتدت ما بين ٢٠٠١\١٠\١ حتى ٢٠٠٢\٣\٣١. كان عدد الإناث ٤٦ أي ما نسبته ٣٧.٧ %، أما الذكور فكان عددهم ٧٦ أي ما نسبته ٦٢.٣ %. و يبين الجدول رقم (١) وجود الفوارق التشريحية للغدة الدرقية و التي اخترناها في دراستنا و نسبها في العينة المشمولة قي الدراسة و حسب الجنس مع الدالة الإحصائية للفروق بين الذكور و الإناث. و يظهر فيه أن وجود الفص الهرمي هو الفارق التشريحي الأكثر تواجدا بين الفوارق المختارة في هذه الدراسة. و يظهر في الصورة رقم (١) وجود الفص الهرمي في إحدى الغدد الدرقية المشمولة بدراستنا.

أما الصورة رقم (٢) فتظهر فيها غدتان درقيتان يلاحظ في إحداهما وجود الشريان الدرقي المفرد و في الثانية غياب البرزخ مع وجود الشريان الدرقي المفرد الذي تفرع إلى فرعين ذهب كل فرع منهما إلى أحد فصي الغدة.

الجدول رقم (١) : الفوارق التشريحية المختارة في الغدة الدرقية ونسبتها في العينة المشمولة بالدراسة وحسب الجنس.

الفارق التشريحي	العدد من أصل ١٢٢ حالة			النسبة المئوية			الدالة الإحصائية للفروق بين الإناث والذكور
	الإناث	الذكور	الكلي	الإناث	الذكور	الكلي	
وجود الفص الهرمي	٢	٥	٧	١.٦	٤.١	٥.٧	٠.٤٧
غياب البرزخ	١	٥	٦	٠.٨	٤.١	٤.٩	٠.٢٦
وجود الشريان الدرقي المفرد	٠	٦	٦	٠	٤.٩	٤.٩	٠.٠٥

الصورة رقم (١) : وجود الفص الهرمي في إحدى الغدد الدرقية المشمولة بالدراسة.



الصورة رقم (٢) غدتان درقيتان، الأولى إلى يمين الناظر يلاحظ فيها وجود الشريان الدرقي المفرد (أسفل الغدة)، الثانية إلى يسار الناظر يلاحظ فيها غياب البرزخ و وجود الشريان الدرقي المفرد و انقسامه إلى فرعين ذهب كل منهما إلى فص من فصي الغدة.

المناقشة

شملت هذه الدراسة ١٢٢ حالة تشريحية للبحث عن بعض الفوارق التشريحية في الغدة الدرقية لمدة ٦ أشهر اعتبارا من ١٠٢٠٠١\١ إلى ٢٠٠٢\٣\٣١ . و لقد ظهر أن نسبة الذكور أكثر من الإناث إذ بلغت تقريبا ١.٧ : ١ و ذلك هو المتوقع عادة في الحالات الواردة إلى معهد الطب العدلي في بغداد التي بلغ مجموعها في نفس مدة الدراسة (١٥٨١) حالة تشريحية. كان عدد الذكور فيها (١٠٢٧) و عدد الإناث (٥٥٤) أي إن نسبة الذكور إلى الإناث كانت (١.٩ : ١) تقريبا (١٢) و هي مقاربة لنسبة الذكور إلى الإناث في الدراسة.

إن اختلاف نسبة تواجد الفروق التشريحية المذكورة فيما تقدم في الغدة الدرقية (الجدول رقم ١)، المكتشفة في هذه الدراسة عما ذكر في مصادر أخرى[٥] من الممكن إرجاعه إلى اختلاف مكان إجراء الدراسة و اختلاف السكان، و ربما لو كانت العينة المشمولة بالدراسة اكبر و مدة إجراء الدراسة أطول لكانت النتائج مغيرة و قد ينطبق ذلك أيضا على عدم حصول فارق إحصائي مهم بين الذكور و الإناث فيما يتعلق بوجود تلك الفوارق.

وكذا تبقى نتائج إجراء تشريح الجثة (Autopsy) ذات قرار حاسم حتى في عالم اليوم الذي ازدهرت فيه طرائق أخرى للبحث و التقصي[١٣].

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ATTENTION DEFICIT HYPERACTIVITY DISORDER: AN OVERLOOKED PROBLEM IN CHILDREN

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Background: This condition is one of the most prevalent disorders among school-aged children treated by child neurologists and pediatricians. It is characterized by inattention, hyperactivity-impulsivity or combination of these features. It is one of the most common causes of poor school performance. It remains under diagnosed and under recognized.

Objectives: To study the characteristics of Attention Deficit Hyperactivity Disorder in our children.

Methods: 42 children diagnosed as having ADHD (according to Statistical Manual of Mental Diseases edition IV) in the pediatric neurology clinic in Al-Kadhimiya Teaching Hospital. 40 non-ADHD children matching with age and sex were used as control. Chi square was used to find the significance of the characteristics of ADHD.

Results: Males were affected twice as the females. 59.5% of the patients were of the combined type. 42.9% had significant history of nocturnal enuresis (P= 0.01). 71.4% had significant history of daily injuries, (P= 0.004). 61.9% had significant history of poor school performance, (P= 0.0001). 80.9% had significant history of sleep problems, (P= 0.0003). 69% of all subtypes had onset of symptoms after 7 years of age and all cases of the hyperactive subtype before 7 years of age.

Conclusion: Boys with ADHD are more commonly affected. The most common type of ADHD is the combined type, and the hyperactive type is the least. The hyperactive type is more common in the younger age group. ADHD children are more likely to have nocturnal enuresis, daily injuries, poor school performance and sleep problems.

Key words: Attention deficit, hyperactivity, children

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Introduction

Attention Deficit Hyperactivity Disorder (ADHD) is one of the most prevalent disorders (3-5% of school-age children) treated by physicians who manage children/adolescents, making up as much as half of child psychiatric clinical practice and also commonly managed by child neurologists and pediatricians[1].

The essential description disorder has a 75 year-long history under a variety of names- "incorrigibles," "brain damaged," "hyperkinetic," and "Minimal Brain Dysfunction"[2]. Since 1980, the term "attention" has been the initial and therefore most prominent word featured in the names given to the syndrome, either "inattention" alone or combined with "hyperactivity" and "impulsivity," comprising the other central features defining the clinical category of Attention deficit Hyperactivity Disorder[3].

The core symptoms of ADHD are: short attention span for mental age, impulsivity (acting without thinking of consequences), easy distractibility (inability to maintain focus on a needed task) and motor overactivity (which may range from fidgetiness to continuous movement). These core features have been organized into two major groups (inattentiveness and hyperactivity-impulsivity) in the Diagnostic and Statistical Manual of Mental Disorders 4th edition (DSM-IV) of the American Psychiatric Association 1994 under the criteria for attention deficit hyperactivity disorder[4].

The Attention Deficit Hyperactivity Disorder still remains under diagnosed and under recognized, although this illness affects at least one pupil in each classroom. Despite its prevalence, untreated ADHD can lead to school failure, relationship break-

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ups, drug abuse, and a tremendous sense of underachievement[5].

Recently, it has been verified that the presence of ADHD in early ages could be a vulnerability factor for developing different psychiatric disorders in adults, such as substance abuse and personality disorders and it has been demonstrated that it increases the risk of antisocial behavior development in adulthood[6,7].

ADHD is a descriptive diagnosis in which indices of the severity of behavior enable it to be distinguished from normal behavior. Both over-diagnosis and under-diagnosis occur[8]. Although the biological basis of ADHD is unknown, it has been shown to possess a considerable heritability. Current association studies have focused mainly on dopaminergic genes[9].

The etiology of ADHD encompasses genetic and environmental factors. Pre-, peri-, and postnatal stresses are environmental factors that may play a role in its etiology[10].

Anatomical imaging studies of individuals with attention deficit hyperactivity disorder consistently point to involvement of the frontal lobes, basal ganglia, corpus callosum and cerebellum. Imaging studies of brain physiology also support the involvement of the right frontal and basal ganglia, probably mediated by decreased brain dopaminergic functioning[11,12].

Several studies have shown an association between ADHD and the 7-repeat allele of the dopamine D (4) receptor gene (DRD4).

Recently, Faraone SV et al. and Todd RD et al. reported an association of the DSM-IV primarily inattentive ADHD subtype with a 5' 120 base pair repeat polymorphism in the DRD4 gene[13,14].

Diagnostic Criteria for ADHD according to DSM-IV (Diagnostic and Statistical Manual of Mental diseases edition 4)[3]

Either (1) or (2):

(1) Six (or more) of the following symptoms of **inattention** have persisted for at least 6 months to a degree that is maladaptive and inconsistent with the developmental level:

Inattention

i. Often fails to give close attention to details or makes careless mistakes in schoolwork, work, or other activities.

ii. Often has difficulty sustaining attention in tasks or play activities.

iii. Often does not seem to listen when spoken to directly.

iv. Often does not follow through on instructions and fails to finish schoolwork, chores, or duties in the workplace (not due to oppositional behavior or failure to understand instructions).

v. Often has difficulty organizing tasks and activities.

vi. Often avoids, dislikes, or is reluctant to engage in tasks that require sustained mental effort (such as schoolwork or homework).

vii. Often loses things necessary for tasks or activities (e.g. toys, school assignments, pencils, books, or tools).

viii. Is often easily distracted by extraneous stimuli.

ix. Is often forgetful in daily activities.

(2) Six (or more) of the following symptoms of **hyperactivity-impulsivity** have persisted for at least 6 months to a degree that is maladaptive and inconsistent with the developmental level:

Hyperactivity

i. Often fidgets with hands or feet or squirms in seat.

ii. Often leaves seat in classroom or in other situations in which remaining seated is expected.

iii. Often runs about or climbs excessively in situations in which it is inappropriate (in adolescents or adults, may be limited to subjective feelings of restlessness).

iv. Often has difficulty playing or engaging in leisure activities quietly.

v. Is often "on the go" or often acts as if "driven by a motor".

vi. Often talks excessively.

Impulsivity

i. Often blurts out answers before questions have been completed.

ii. Often has difficulty awaiting turn.

iii. Often interrupts or intrudes on others (e.g. butts into conversations or games).

- **ADHD combined type:** if both criteria (1) and (2) are met for the past 6 months.
- **ADHD Predominantly Inattentive Type:** if criterion (1) is met but criterion (2) is not met for the past 6 months.
- **ADHD Predominantly Hyperactive-Impulsive Type:** if criterion (2) is met but criterion (1) is not met for the past 6 months.

It is essential that family physicians be knowledgeable about the presentation and diagnosis of ADHD. Stimulant medications continue to be the mainstay of treatment, such as methylphenidate, although many other medications (such as antidepressants and alpha blockers) are helpful adjuvant to therapy. Current recommendations for treatment include an individualized, multimodal approach involving parents, teachers, counselors and the school system. New clinical practice guidelines from the American Academy of Pediatrics specify diagnosis and treatment for childhood ADHD, including psychosocial interventions, psychopharmacology, educational modifications, skill training, and social support[15,16].

Aim of the study

To study the characteristics of Attention Deficit Hyperactivity Disorder in the children referred to the neuropediatric consultation clinic in Al-Kadhimiya Teaching Hospital.

Patients and Method

This study was conducted on the children who were referred to the consultation pediatric neurology clinic in Al-Kadhimiya Teaching Hospital, along the period from September 2003 to May 2004.

In the first stage the parents of those children who were suspected to have ADHD filled a standardized questionnaire of 18 ADHD symptoms defined at the Diagnostic and Statistical Manual of mental diseases edition IV (DSM-IV)[3].

After screening the children, a total of 42 were diagnosed to have ADHD according to the criteria mentioned in DSM-IV. The age range was from 7-14 years (26 boys and 16 girls).In the second stage the following procedures were done: DSM-IV symptoms questionnaire, oriented history, physical examination and neurological examination.

ADHD diagnosis was subdivided into three subtypes:

- Predominantly hyperactive – impulsive
- Predominantly inattentive
- Combined type

Additionally 40 healthy non-ADHD children had served as control; age range was 7-15 years (22 boys and 18 girls). Statistical analysis was done using chi square and any P value greater than 0.05 was regarded to be not significant.

Results

During the nine months period of the study 42 children with ADHD were collected, 28 of them were males (67%) and 14 were females (33%). Male: female ratio was 2:1.

The patients were distributed according to age groups and subtypes of ADHD. The most common subtype was the combined (59.5%), then the inattentive (33.3%), and the least was the hyperactive-impulsive (7.2%).

Table 1: Distribution of the ADHD patients according to age groups and subtypes.

Age group (years)	Combined No. %	Inattentive No. %	Hyperactive-impulsive No. %	Total No. %
6-7	9 (21.4%)	4 (9.5%)	2 (4.8%)	15 (35.7%)
8-9	7 (16.7%)	5 (11.9%)	1 (2.4%)	13 (31%)
10-11	5 (11.9%)	3 (7.1%)	0 (00%)	8 (19%)
12-13	3 (7.1%)	1 (2.4%)	0 (00%)	4 (9.5%)
> 14	1 (2.4%)	1 (2.4%)	0 (00%)	2 (4.8%)
Total	25 (59.5%)	14 (33.3%)	3 (7.2%)	42 (100%)

During taking the past history the parents were asked about nocturnal enuresis after age of 5 years. It has been found that 42.9% of the patients had history of nocturnal enuresis while 15% only of the control group had this problem. The difference was statistically significant with a p value of 0.01.

Table 2: ADHD patients with history of nocturnal enuresis after age of 5 years compared to the control group.

Nocturnal Enuresis	ADHD	Control
Positive	18 (42.9%)	6 (15%)
Negative	24 (57.1%)	34 (85%)
Total	42 (100%)	40 (100%)

P= 0.01

Regarding history of injuries of the children with ADHD, the parents were asked about daily continuous injuries of their children and it was found that 71.4% of the patients had daily injuries while only 20% of the control group had this problem. The difference was statistically significant with a p value 0.004.

Table3: ADHD cases with history of daily injuries compared to the control group.

Daily injuries	ADHD	Control
Positive	30 (71.4%)	15 (37.5%)
Negative	12 (28.6%)	25 (62.5%)
Total	42 (100%)	40 (100%)

P= 0.004

School performance of the patients was one of the important things to ask the parents about and it was found that 61.9% of the ADHD children had school repetition, suspension or expulsion, while only 17.5% of the control group had school repetition, suspension or expulsion. The difference was statistically significant with a p value 0.0001.

Table 4: School performance of the ADHD children.

School repetition, suspension, expulsion	ADHD	Control
Positive	26 (61.9%)	7 (17.5%)
Negative	16 (38.1%)	33 (82.5%)
Total	42 (100%)	40 (100%)

P= 0.0001

Regarding sleep problems of the children with ADHD 45.2% of their parents reported difficulty in settling and going to sleep compared to 20% in the control group, and 35.7% of them reported sleep disruptions compared to 17.5% in the control group, while 19.1% of the parents with ADHD children did not report any sleep problem compared to 62.5% in the control group. The differences were statistically significant with a p value 0.0003.

Table 5: Sleep problems in ADHD children.

Sleep problem	ADHD	Control
Difficulty in settling and going to sleep	19 (45.2%)	8 (20%)
Disruptions of sleep	15 (35.7%)	7 (17.5%)
No difficulty	8 (19.1%)	25 (62.5%)
Total	42 (100%)	40 (100%)

P= 0.0003

The parents were asked about the onset of impairment due to symptoms of ADHD, and it was divided either before 7 years of age or after it. It was found that all the children with the hyperactive-impulsive subtype started their symptom criteria before the age of 7 years, while the majority of the combined and the inattentive subtypes started their symptom criteria after the age of 7 years.

Table 6: Distribution of ADHD patients according to the onset of symptom criteria and the subtypes.

Onset of symptom criteria	Combined ADHD	Inattentive ADHD	Hyperactive-impulsive ADHD	Total
Before 7 years	4 (16%)	6 (42.9%)	3 (100%)	13 (31%)
After 7 years	21 (84%)	8 (57.1%)	0	29 (69%)
Total	25 (100%)	14 (100%)	3 (100%)	42 (100%)

Discussion

In the present study sex difference in children with ADHD was obvious, male to female ratio 2:1. Several studies in many countries worldwide support this finding. Hortnug et al in 2002 found male to female ratio in a mostly clinic-referred sample of children with ADHD to be 4.5:1[17]. Biederman et al in 2002 also in a clinic-referred sample mentioned male to female ratio in ADHD children to be 3:1[18].

Boys being affected more than girls by ADHD appear to be because boys are more likely to be disruptive, hyperactive, and impulsive and express the disorder more clearly. This sex difference is even more pronounced among those who are seen in psychiatric rather than pediatric settings. The lower likelihood for girls to manifest psychiatric, cognitive and functional impairment than boys could result in gender-based referral bias unfavorable to girls with ADHD.

The younger age group (6-7 years) was affected more (35.7%), and the percentage dropped to (4.8%) in the older age group (> 14 years). Barkley et al in 1990 in his study " an 8-year prospective follow-up study of ADHD" mentioned that the prevalence of ADHD was high in school-aged children and it dropped down in adolescence[19].

In this study the combined type of ADHD was the most common (59.5%) while the inattentive type presented as (33.3%) of cases and the hyperactive type presented as the least type (7.2%). Similar results were found by Pineda et al in

2003[20], by Montiel-Nava et al in 2002[21] and by Gaub and Carlson in 1997[22].

In childhood, the combined subtype of ADHD is most common, followed by the inattentive and hyperactive subtypes. Symptoms of ADHD may diminish over time; hyperactive or impulsive symptoms often decrease to a greater extent than the inattentive ones do. Overall, 50% to 75% of all ADHD patients have the combined subtype[23].

Children with ADHD in this study had significantly higher rates of nocturnal enuresis than those without ADHD, similar results found by Faraone in 2003[24] and by Robson in 1997[25].

Being a neurodevelopmental disorder, children with ADHD are more likely to present with nocturnal enuresis than the non-ADHD children.

Parents of ADHD children and adolescents reported statistically higher rates of body injuries and motor vehicle accidents compared to the control group. In a study by Barkley et al.[26] children and adolescents with ADHD showed increased incidence of motor vehicle accidents and body injuries. This is expected because children and adolescents with ADHD exhibit more problem behavior and are less socially skilled than their normal counterparts. Due to their inattention and hyperactivity they are more prone to daily injuries.

Because of the behavior characteristic of ADHD, many affected children have to struggle with school work and perform poorly academically. In this study (61.9%) of the children with ADHD had school repetition, suspension or expulsion.

Despite of their best efforts, these children often do poorly or fail in their academic and social environments.

Of the children with ADHD, 80.9% had more significant sleep problems, 45.2% of them had difficulty in settling and going to sleep and 35.7% of them had disruptions of sleep. That was also proved by Day in 1998[27].

Conclusion

1. Boys with ADHD are affected twice more than girls.
2. The most common type of ADHD is the combined type, and the hyperactive type is the least.
3. The hyperactive type is more common in the younger age groups.
4. ADHD children are more likely to have nocturnal enuresis, daily injuries, poor school performance and sleep problems.

Recommendations

1. Family physicians and pediatricians should be knowledgeable about the presentation and diagnosis of ADHD.
2. Diagnosis of ADHD should be according to the criteria mentioned in the Diagnostic and Statistical Manual of Mental diseases edition 4 (DSM-IV).
3. Treatment includes a multimodal approach involving parents, teachers, counselors and the school system.

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RISK FACTORS FOR ACUTE DIARRHEA MORTALITY

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Abstract:

Background: Diarrhoeal diseases are a leading cause of childhood death and disease in the developing countries. Dehydration, dysentery and persistent diarrhea cause these deaths. Childhood morbidity and mortality associated with diarrhea share a dramatic burden of health services and cost in these countries.

Objective: Tostudy the important risk factors for death in children with acute diarrhea less than two years of age.

Methods: A retrospective study between 1996 – 2000 was performed to study the risk factors for death in children admitted to Al –Kadyhmia Teaching Hospital because of acute diarrhea below two years of age, the number of admitted cases were 336 case and there was 11 cases of death.

Results: The characteristics of the died cases are the followings: Young age mainly less than one year, low body weight, male sex, artificial feeding, and residency in a rural areas and severe degree of dehydration are important risk factors for death.

Conclusion: The important risk factors for death incases with acute diarrhea are severe dehydration , male sex ,artificial feeding ,low body wieght and residancy in rural areas.

Key words: Acute diarrhea , Severe dehydration , risk factor

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Introduction

Diarrhoeal diseases are still a major cause of morbidity and mortality among children in many developing countries. Acute diarrhea is a three or more loose or watery stool per day or definite decrease in consistency; increase in frequency based on individual baseline usually less than 14 days. Most patients with acute diarrhea will typically have 3-7 movements per day with total stool volume less than one letter per day[1]. The main dangers of acute diarrhea are death and malnutrition.

Epidemiology:

Diarrhoeal diseases are one of the leading causes of morbidity and mortality in children worldwide especialy in many developing countries and areas. In developing countries it has been found that the incidence of diarrhoea obtained 2.6 episodes per child per year was virtually the same as that estimated by Synde and Marson in 1982 while the global mortality estimated was lower 3.3 million deaths per year. range 1.5- 5.1 million .

The mortality estimated is based on a small number of active surveillance and prospective studies and thus associated with a large degree of uncertainty, reflecting the weakness of the global database[2].

In a current estimate of the problem in the united states of America that 16.5 millions of children younger than five years of age experience 21-37 million episode of diarrhea annually and this result in 325-425 childhood deaths annually.

The W.H.O. estimates that for children under 5 years of age in developing countries, there was a median of 3.2 episodes of diarrhea per child-year . the yearly infant mortality due to diarrhea revealed that 4.9 children per year , a decline from the previous estimates of 13.6 and 5.6 per 1000 per year.The decrease was most pronounced in children aged under one year. Despite improving rates, diarrhea accounted for a median of 21%of all deaths of children aged under 5years in these areas

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and countries, being responsible for 2.5 million deaths per year[3].

Patients and Methods

This retrospective study of acute diarrhea among children less thn 5 years of age including 363 cases who were admitted to Al- Kadyhmia Teaching Hospital for the period between 1996-2000, the number of died cases because of acute diarrhea and its complications were 11case (3.03 %). T hese cases were studied regarding deferent variables including the age, sex, body weight and percentile, degree of dehydration at time of admission, residency of these children and feeding patterns.

Results

Age and Sex

The total number of the admited cases was 336cases ,the number of male inthese cases was 205(62.01%), and there were eight of the eleven deid cases were male (72.72%), while the number of the female admited was 131 (38.98%) and only three cases were female (27.2 %) of the studied died cases .

The age of the cases who died was: nine cases were less than one year of age (81.8%) and only two cases who were one year and one and half year respectively. These results are shown in table 1.

Body weight and percentile

In our study we found that the mean weight of death for admitted children less than 2 years of age in our hospital in the period between 1996-2000 was (4.4kg) and their growth mostly below 3rd centile for their age and sex in seven of them and three cases were on the third centile and only one case was more than third centile according to the growth charts of the W.H.O growth charts. This may reflect the nutritional status of these children but there was no signs of malnutrition mentioned in the medical records of these children apart from their low body weight for their age and sex.

Residency

We found that 9 cases were residing in rural areas (81.8 %) and that only two cases were from urban areas (18.18 %) as shown in table 2.

Degree of dehydration

There were 75 cases in our study with severe dehydration at the time of admission (22.32 %) and all the death cases were with severe dehydration (100%) and all the cases were treated with intravenous fluid initially followed by oral rehydration therapy with continuing of breast or artificial feeding. ther wasno cases of no or some dehdration according to the W.H.O guidelines for prevention and treatment of acute diarrhea in 1985.

Feeding pattern

There were 7 cases between the died cases were artificially fed and other 3 were mixed breast and artificially fed and only 1 case who was breast fed infant. So the predomenant mode of feeding was artificial feeding, the distribution of mode of feeding are shown in table 2 .

Table 1: Age And Sex Distribution Of The Died Cases.

Age	No. of cases	Male	Female
<1year	9	7	2
1 year	1		1
> year	1	1	

Table 2: Feeding Pattern And ResidancyOf theDied Cases

Type of Feeding	No. of Cases	Rural	Urban
Breast feeding	1	1	
Breast and Artificial	3	2	1
Artificial Feeding	7	5	2

Discussion

Diarrhoeal diseases remian the mian cause of childhood mortality and morbidity in developing countries, although diarrhoeal deaths have significantly declined in recent years mostly due to the success in the implantation of oral rehydration therapy (ORT) as the prenciple treatment modality[4].

The subject of acute diarrhea has been one of the future goals of the WHO because of its gross participation in the infant mortality worldwide.

Two main dengers of diarrhea are death and malnutrition, death is mostly caused by loss of large amount of water and salts i.e., dehydration[5]. In our study the mortality mostly occur in the first 6 month of life the can be explained by the immature immune system accompanied by decrement in the passive immunity and exposure to diarrheal agents at this stage which leads to diarrhea and may cause death[6]. So age less than one year is the mian characteristic for death in children with acute diarrhea[7-9] and the mortality was highest among children 6-11 months[10]. In a study done in Callacatta in 1990, it was found that the maximum death occur among children aged between 7-36 months in all admitted cases of acute diarrhoea up to 5 years old[11].

It has been found that diarrhoeal deaths were most commonly occur among children less than one year, these lives in rural areas[10,12]. The geographic and economic access barriers were identified in rural areas which contribute to increase mortality in children from these areas[7]. The access to piped water in the houses of the rural areas is lacking and low hygiene level which increase the risk of diarrhoea morbidity and mortality[13] and usually the people from these areas are of low income, low educational level, the general hygienic conditions were poor and the medical services insufficient in defferent aspects so the rate of diarrhoea is high among them and hence the mortality[14].

The residency of the patients with acute diarrhea had significant effect on the outcome of the disease, in our retrospective study we found that 8 of the cases (72.72%) were from rural area while only 3 (27.27%) were from urban area. This high mortality rate in children from rural areas may indicate the water supply and storage is unwell and it has been found that water storage is more important than water source as a risk factor for diarrhoea and its complications, this was the finding of Mohammed in 1992[15].

The residency itself alone was found as a separate risk factor in other studies. The incidence of diarrhoea found to be higher in rural areas than urban areas according to Al-Mazon[16].

A retrospective study done in Pakistan found the same results of predominant male sex between the died children because of acute diarrhoea[17]. Another study for acute diarrhea mortality in Cuba showed that the higher mortality was found among male sex a result support the finding of our study that 7 of 11 dead children were male[18].

The method of feeding among patients with acute diarrhea in our study was mostly artificially feeding (132) cases of 336 cases of acute diarrhea (36.36%) and there was 7 cases of the dead ones were artificially fed (63.63%) and 4 (36.36%) of them were breast and artificially fed. This indicate that artificial feeding is a risk factor for acute diarrhea and increase mortality in children with acute disease .There is a defintive role of breast feeding in the etiology of diarrhoeal diseases in lactating children .

It has been found that breast-feeding has a protective effect and specific protective elements including antibodies, lymphocytes, and macrophage[19]. The breast feed infants showed sustained increment of weight and improvement in growth at least during the first months of life there by reducing the risk of severe diarrhoea and death[20].

Exclusive breast feeding of infants aged 0-3 months and partial breast feeding through out the remiander of infancy could

substanially reduce the infants mortality so the interventions to promote breast feeding should target the younger infants[21].

The body weight is a risk factor for acute diarrhea and is associated with increase morbidity and mortality in a child who is malnourished, in our study 7 of 11 (63.63%) cases who died their body weight were less than the third centile for their age and sex. There is a strong association with diarrhea and its complications and the nutritional status of the infants[22].

There is a strong association between the nutritional status mortality due to diarrhea , the mildly malnourshed children had twice the risk of diarrhea than well nourished child and the moderatly malnourished had more than twice the risk, while the severely malnourished admitted to the hospital had a significant association with death because of diarrhea[22].

The role of malnutrition in child mortality was studied and results from 53 developing countries with nationally representative data on child weight for age indicate 56% of child deaths were atributable to malnutrition potentiating effects and 83% of these were atrebutable to mild-moderate apposed to severe malnutrition, these results show that malnutrition has a far more powerful effects on child mortality than generally appreciated and suggest that strategies involving only screening and treating the severely malnourshed will do little to adress disease impact[23]. In addition to malnutrition, the factors that worsening the outcome of diarrhea episiods are the inappropriate treatment provided by private physicians and the deficient huosehold care of diarrheaepisiode[24].

The state of dehydration on admission to the hospital we found that 75 cases (22.32%) of the 336 cases admitted to the hospital with acute diarrhea were severely dehydrated, and all the 11 died cases were severely dehydrated on admission and all the patients were treated by intravenous fluid for initial rehydration.

The high mortality caused by diarrhoeal diseases in the hospital were related to the problems in the case management that stemmed from pediatric staff and also from diarrhea case management, training of clinical staff with bias towards the pediatric staff within the hospital[25]. The principle stratgy employed to improve case mangment through rehydration and better feeding through assured production and distribution of ORS, eduction of famlies and health workers thruogh training programs and creating of rehydration corners thruogh out the established primary care centers and hospitals[26].

Management of dehydration remains the corner stone of therapy of diarrhea, the use of IVF to prevent and treat dehydration quickly; this in turn will prevent the other risk of acute severe diarrhea in children, which is death if not treated.

Increase fliud intake remian the corner stone in early mamgment of diarrhoeal diseases since severe dehydration ,malnutrition and persistant diarrhoea associated with high mortality[27]. Because many of these deeaths can be prevented by early rehydration, further efforts shuold be directed at educating health care provider about the continuing problem and recognition of the high risk infants and teaching the mother of such infants to begin rehydration early and to seek medical advice when their infants develop diarrhoea[28].

Most children with gastroenteritis can be treated with physiologically balanced ORS, in cases with severe dehydration the intial treatment with I.V.F. then theORS also these children need nutrition to restore digestive function and general foods shuold not be withheld[29]. The ORT is well established therapy the treatment and prevention of dehydration that the majority of deaths occur because of it and it is effective use has saved the life of millions around the world and the expert panal noted that the majority of deaths and the hospitalization and visits to the emergency department could be prevented by

apropriate use of ORT and the diarrhoea mortality had signifacantly declined in recent years mostly due to implantation of ORT[30-31].

Conclusions

The important risk factors for death in acute diarrhea are severe dehydration, male sex, and low body weight, malnutrition, and residence in rural areas and artificial feeding.

Recommandations

1. Diarrhea mortality in a busy referral hospital should be investigated regularly for Lapse in the management because some of these deaths can be prevented by simple interventions.
2. Majority of deaths, hospitalization and visits to the emergency department could be prevented by appropriate use of ORT together with training of the health care providers could substantially reduce diarrhea mortality and decrease the hospitalization of children.
3. Encourage breast-feeding are needed through deferent mass media plans with enhancement of nutrition must be included.
4. Education of the mothers about proper hygienic standards of child care. This approach contribute further towards reduction in diarrhoea mortality.

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INJURIES DUE TO SEIZURE IN CHILDREN WITH NEWLY DIAGNOSED AND UNTREATED EPILEPSY

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Abstract

Background: There is an increased risk for physical injury during convulsion in children with epilepsy before control or in poorly controlled fits.

Objectives: To study the rate and features of physical injuries due to seizure in newly diagnosed children with epilepsy before the use of anti-epileptic drugs.

Method: Newly diagnosed and untreated children with epilepsy with at least two unprovoked a febrile fits of any type aged 1-14 years presenting to Al-Kadhimiya Teaching Hospital and the author's private clinic along 12 months period (April 2004-March 2005) were studied. Information was collected from the parents about whether physical injuries resulted from the seizure. Features of the fits and the injuries with their management were fixed.

Results: Eleven children (17.7%) sustained physical injury out of 62 with epilepsy. Nine children (81.8%) had single injury while 2 children (18.2%) had multiple injuries. Eight children (72.7%) sustained their injury at home, 2 at school (18.2%) and one (9.1%) in the garden. Most of the injuries were bruising of head and/or face (63.6%). The most common seizure type causing injury is generalized tonic-clonic (72.7%) and all the children with typical absence seizure did not experience any injury.

Conclusion: Physical injuries from seizures are not uncommon, but they are simple. We have to find a balance between seizure precaution and the freedom to enjoy life.

Keywords: Injuries, Seizure, Children, Epilepsy.

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Introduction

Children newly diagnosed with epilepsy or those with uncontrolled or poorly controlled epilepsy, are reported to have a higher risk of physical injury due to the fit, than children with no epilepsy. Occasionally some children with well controlled epilepsy may have physical injuries as a complication of the adverse effects from antiepileptic drugs (AEDs)[1-3].

Those studies have been based on patients with an established diagnosis of epilepsy and receiving AEDs. Early diagnosis of epilepsy and early treatment by some doctors is to prevent seizure-related injuries and to allay parental fear that seizures may cause injuries[4-6].

An accurate understanding of injury risk for patients who have epilepsy not only affects the patient, but also family members, schools, employers and the general public. It is important to find a balance between seizure precaution and the freedom to enjoy life. Unnecessary restrictions of activity can adversely affect quality of life, often to a more serious extent than what seizure attacks can do. Ignoring the risk of injuries may have disastrous consequences for some people with epilepsy. However, overestimating the risk of injuries may unfairly impact on the rights of those with well-controlled epilepsy. People with well-controlled epilepsy should not arbitrarily be considered at higher risk of injury than those without epilepsy. School authorities and work personnel should understand that the risk of injuries from seizures is very small in people whose

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epilepsy is well-controlled. It is comparable to or lower than the risk in many people without epilepsy. It is illegal to deprive people with well-controlled epilepsy of their opportunities to study or to work. Most previous studies of seizure injury rate looked at patients treated for poorly-controlled epilepsy in epilepsy centers or emergency room; these studies cited injury risk rates as high as one in three patients. The high injury rate in patients with severe epilepsy investigated in these prior studies does not apply to the general population of people with epilepsy, which would include those with well-controlled as well as those with uncontrolled epilepsy[7].

The aim of the study is to assess the rate and features of physical injuries due to convulsion in children with a new diagnosis of epilepsy before starting antiepileptic drugs.

Patients and Methods

The patients were collected from the pediatric neurology clinic in Al-Kadhimiya Teaching Hospital and from the author's private clinic along 12 months period from April 1st 2004 to March 31st 2005 aged between 1 and 14 years.

The diagnosis of epilepsy was made by the author based on an eyewitness account on the child's seizure. The criteria for inclusion in the study:

1. Children with newly diagnosed epilepsy.
2. Have at least two unprovoked afebrile convulsions of any type.
3. Did not receive any antiepileptic drugs.

The information was obtained from the child's parents with a structured questionnaire including the following:

The duration of the child's epilepsy before diagnosis, the epilepsy syndrome, any accompanying learning difficulty, the seizure type causing the injury, how and the age at which the injury was sustained and whether hospital treatment was required because of the injury. Children who were admitted to the hospital because of a fit were not included because it was difficult to determine the reason for admission whether it was because of the fit itself or because of the injury. Those children with learning difficulties were excluded from the study.

The classification of patients' seizure type or types and epilepsy syndrome was according to the International League Against Epilepsy[8,9].

Results

Sixty two patients (38 boys and 24 girls) with age range from 1-14 years were included in this study. Eleven (17.7%) patients experienced injuries because of their fit, before the diagnosis of epilepsy. Of the 11 patients with injuries, 7 were boys (63.6%), of whom 2 had sustained multiple injuries. No female patient experienced multiple injuries.

Table 1: Distribution of patients according to their type of injury and sex.

Injury	Male		Female		Total	
	No.	%	No.	%	No.	%
Single	5	45.5	4	36.3	9	81.8
Multiple	2	18.2	0	0	2	18.2
Total	7	63.7	4	36.3	11	100

Multiple injuries were defined as injuries causing bruising with at least one other injury (I.e., fracture, cuts or lacerations, or broken teeth) and sustained during the same fit. A bitten tongue and friction burns were not considered physical injuries because these features are common to many tonic-clonic seizures.

The mean age of injury occurrence was 9.2 years, (range 3.5-13.1). The mean age of epilepsy diagnosis with injury was 10.1 years, (range 3.8-13.3). The mean age of epilepsy diagnosis with no injury was 11.1 years, (range 4.6-13.8).

Eight patients (72.7%) had experienced their injuries at home, 2 at school (18.2%) and one (9.1%) outside the home (in the garden). Five of the injuries sustained at home had occurred in the bedroom while the children were asleep when they fell out of the bed, one occurred in the kitchen and two occurred on the stairs. The two patients who had experienced a convulsion at school they were in the school playground.

Table 2: Distribution of injured patients according to place of injury.

Place of injury		No.	%
Home	Bedroom	5	72.7
	Kitchen	1	45.4
	Stairs	2	9.1
School		2	18.2
Outside home		1	9.1
Total		11	

The physical injuries sustained included bruising to the head and/or face (7 patients). Multiple bruising involving the face, head and limbs (2 patients), bruising or cuts to the limbs (1 patient) and cut lips and/or broken teeth (1patient).

Table 3: Distribution of injured patients according to physical injury.

Physical injury	No.	%
Bruising head and/or face	7	63.6
Multiple bruising (face, head, limbs)	2	18.2
Bruising or cuts to limbs	1	9.1
Cut lips and/or broken teeth	1	9.1
Total	11	100

Two patients (18.2%) required medical care because of their injury, one for suturing of cuts and the other because of parental concern about the child's first convulsion. The fits causing the injuries were reported to have been generalized tonic-clonic in 8 patients (72.7%), complex partial in one patient (9.1%), myoclonic in one patient (9.1%) and of uncertain type in one patient (9.1%).

Table 4: Distribution of injured patients according to type of epilepsy.

Type of seizure	No.	%
Generalized tonic-clonic	8	72.7
Complex partial	1	9.1
Myoclonic	1	9.1
Uncertain	1	9.1
Total	11	100

All the 62 epileptic patients with and without injury were distributed according to the type of epilepsy as shown in table 5. None of the 9 patients with typical absence epilepsy experienced a physical injury.

Table 5: Distribution of all epileptic patients according to type of epilepsy.

Type of seizure	No.	%
Generalized tonic-clonic	42	67.7
Complex partial	5	8.2
Myoclonic	3	4.8
Absence	9	14.5
Uncertain	3	4.8
Total	62	100

Discussion

This study reports the rate of physical injuries in a consultation clinic in a teaching hospital and in a private clinic, of children with a new diagnosis of epilepsy and before introducing medication. Some studies have previously described the relation of physical injuries with epilepsy, but most have been adult based and have concentrated on head injuries, drowning and burns and in patients already receiving AEDs[1-3,10,11].

The diagnosis of epilepsy was made by the author based on an eyewitness account on the child's fit only. Demonstration of paroxysmal discharges on the EEG during a clinical fit is diagnostic of epilepsy, but fits rarely occur in the EEG laboratory. A normal EEG does not preclude the diagnosis of epilepsy, because the interictal recording is normal in approximately 40% of patients[12].

Buck D. et al. studied 1000 adults with active epilepsy, 24% of them sustained a head injury, 16% had sustained a burn or scald, 10% a dental injury and 6% other fractures[2]. None of our patients had burns or scalds, this shows the fact that children are more likely to be supervised in situations that could predispose them to these specific injuries.

In our study injuries had occurred at a mean age of 9.2 years, and epilepsy had been diagnosed at a mean age of 10.1 years in the patients who had injuries and at a mean age of 11.1 years in those patients who had no injuries as a result of the fit. The difference in ages reflected the fact that many of the injuries had occurred with a first or subsequent fits before the diagnosis of epilepsy. The delayed diagnosis of epilepsy in the non-injured rather than the injured group probably reflects the fact that the injuries may have attracted the attention to the diagnosis of epilepsy[10].

Tonic-clonic seizures were the most common types of epilepsy causing injuries in our patients. This is accepted because of the sudden falls and shakings caused by these types of epilepsy, and this was observed also by other authors[1-3,10].

None of the 9 children with typical absence seizure in our study had an injury. Ziegler et al. mentioned 14% of the children with absence seizure had an accident or injury in his study[10]. Wirrell et al. mentioned a figure of 27% of children with absence seizure had an injury[11]. Those patients in the mentioned studies were receiving AEDs. This finding may be explained by the fact that the treated patients in those studies would have had a longer history of epilepsy than our patients which exposed them to more risk of injury.

Most of the injuries in our study were sustained at home and in the bedroom because of a fall from the bed during tonic-clonic

convulsion, and two children were injured at school.

The fact that 18.2% of the children in our study sustained a physical injury that required minor medical care would suggest that untreated epileptic fits cause a physical injury.

Conclusion

1. The rate of physical injuries in children with newly diagnosed and untreated epilepsy was 17.7%.
2. Most of the injuries were minor and only 18.2% needed simple medical care.

Recommendations

1. The major factor in risk reduction for seizure-related injuries in epileptic children is effective epilepsy control.
2. Education of parents about the measures taken if their child had a convulsion.
3. Appropriate companion or supervisor for the child during activities that may pose high risk of serious injury if a convulsion occurs.

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SURGICAL TREATMENT OF CHRONIC SUBDURAL HEMATOMA: RETROSPECTIVE STUDY

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Abstract:
Background: Chronic subdural hematoma (CSH) is a common disease of the elderly, most of the patients being above fifty. It usually follows minor head trauma, and is bilateral in 25% of cases. Although surgical treatment is successful in most cases, it still involves high rates of mortality and recurrence.

Objective: To propose a new surgical technique and evaluate it's efficacy in reducing the Incidence of complications and recurrence**.**

Methods: Twenty-four consecutive cases with CSH were diagnosed with computerized tomography and MRI and surgically treated using double burr hole evacuation and irrigation using small catheter manipulated inside the hematoma cavity.

Results: The patients were 21 males and 3 females; the average age was 56 years. Progressive hemiparesis was the most common presentation, followed by headache and mental confusion. All patients except one made excellent neurological recovery, and were back to their pre-morbid condition. There was no mortality or recurrence.

Conclusion: The surgical method used in this study offers simple way for slow and effective evacuation of CSH, and reduces recurrence.

Key words: Chronic, intracranial hematoma, subdural hematoma, surgical treatment.

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Introduction

Chronic subdural hematoma (CSH) is a subdural collection of blood, which presents more than 3 weeks following a mild trauma. It's incidence is estimated to be 1-2/ 100000 / year[1]. Most of the patients are above the age of 50, and 5:1 male preponderance has been reported[1,2]. However no age is exempted, it has even been reported in utero[3]. Predisposing factors include alcohol abuse, epilepsy and coagulopathies. It can also complicate polycystic kidney disease, arachnoid cyst, leukemias and other malignancies of the brain. CSH has also been seen following shunting of large ventricles in hydrocephalus[1,4-9]. We have also witnessed one complicating ruptured aneurysm. CSH is usually supratentorial, and is bilateral in 20-25 % of cases[4].

Hemorrhage usually occur from a torn bridging vein or cortical artery[10]. Small amount of bleeding into the Subdural space may fail to produce symptoms, especially in the presence of cerebral atrophy. Within 3 weeks the hematoma is completely encased by a vascular membrane. By this time the hematoma liquefies and become progressively more hypodense on CT. In some patients there is gradual resorption of the hematoma, in others the hematoma enlarges. It is now believed that this is due to recurrent bleeding into the cavity[1].

Histopathological studies and electron microscopy, showed the proliferation of a network of macro and micro capillaries and veins connecting the dura to the outer membrane. Superselective angiography of the ipsilateral middle meningeal artery in cases of CSH showed dilatation of the artery, and visualization of the vascular network. These vascular structures, which have very thin walls and

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abundant endothelial junctions, are suggested to be the site of recurrent leaks of blood[1,11-14].

Presentation of patients with CSH is variable. Impaired level of consciousness and hemiparesis are most common, and may be mistaken for CVA. Hemianopsia and cranial nerve abnormalities are less common, and papilledema is seen in less than quarter of patients[1]. Older patients may present with confusion and impaired mentation, and may be misdiagnosed as dementia[1,15]. Bilateral CSH may present as progressive paraparesis[4]. A quarter to one-half of patients gives no history of trauma**,** and the clinical picture may fluctuate. A high degree of suspicion is necessary to investigate such cases.

Initially on CT. CSH appears hyperdence. In 2-3 weeks it become Isodense to the brain, and may be missed, especially if there is no shift or the hematoma is bilateral. In such cases contrast enhancement is needed to see the membrane. Occasionally a long standing CSH may become calcified, especially in cases of shunting for hydrocephalus[16,17]. On MRI CSH appears brightly hyper intense on T2 images, and can demonstrate acute hemorrhage inside the hematoma. In this respect MRI is more sensitive and more specific in diagnosing and follow up of CSDH than CT[1,18].

CSH has been managed medically in selected group of patients, using rest, diuretics and steroids. However present opinion overwhelmingly support surgical treatment[1]. CSH has been evacuated using craniotomy, burr holes, and twist drill aspiration. Various closed system drainage and reservoir has been used in refractory cases[1,19-23].

Surgical treatment is very successful, with less than 10% mortality in most large series. Eighty percent of patients return to normal function. The results largely depend on the patient preoperative clinical condition and associated systemic diseases. (1) Complications include, recurrence, infection, and seizures[1,15,24-26].

Aims: To propose a new surgical technique and evaluate it's efficacy in reducing the Incidence of complications and recurrence.

Methods Twenty-four consecutive patients with CSH were admitted and surgically treated in The Nursing Home Hospital and Al-Kadhimiya Teaching Hospital (T) between Jun 1997 and October 2003. The cases were studied regarding Age, Gender, duration of symptoms, history of trauma, Predisposing factors, diagnosis, surgical treatment, complications, and outcome.

Diagnosis:

Computerized axial tomography (CT) was done in all patients, and was the main diagnostic tool. Magnetic resonance imaging (MRI) was done in seven cases. The indications for doing MRI included Isodense hematoma on CT and young age to exclude vascular lesion.

Surgical technique:

The aim of surgery is to evacuate the hematoma slowly and completely, and to break any fibrinous septa dividing the hematoma cavity into partitions. Preoperative preperation includes adequate hematological evaluation to exclude coaggulopathy. The Hematoma is evacuated through two burr holes; the 1st. is a standard frontal bur hole, and the 2nd. Is placed over the parietal eminence. The dura is opened in the anterior burr hole first; the hematoma membrane is cauterized and opened.

The hematoma fluid is allowed to drain freely (Figure 1). The dura and membrane are opened in the posterior bur hole, and the remaining hematoma is evacuated. The hematoma cavity is intensively irrigated with normal saline, using a small catheter mounted on a syringe. The catheter is manipulated into the corners of the cavity to wash out any clots and insure free communication of all parts of the cavity. When the irrigation fluid is clear, the posterior bur hole is closed. The hematoma cavity is partially filled with normal saline through the anterior bur hole. Finally the anterior bur hole is closed. The procedure

takes about 30 minutes. Recent hyperdense hematomas were treated by craniotomy, and excision of the outer membrane. Anticonvulsant therapy is administered pre operatively and continued for one month.

Recurrence is defined as recurrence of symptoms and re accumulation of subdural hematoma with mass effect demonstrated on CT.

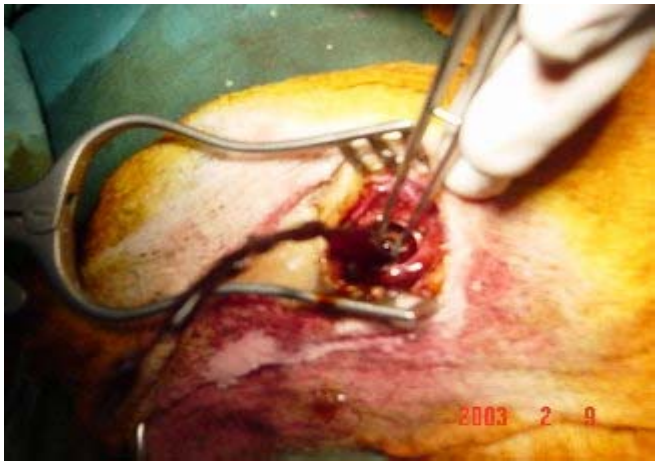

Figure 1: Operative view CSH escaping under high pressure from a burr hole

Results

Age and gender: The patients were 21 males and 3 females (M:F = 7:1) Age ranged between 20 and 83 (average 56 years) (Figure 2). Progressive hemiparesis was the most common 1st symptom, (42%) Followed by headache (29%) and mental confusion, drowsiness and impaired cognition (17%) (Figure 3).

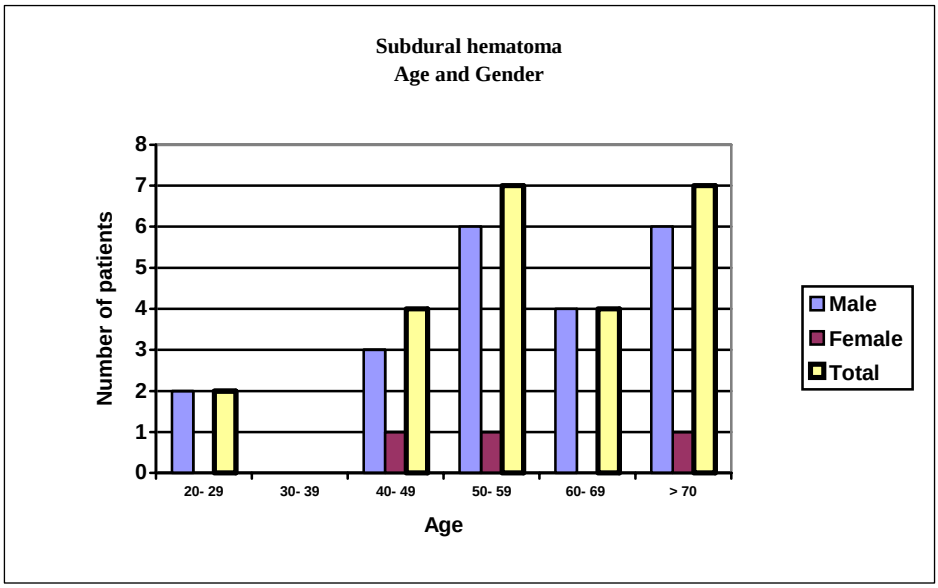

Figure 2: Age and gender distribution of the patients

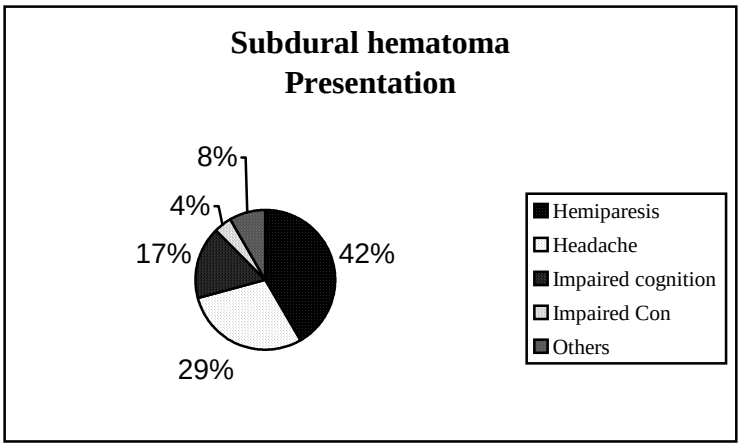

Figure 3: The presenting symptoms

One patient had urinary incontinence, and another had diplopia, only one patient presented with impaired consciousness. The duration of symptoms ranged from 4 days to 2 months (average 27 days). Fourteen patients gave history of trauma (58%) six days to 4 months before presentation. One patient was diabetic, one was hypertensive and one had decreased platelets count. There were no alcoholics. All symptoms and neurological findings are listed in (Table 1).

Table 1: Symptoms and signs

Symptom or sign	No. of patients	Percent
Hemiparesis	10	41%
Headache	11	46%
Impaired cognition	5	21%
Vomiting	2	8%
Incontinence	1	4%
Diplopia	1	4%
Epilepsy	3	13%
Papilledema	9	38%
Dysphasia	1	4%
Impaired consciousness	1	4%

Brain CT. was done in all patients. Results are shown in (Table2). The thickness of the hematoma ranged from 1.5 to 4 cm (Figure 4-6).

Table 2: CT. Findings

CT. Findings	No. of patients	Percent
Hyper dense	2	8%
Hypo dense	13	54%
Isodense	8	33%
Mixed density	1	4%
Mass effect	22	92%
Rt.	14	58%
Lt.	8	33%
Bilateral	2	8%

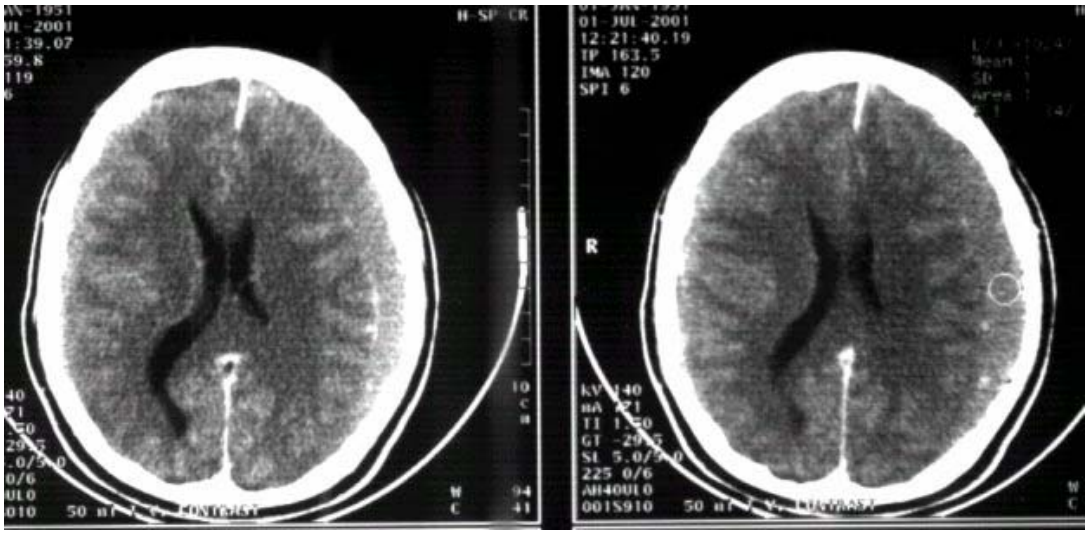

Figure 4: Axial CT. Lt. CSH Isodense to the brain

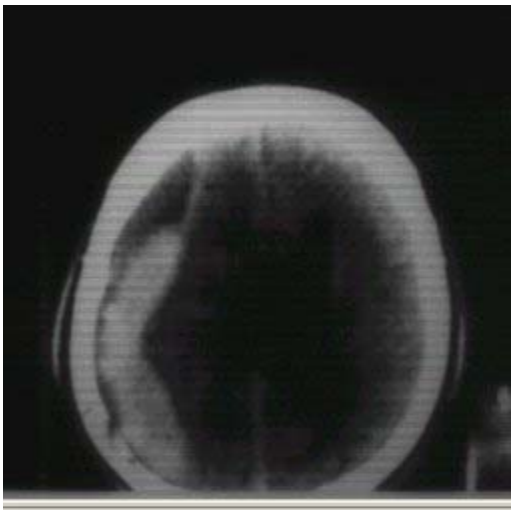

Figure 5: Axial CT. Rt. CSH hyper-dense to the brain

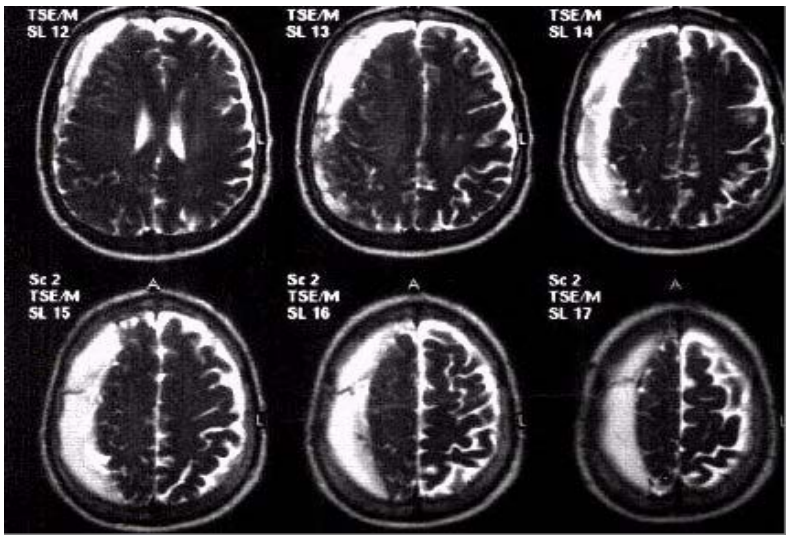

Figure 6: MRI of the brain, showing Rt. CSH with brain atrophy and minimal shift of midline

All patients were surgically treated, 22 by double burr hole. The hematoma was encased in a well-formed vascular membrane under very high pressure. Two patients with hyperdense recent hemoatomas had craniotomy. All patients made rapid and full recovery except one 83 years old patient who did not have useful neurological recovery. There was no recollection or mortality. A part from one case of subdural air collection which was relieved by tapping under local anesthesia there were no complications. All patients returned to their pre morbid neurological state, or work. Table 3 showed some of the complications developed after surgery.

Table 3: Complications of surgical treatment

Author	*Year*	No. Of patients	Method	Recurrence And complications	Ref. No.
Benes-J	1999	92	B.H +drain	13 patients: 14%	19
			Craniotomy	40 patients: 46%	
Emonds-N	1999	86	Hollow screw	22 patients: 11%	20
Suzuki	1998	186	Closed drainage	3.2%	21
Ernestus-RI	1997	104	Burr hole	18.5%	29
			Craniotomy	12.5%	
Zumkeller-M	1997	314	Burr hole +drain	15%	31
Matsomoto-K	1999	121	Burr hole	8.3%	32

There was no long-term follow up for most of the patients, however for over 6 years no patient returned with symptoms or radiological evidence of recurrence.

Discussion

This benign condition affects a still active group of society, who with adequate treatment can return to full employment, or preoperative activity. Although the proposed surgical treatment is simple, the relatively high rate of complications and mortality warrant great attention to details in order to achieve best results. The incidence of CSH is reported as being 1-2/100000/year, it increases steadily with age to reach 17/100000/year above 80 years[15]. The incidence further increases with the presence of risk factors such as alcoholism, epilepsy and coaggulopathy[1,5,27].

We do not know the true incidence of CSH in Iraq due to lack of proper epidemiological studies, and inadequate records. However 24 cases in 6 years are too few and do not reflect the true incidence. The age range of patients in this study was 20-83 years (Average 56 years) 25% of patients were below 50, and another 25% were above 70 years. (Figure 1). As expected males predominated the number of patients, 7:1 ratio in this study is even higher than the reported M:F ratio of 5:1 among 2300 patients[2], this is probably due to the fact that males are more prone to trauma.

More than half the patients in this study presented typically with progressive neurological deficit, and or impaired cognition, which is in agreement with most reports[1,15,28], however, 46% of patients complained of headache and sometimes vomiting, and there was also high incidence of papilledema 38%, while Samudrala and Cooper in a summary of several large series of CSH report an incidence of 24%[1]. Both these observations are probably due to the low average age in this study. Generally headache was seen in young patients with recent trauma, while most patients with confusion and impaired mentation were above the age of 70 years.

Although present opinion overwhelmingly supports the operative treatment of CSH[1,28], the extent and type of surgical treatment is still controversial[29], due to the still significant rates of mortality, morbidity and recurrence[1,19-21,29-33]. Table shows summary of the recurrence and complication rates in several recent series (Table 3).

Craniotomy and membrainectomy for CSH has long been considered unnecessary except for multiple compartment, recent solid and recurrent CSH[1,29] Various techniques of drainage still involves 5-10% mortality[1,29,31,33] and up to 45% of recurrence[1]. Many risk factors for outcome and recurrence are recognized; Severity of the clinical condition, the degree of mass effect, hematoma thickness of more than 20 mm, drainage volume and diabetes[32-34] Ogasawara-K et al; using single- photon emission computerized tomography (SPECT) to measure cerebral blood flow before and immediately after rapid decompression of CSH, demonstrated areas of cortical hyperemia beneath the hematoma[35].

This may contribute to recurrent bleeding after rapid decompression. Further more inadequate evacuation of CSH may be due to the presence of fibrinous septa dividing the hematoma cavity into compartments or loculi[1,36] It is against these two factors that the method used in this study is directed, slow and thorough evacuation of the hematoma. There was no recurrence or mortality. Although the method used is essentially a standard technique, the small differences proved effective, and show the importance of attention for details in this apparently simple but intricate pathology.

Conclusion

Burr-hole evacuation of CSH with irrigation is a simple procedure, it is suitable for use in old and generally unfit patients, it can be done under local anesthesia. It has the advantage of offering the opportunity for repeating the procedure in case of recollection, and for inserting a drain if necessary. Slow and thorough evacuation as described in this study, is an effective method in reducing the rate of complications and recurrence.

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UNUSUAL CAUSES OF HEAD INJURIES

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Abstract

Background: Although the patterns of common causes of head injury (HI) are well established all over the world, however, unusual causes of HI, incurred inadvertently to many patients, do occur every now and then.

Objective: To bring to the attention of the practicing neurosurgeon the possibility of an unusual pattern of HI. Furthermore, such injuries may endanger the patient's life.

Methods: A retrospective study of 30 HI cases encountered by the author between 1986 – 2003. The Accident and Emergency Hospital in Amara, The Teaching Hospital in Basrah, The Neurosurgical Hospital and The Teaching Hospital at Kadhimiyah, Baghdad. All had 3 standard plain skull X-ray projections: postero-anterior, lateral, and Townes views; occasionally, occipito-mental and orthopentgraphic views were done. Although few cases needed conventional angiographic examination, none of them had the test because of the non-availability of the contrast medium. Few patients had computerized tomography (CT) examination. All cases presented before magnetic resonance (MR) imaging was introduced into the country.

Results: Different age groups are represented. Although both sexes were affected, however, most of the victims were males (24, 80%), and most injuries were compound and of a penetrating nature; all calvarial regions are represented in this study. There was no death in this series as all patients made, in due course, an excellent recovery.

Conclusions and recommendations: Under certain situations, especially when the financial resources are limited, or up-date neuro-imaging machines are unavailable, plain skull X-ray films prove adequate investigative tool disclosing the extent of bony damages and state of penetration. Domestic animals and tools can, un-expectedly, be harmful; an educational program in this respect is helpful. A protective safety helmet may be mandatory in certain professions when the risk of having a HI is likely. Although most of our patients suffered a certain degree of transient morbidity, however, they were back to normal active life. The practicing neurosurgeon may face an unusual type of HI that may constitute a serious threat to the victim's life. Addressing the management of such events, an urgent non-hesitating attitude is to be practiced by following the standard lines of dealing with penetrating injuries.

Key words: Unusual causes of head injury, penetrating injury, plain skull X-ray.

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Introduction

Head injuries (HI) remains a socio-economic problem bothering both the communities and the health care providers. It affects all age groups, causes substantial morbidity and mortality and loss of financial resources. The pattern of HI can be quite varied depending on the circumstances and the environment. The aims of this study are to document these unfortunate domestic events, to bring to the attention of our colleagues such possible injuries, and to discuss them and some other similar reports in the literature.

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Table 1: Unusual causes of head injury

Injurious agent	Number			Site and side of injury
	♂	♀	Total	
A kick by a donkey's back limb	3	1	4	Rt. Temporal (3) Lt temporal (1)
A pull by a running cow; head of child collided with a ground stone	-	1	1	Rt Parietal
Rotating ceiling fans	7	4	١١	Rt frontal (4), Rt. temporal (1), Rt temporo-parietal (1), Lt temporal (1)
A fall of a rotating ceiling fans	1	-	١	Sagittal parietal
Moving pointed wooden stick (the patient was driving his pick-up)	1	-	١	Lt Temporal
Pointed metal bar	1	-	1	Bi-Parietal
Throwing a building brick	3	-	٣	Rt Parietal (2), Lt temporal (1)
A low velocity hunting shotgun (3 meters distance)	1	-	1	All scalp regions
High-speed revolving piece of metal cutter (a detached broken piece flew)	1	-	١	Lt Parieto-tomporal
A tire ring jumped off its catch	5	-	٥	All calvarial sites involved, mainly frontal
Hand gun explosion while firing a lightening bomb	1	-	١	Rt temporal
Total **%**	24 80%	6 20%	٣٠ 100%	-

Patients and methods

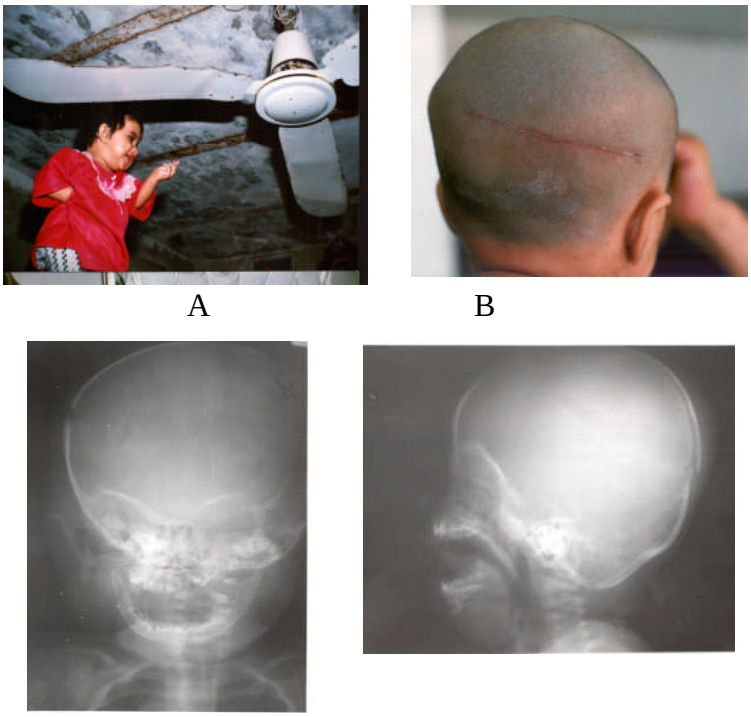
Most of the affected patients were males (24, 80%), being damaged mostly in the temporal region, and they were inadvertently injured by the following agents (Table 1):

1. A kick by a donkey's back limb.
2. A pull by a running cow (a rope was accidentally turned round the child patient).
3. Rotating ceiling fans (Figure 1, A-D).
4. A fall of a rotating ceiling fans.
5. Moving pointed wooden stick (Figure 2).
6. Pointed metal bar.
7. Flying detached high-speed revolving piece of metal cutter (Figure 3).
8. A building brick thrown on the head (Figure 4).
9. A low velocity hunting shotgun (Figure 5).
10. A jumping tire ring, accidentally released from its catching restraint frame while being repaired.
11. Hand gun explosion while firing a lightening bomb (Figure 6, A-C).

Except the shotgun event where the pellets penetrated the scalp tissue only without bony penetration, all other injuries were compound, most of the fractures were comminuted, scalp was lacerated and the dura was torn. Glasgow coma scale score ranged from 12 to 15.

Place and mechanism of injury

The accidents occurred at the farm, home, or at industrial sites. The injuries were the result of direct contact (contact phenomenon) between the injurious agent and the head as well as the inertial effects that follow; a dominant acceleration injuries profile, and to a lesser extent deceleration injuries.



A B C D

Figure 1: *A.* Simulation of a ceiling fan accident of a female infant. *B.* Parieto-occipital scalp wound of the same infant in picture A. *C.* Postero-anterior view and *D.* a lateral view of the infant in A to show the (fissure) skull fractures with wide separation.

Table 2: The most common causes of head injury

1. Road traffic accident, e.g., vehicular occupants, pedestrians, cyclists.
2. Falls, e.g., falls off roofs and balconies, downstaircase.
3. Assaults, e.g., with a crunch or metal bar.
4. Penetrating and perforating injuries, e.g., missiles, knives.
5. Industrial and occupational, e.g., at building sites.
6. Sport, e.g., horse riding.
7. Collapse of building, e.g., natural disasters, military conflicts.
8. Miscellaneous.

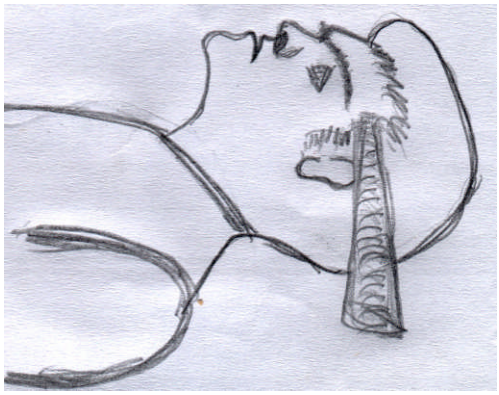
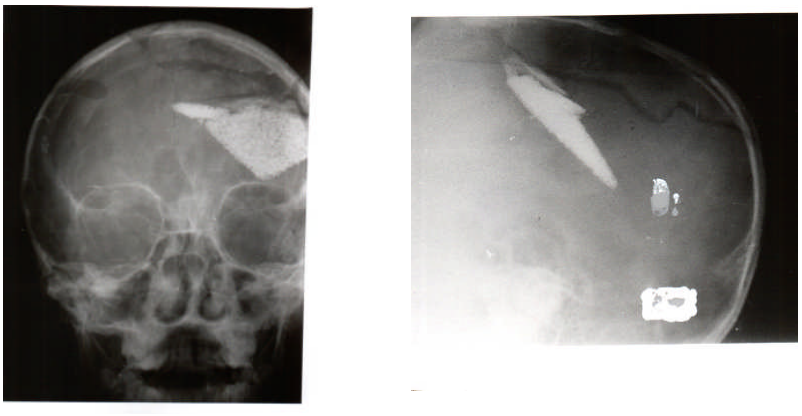


Figure 2: Diagram of the driver patient who had a left temporal depressed compound fracture by a penetrating pointed piece of wood protruding out of another moving vehicle.



A B

Figure 3. Flying detached high-speed revolving piece of metal cutter. A. Postero-anterior and B, lateral views.

Results

Seasonal Incidence

All injuries incurred by ceiling fans had occurred during the summer time, i.e., between June and September when the people had needed the fan for room ventilation during the warm summer weather. It would, probably, be worthwhile to mention that during those 4 months the students retire from school for the summer holiday. In our practice, we have not come across a similar accident outside the months mentioned above.

For other injuries they had occurred throughout different seasons.

Age and Sex

The age ranged from 6 months to 75 years (mean 12.5 years); they were 24 (80%) males and 6 (20%) females(Table 1).

Clinical Examination

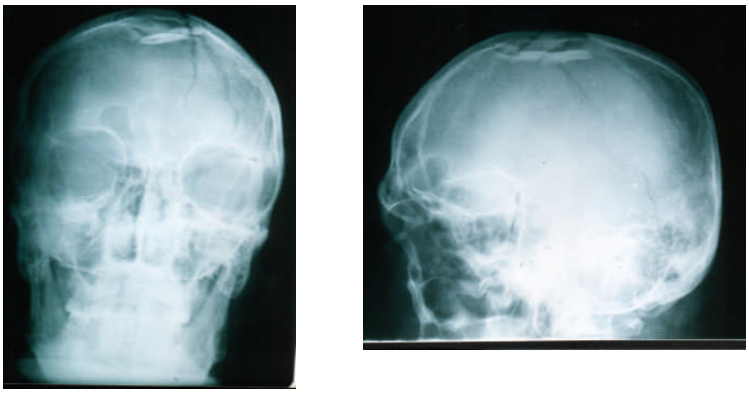
All patients had scalp wounds of variable configuration; no scalp region was exempted from being involved by a scalp wound (Table 1).

Although only 3 patients developed immediate post-traumatic unconsciousness, however, all other patients gave no history of loss of consciousness and were alert at the time when seen first; they remained so throughout their stay in the hospital; their neurological examination was unremarkable; the Glasgow Coma Scale score[1] at the time of admission was about 12 – 15. ; 3 had hemispheric weakness and cognitive impairment shortly after the trauma but had eventual recovery.

Few children developed attacks of focal progressing to generalized seizures. Eventually, in few days time, they had full recovery and were seizure free for the rest of follow-up period. None of the patients had extra-cranial injuries.

Radiological Examination

All patients had conventional plain skull radiography, postero-anterior, lateral, and Townes views that were quite practically adequate to investigate the status of bone and penetration. During the early years of the study period, the computerized tomography scanning machine was unavailable at the first two places. Although few cases needed conventional angiographic examination, none of them had the test because of the non-availability of the contrast medium. Few patients had CT examination. All cases presented before MR imaging was introduced into the country.

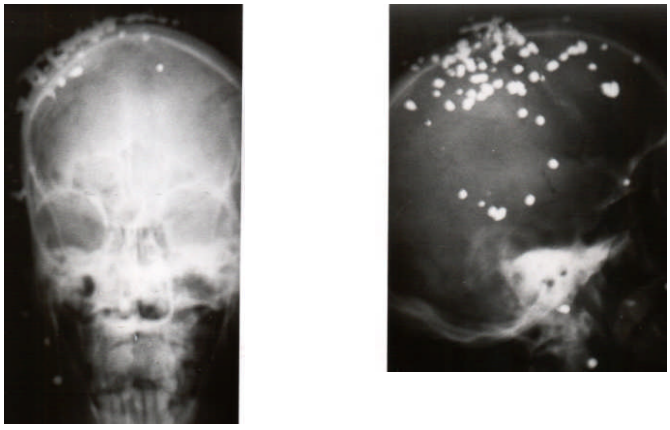


A B

Figure 4: A compound comminuted depressed skull fracture from which more (fissure) fractures radiate, may result from collision of a building brick that has sharp edges and corners with the head of the victim: A. Postero-anterior view. B lateral view.

Treatment and Outcome

After giving the medications, mentioned above, all, except the patient in figure 5 who signed his own discharge, underwent surgical procedures for wound debridement, removal of foreign bodies and depressed and comminuted pieces of bone and had dural closure; the post-operative recovery was uneventful; luckily, there was neither significant wound nor intracranial infection. All patients left hospital well, few had transient motor and mental sequels, all eventually resolved; none of the patients had cerebrospinal fluid leak; those attending kindergarten and school had normal performance; others were back to normal life activity. There was no mortality among this series.



A. Postero-anterior view. B. Lateral view.

Figure 5: Plain skull X-ray of a patient with a low-velocity "hunting" shot-gun injury to the head of a 75-year-old man, while sleeping. There was no skull penetration although the shot range was about 3 meters.

Figure 6 show few radiological pictures of plain skull X-ray and computerized tomography of the patient who was injured by explosion of a hand gun while firing a lightening bomb. A. Plain postero-anterior view to show a metal fragment at the right temporal region, the site of a compound comminuted depressed fracture with dural tear. B. A lateral view. C. A post-operative CT axial pictures to show the site of craniectomy and the extensive haemorrhagic contusion of the right temporal lobe. There are also few air bubbles. The patient's recovery was full after one month from date of injury.

A B C

Figure 6: Few radiological pictures of plain skull X-ray and computerized tomography. A. Plain postero-anterior view. B. A lateral view. C. A post-operative CT axial pictures.

Discussion

HI remains a challenge to health care providers. It has a substantial impact on the National Health Service and budgets[2]. With the successful control of many childhood diseases, trauma remains, more than any other entity, the primary cause of mortality in childhood[3]. Although precise figures are not available, trauma to the brain and it's coverings ranks as one of the leading causes of mortality and long-term morbidity in the pediatric population[3].

The most common causes of head injuries are well known (Table 2). However, the practicing neurosurgeon may come across an unusual pattern of head trauma, such as those mentioned here, which predominantly resulted, biomechanically, from contact phenomena, though part of them had been caused by a superimposing acceleration (inertial) effects inducing surface strains and their resultant subdural haematoma (as in the case of the rotating fan)[4,5].

In the context of HI, from a biomechanical point of view, many variables interact in deciding the pattern, extent and distribution of primary injury sustained by the cranial bones, soft tissues covering and contents of intracranial cavity. One of these variables, is the force of the injurious agent; this force is in itself the product of many elements, namely the change of angular momentum, the time interval (duration of contact between the injurious agent and the head), weight and size of the agent used.

Table 1 shows briefly those unusual patterns of HI. All were dealt with using the available diagnostic and operating facilities; the outcome was very satisfactory. For example, the cases of the non-missile penetrating injuries, such as those in figures 2 and 3 and the penetrating metal bar, all presented to the author's practice before the MR imaging, which includes MR angiography facility, was introduced into the country; moreover, because of the economic embargo, the contrast material for conventional angiography was not available. Extreme care was exhibited during handling the patients to ensure stabilizing the embedded pieces until the latter were removed in the operating room via craniectomy rather than craniotomy; fortunately, there was no vascular injury and the patients made an excellent recovery.

The author thinks most of them are preventable by foreseen anticipation of possible risks, adequate care taking, family supervision, community education, and wearing helmets in professions such as those dealing with high-speed-revolving metal cutting or while repairing tiers.

Authors elsewhere have also written on some unusual modes of HI. Mlay et al

reported HI- skull fractures in children following fall of coconut fruits on top of their heads or fall off mothers' back[6]. In Finland, Koskinen reported that HI might follow snowmobile trauma and that helmets were protective[7]. Infant walker-related head injuries have been reported[8]; similarly, stroller safety has been questioned[9].

In New Zealand, discussing the injuries occurring during trampoline shows, Chalmers et al concluded that, although existing trampoline standards addressed many of the issues raised by their research, measures to reduce the impact of falls from trampolines to the ground and to prohibit the provision of trampolines as 'play equipment' are required[10].

Similarly, Lillehei et al analyzing the mechanisms of injury and death in a commercial airline disaster and proposing preventative safety measures based on that analysis have concluded that head trauma was the most common fatal blunt injury, followed by injuries to the chest and the abdomen; the blunt injuries were remarkably similar to the deceleration injuries seen in high-speed motor vehicle crashes. The use of a lap belt restraint system alone is not adequate to protect passengers against these forces as shown convincingly in the automotive industry literature[11].

What impact a better passenger restraint system may have had on survival in this disaster is unknown, however, at a minimum, it would have significantly improved survival for 6 of 28 passengers dying of isolated blunt head trauma[11]. Minor alterations in aircraft design (secure bolting of passenger seats to the airplane superstructure) and passenger restraints (3-point lap and shoulder harness system) is proposed to positively influence survival during an airplane crash at negligible increased airline expense or passenger inconvenience[11].

The author thinks that due to the tremendous amount of variation of different nations and communities in their habits, customs, natural geography, and other life aspects, other enumerable patterns of HI may evolve every now and then and that authors may continue to report, on, at least, some of these unfamiliar modes of head trauma.

Conclusions

This should bring to the attention of the members of the medical profession and publics the risk of domestic animals and home and work tools when, under certain circumstances, these may be responsible for "compound, with / without penetration" HI that can be life threatening. Educational program may help in this respect. A protective safety helmet may be mandatory in certain professions when the risk of having a HI is likely. The therapeutic approach to managing such injuries should follow, without hesitation, the standard lines that, hopefully, include using the most recent investigative armamentarium, well-equipped operating theaters, a proper decision making, and adequate well-trained staff.

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SKULL FRACTURES IN HEAD-INJURED PATIENTS ATTENDING THE ACCIDENT AND EMERGENCY DEPARTMENT OF THE TEACHING HOSPITAL AT KADHIMIYAH: A RETROSPECTIVE STUDY OF 100 CONSECUTIVE CASES

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Abstract

Background: A skull fracture (SF) finding in acutely head injured patient represents a neurosurgical emergency that necessitates admission to the hospital as it indicates a significant head trauma and can be accompanied by life threatening complications.

Objective: To study the pattern of SF in 100 head injured patients presented to the Accident and Emergency (A and E) Department at Al-Kadhimiya Teaching Hospital.

Methods: 100 patients having fresh SF were examined during October 2001 to February 2003 inclusive. All patients had plain skull X-ray, CT scanning; MRI study.

Results: The most common causes were fall from height (FFH) (40%), road traffic accidents (RTA) (37%), assaults (13%), collapse of building (4%), diving (1%), missile (1%) and miscellaneous causes (4%). While eighty-six patients had single SF, 14 patients harbored multiple SF, all totaling 118 SF. The pattern of SF was fissure fracture (66.1%), depressed (20.3%), fracture base of skull (8.5%) and diastatic (5.1%). At Glasgow Coma Scale (GCS) scoring, 69% had a score of 13-15, 22% a score of 9-12, and 9% had a score of 3-8. Intracranial haematomas were extradural 14, subdural 3, and 1 intracerebral haematoma.

Conclusions: The majority of SFs are simple fissure patterns affect mainly young age groups who sustain HI; males are more involved than females. Conventional X- ray, spiral CT scan and MRI are essential for determination of the type of SF. Since the majority of accidents have occurred in urban sites, 80%, the authors think that HI may be a phenomenon of urbanization. Moreover, the majority of the causes of SF(s), the authors think, are preventable, like FFH and RTA, by adequate measures such as family supervision, community education, safe house construction and traffic regulation legislation. Although the majority of cases had high GCS scores indicating a mild severity of trauma, however, a proper management and skilled care would contribute to avoidance of life-threatening complications and effect recovery.

Key words: head injury, skull fracture, neuro-imaging, CT scan, MRI venography, family and school supervision.

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Introduction

Trauma is the leading cause of death and disability in people under 45 years of age worldwide. Up to 50% of trauma fatalities are due to HI, but HI represents a much greater proportion of permanent disability[1]. The main causes of HI are road accidents, falls, and assaults[2]. Improved emergency medical services and campaigns for road safety have seen a relative reduction in both the incidence of injury and the number of resulting fatalities[2]. A SF is a well known sequel of HI; HI causing SF from blunt or penetrating mechanisms, is the commonest cause of death and morbidity in all forms of trauma and commonest cause of trauma among those attending the accidents and the emergency department with half of them being aged 14 years or less.

The skull X-ray is still a useful tool in the management of injuries that are associated with SF. E.g., in the context of extradural haematomas (EDH), most EDHs occur at the base of the skull beneath the temporal lobe or over the the lateral surface of the brain. This distribution corresponds not only to the course of the middle

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meningeal artery but also to the most common sites for a skull fracture[3]. Occasionally, EDHs occur over the top (vertex) of the head or in the occipital region. In these cases, the haematoma is usually caused by a laceration of a dural venous sinus and is almost invariably associated with an overlying skull fracture[3].

SFs are classified according to whether the skin overlying the fracture is intact (closed) or disturbed (open or compound), whether there is a single fracture line (fissure or linear), several fractures radiating from a central point (stellate), or fragmentation of the bone (comminuted), and whether the edges of the fracture line had been driven below the level of the surrounding bone (depressed) or not. Simple SFs (linear, stellate, or comminuted non-depressed) require no specific treatment. They are, however, potentially serious and can be fatal if they cross major vascular channels in the skull, such as the groove of the middle meningeal artery or the dural venous sinuses.

The two most important risk factors for the development of an intracranial haematoma are an abnormal level of consciousness and the presence of a SF. The statistical risk of developing a traumatic intracranial haematoma in conscious adults in whom no skull fracture exists and in whom there is no history of altered consciousness is approximately 1 in 6000; however, when there is a history of loss of consciousness and SF is present, the risk is increased to 1 in 4[3].

Depressed SFs often require surgery to elevate the depressed bone fragments. If there are no adverse neurologic signs and the fracture is closed, repair may be done electively. Basal SFs involve the floor of the calvarium. Bruising may occur about the eye (raccoon sign) or behind the ear (Battle sign), suggesting a fracture involving either the anterior or middle fossa, respectively. Any associated CSF rhinorrhoea, or otorrhoea should be treated expectantly. Traumatic CSF leaks typically stops within the first 7 to 10 days. Should a leak persist, lumbar CSF drainage can be implemented to seal the leak by lowering CSF volume and intracranial pressure.

If this therapy fails, surgical exploration and oversewing of the defect with a facial patch graft is indicated. Less than 5% of patients actually require surgical repair. Tyson thinks that an open fissure fracture is not ordinarily an indication for the use of prophylactic antibiotics are no longer used and that their use in patients with who have open depressed fractures is controversial and there is no reason to use them in the majority of cases; however, they should be considered when there is brain tissue within the wound or when a skull x-ray reveals foreign bodies within the cranial cavity[4].

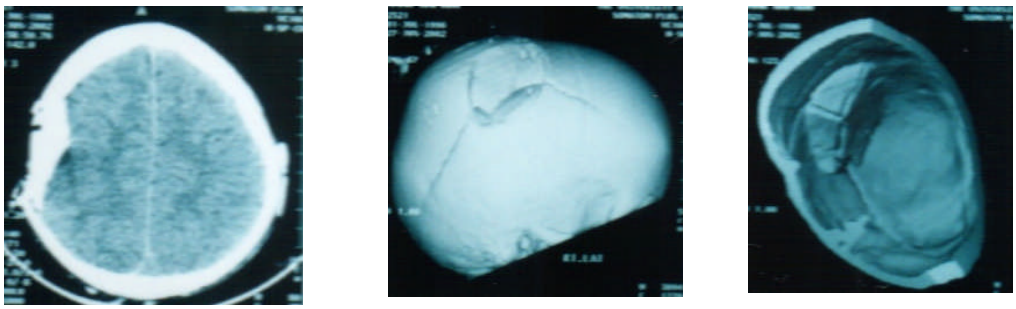
The main aim of this retrospective descriptive study is to verify the patterns (types) of skull fractures in 100 consecutive head-injured patients; also, to analyze some other variables and findings relevant to those events.

Patients and methods

One hundred consecutive head injured patients, attending the A and E Department of the THK having sustained head trauma, over seventeen-month-period from October 2001 through February 2003 inclusive, who had SFs, qualified for this retrospective study. Having received the patients, their clinical condition would have been stabilized; the general and the neurological conditions are assessed. All patients had PSXR films (postero-anterior, lateral projections, and only few of them had Townes views) and spiral CT scanning (Figures 1-4).

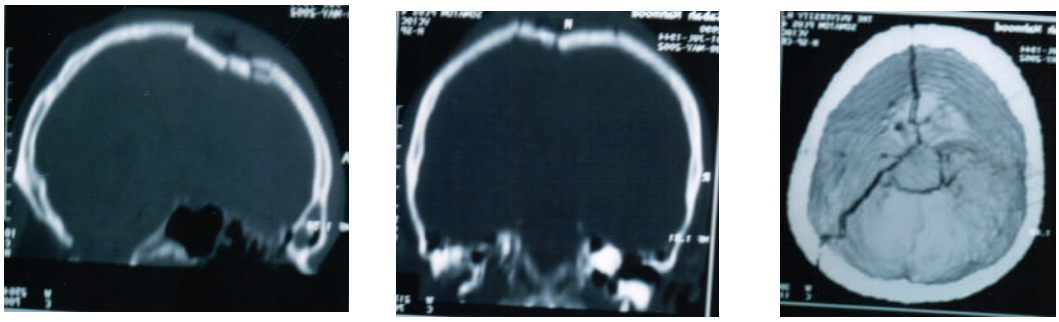
When indicated, occipito-mental, ortho-pentographic and a complete set of cervical spine films would have been taken. Few patients had in addition an MRI venography, only when felt necessary in order to solve a clinical confusion regarding the patency of the superior sagittal sinus for the blood flow. The patient and / or his / her relatives, guardians, or witness were asked

about the cause of head injury; the clinical severity of the injury was assessed according to GCS; the patients were given the appropriate GCS score[5].



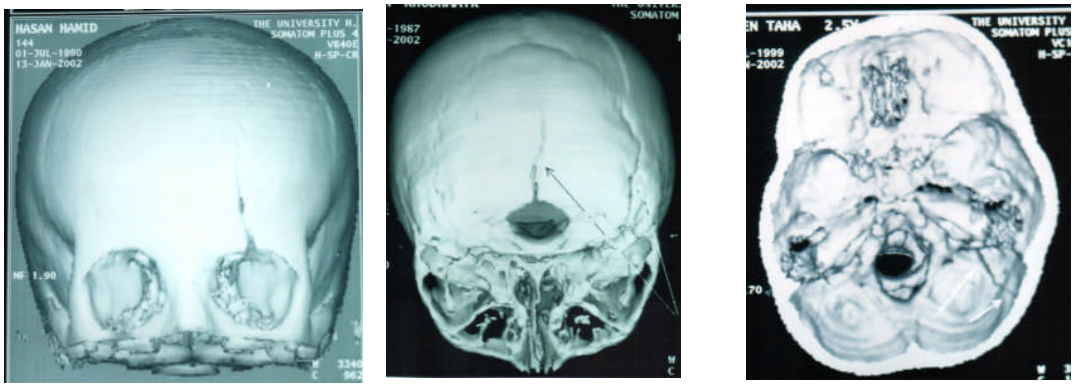
A B C

Figure 1: Pictures of a depressed comminuted compound fracture in the parietal region with spiral computerized scanner. A. Axial section. B. 3-dimensional appearance from outside, and C. An inside view.



A B C

Figure 2: Different views A. Sagittal, B. Coronal and C. An inside views of a depressed comminuted parietal fracture overlying the superior sagittal sinus with risk of occlusion to blood flow; the latter should be verified by magnetic resonance venography or by conventional cerebral angiography (the venous phase).



A B C

Figure 3: Three dimensional picture of the skull showing A. A frontal fissure fracture extending into the superior margin of the left orbit, B. An occipital fissure fracture extending into the posterior lip of the foramen magnum, and C. An inside view of a right occipital fissure fracture extending to the petrous bone.

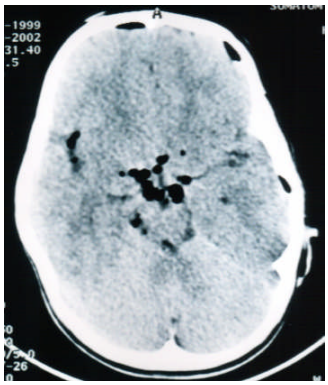


Figure 4: An axial tomographic scanner view showing pneumocephalus: air bubbles in the III ventricle, basal cisterns, ambient cistern and sylvian fissures.

A simple format was designed for registering and analyzing few other variables such as age, sex, residential area, occupation, pattern and number of fractures, whether the fracture was simple (closed) or compound (open), single or multiple, CSF leak, other associated lesions and whether there was any fatality in the same event; the need for a surgical intervention was also documented. Also, in case of a child, we inquired about family supervision at the time of accident.

Results

Age and gender

The age has ranged between 9 months and 70 years (mean 17.7 ± 16.7) (Table 1); 62 of them are in the paediatric age group, below the age of 14. As far as sex is concerned, 28 are females and 72 are males.

Table1. Distribution of patients by age groups

Age groups	Number of patients
9 months-4 years	19
5 years-9 years	22
10 years-14 years	21
15 years-19 years	9
20 years-24 years	3
25 years-29 years	4
30 years-34 years	5
35 years-39 years	3
40 years-44 years	4
45 years-49 years	3
50 years-54 years	4
55 years-59 years	0
60 years-64 years	1
65 years-69 years	0
70 years	2
Total	100
Mean age in years ± standard deviation	17.7 ± 16.7

Residential areas and occupation

Twenty patients (20%) came from rural areas, while 80 were from urban residential regions (80%) (Table 2).

Table 2. Distribution of patients by residency area

Residency	Number	%
Rural	20	20
Urban	80	80
Total	100	100

The students, preschool children, self-employed, and civil servants have accounted for most of the patients: 34%, 25%, 19% and 6% respectively. However, other occupations are also represented (Table 3).

Table 3. Distribution of patients by occupation

Job	Number	%
Preschool children	25	25
Student	34	34
Self-employed	19	19
Civil Servant	6	6
House wife	4	4
Farmer	4	4
Worker	4	4
Retired	2	2
Driver	2	2
Total	100	100%

Causes of HI

As it is shown in tables 4 and 5, FFH have stood for the majority of causes (40%) among the study patients, followed by RTA (37%), whom vehicular users (54%) exceeded pedestrians (46%); 13 patients (13%) had been assaulted on their heads; only 4% patients suffered injuries by collapse of their houses in the winter time; they were mainly from rural areas. Other various causes were also responsible for HI.

Table 4. Distribution of patients by causes of head injury

Cause	Number	%
Fall from height (1-4 meters) (2 due to electrocution)	40	40
Road traffic accident	37	37
Assault	13	13
Collapse of Building	4	4
Diving	1	1
Penetrating missile (bullet)	1	1
Miscellaneous (fall of an object,…)	4	4
Total	100	100%

Table 5. Distribution of patients by details of road users involved in road traffic accidents

Details		Number	%
Vehicular users	Driver	2	54%
	Front Seat Passenger	5	
	Back Seat Passenger	13	
Pedestrians		17	46%
Total		37	100%

Symptoms and signs

1. Consciousness

The majority of patients (59%), gave no history of loss of consciousness. The rest have shown various time intervals for regaining their consciousness following the trauma (Table 6).

Table 6. Distribution of patients by alteration in the level of consciousness (LOC)

Any alteration in LOC	Duration	Number	%
History of loss of consciousness	Few minutes - < 1 hour	15	15%
	1 hour – 6 hours	11	11%
	7 hours – 1 day	7	7%
	2 days – 1 week	5	5%
	> 1 week (4 weeks)	3	3%
Absence of loss of consciousness		59	59%
Total			100%

2. GCS score

Considering GCS score (Table 7), most of patients 69 (69%) had GCS score of (13-15), 22 (22%) had a score of (9-12), and only 9 (9%) had GCS from (3-8); the latter group was severely injured.

Table 7. Distribution of patients by GCS score on admission

GCS score	Number of patients	%
13-15	69	69%
9-12	22	22%
3-8	9	9%
Total	100	100%

3. Other symptoms and signs

While 89 patients have suffered post-traumatic headache, 16 vomiting, 11 epistaxis, 10 bloody otorrhoea, 16 had peri-orbital haematoma, 15 lateralising signs and 8 showed cranial nerve palsies. Extra-cranial injuries were also present (Table 8). Two patients had very early post-traumatic seizure.

Table 8. Distribution of patients by other associated symptoms and signs

Symptom and sign		Number	%
Headache		89	89%
Vomiting		16	16%
Haematemesis		5	5%
Peri-orbital haematoma		5 Lt., 6 Rt., & 5 Lt. & Rt.	16%
Lateralizing signs		15	15%
Cranial nerve palsies (II, III,VI) (transient) (one patient had bilateral VI nerve palsy which is quite uncommon)		II nerve 1, III nerve 2, VI nerve 5	8%
CSF rhinorrhoea		15	15%
Epistaxis		1	1%
Bloody otorrhoea		10	10%
CSF otorrhoea		2	2%
Cerebral tissue otorrhoea		1	1%
Any extra-cranial Injuries:	Soft tissue bruises (limbs and trunk)	35	38%
	Fracture maxillae 1	1	
	Fracture mandible1	1	
	Fracture clavicle1	1	
Early epilepsy (by time of presentation to A and E department)		2	2%

II nerve = optic nerve, III nerve = occulomotor nerve, VI nerve = abducens nerve.

Family and supervision

This is given in table 9; most of children below the age of 14 years, 36 (58.1%), lack family supervision at time of accident.

Table 9. Family supervision for patients in paediatric age group (9 months-14 years)

Family supervision	Number	%
Yes	26	41.9
No	36	58.1
Total	62	100

Radiological findings

All patients have PSXR and CT scanning, few had MRI and other relevant studies, as mentioned above; the summary of findings is shown in tables 10-14.

While eighty-six patients had single SF, 14 patients harbored multiple SF (10 with 2 SF and 4 with 3 SF), all totaling 118 SF; in 2 patients, the same SF crossed the midline and continued to the other side. The pattern of SF was as follow: fissure fracture 78 (66.1%), depressed 24 (20.3%), fracture base of skull 10 (8.5%), 4 of which involved the ethmoid and sphenoid PNS and diastatic 6 (5.1%) (Table 10 and Figures 1-3).

Table 10. Pattern of fracture

Pattern	Number	%
Fissure (linear and curvilinear) fracture of vault of skull	78	66.1
Depressed (most are comminuted) fracture	24	20.3
Fracture base of skull	10	8.5
Diastatic (lambdoid and sagittal sutures) fracture	6	5.1
Total	118	100%

Table 11 shows that the majority of vault fractures are as follow: frontal 36, parietal 26, temporal 21 and occipital 13. Few SF involved more one site and 2 crossed the midline to involve the other side.

Table 11. Distribution of fractures according to their site and side

Site	Side and number			Total
	Left	Right	Midline	
Frontal	16	20	-	36
Temporal (few extended into petrous and / or mastoid bones)	10	11	-	21
Parietal (one crossing midline)	7	19	-	26
Frontoparietal	0	4	-	4
Temporoparietal	0	2	-	2
Occipital (2 involved posterior lip of foramen magnum)	3	10	-	13
Anterior cranial fossa (2 extended into edge of orbit)	2	4	-	6
Ethmoid	1	1	-	2
Sphenoid (midline)	-	-	2	2
Diastatic fracture	1	2	3	6
Total	40	73	5	118
(%)	(33.9%)	(61.9%)	(4.2%)	(100%)

There were 55 patients with scalp laceration(s) overlying their SF (compound or open SF), however, 45 patients were free of scalp laceration (simple or closed SF) (Table 12).

Table 12. Communication of fracture with external environment

Pattern of fracture	Number of fractures		Total
	Compound	Simple	
Fissure and diastatic vault fractures	35	49	84
Depressed fracture	16	8	24
Basal (paranasal sinuses) fracture	4	-	4
Anterior cranial fossa	-	6	6
Total number of fractures (%)	55 (46.6%)	63 (53.4%)	118 (100%)
Total number of patients (%)	55 (55%)	45 (45%)	100 (100%)

However, only patients with large (significant) haematomas needed to have surgical intervention in the form of appropriate craniotomy / craniostomy to remove the haematoma; all, except one, were in good clinical condition. Unfortunately, one patient who was an elderly with severe fracture and multiple wounds, deteriorated shortly after admission and died before surgical exploration. Those who were not operated upon were firmly reassured, clinical monitoring continued, and so their improvement; they were discharged home in few days time.

The indications for surgical intervention were one or more of the followings: Ventricular compression, Midline shift, Effacement of basal cisterns, Intracranial haematomas of significant size, and Lateralizing signs.

As far as intracranial haematomas are concerned (Table 13), there were 16 patients with EDH , 8 SDH, 3 had combined EDH and SDH, 1 ICH and one with a supra- and infra-tentorial haematoma at the same time.

Table 13. Computerized tomography scanning finding: intracranial haematomas

Nature of lesion	Site	Side	Number	Note	Total
Extradural haematoma (EDH)	Frontal	Left	5	2 small	16
	Frontoparietal	Right	1	-	
	Frontotemporal	Right	1	-	
	Parietal	Left	3	All small	
	Temporal	Right	4	1 small	
		Right	1	Small	
Bilateral EDH	Temporal		1	Small	
Subdural haematoma (SDH)	Frontal	Right	2	1 small	8
	Parietal	Left	3	1 small	
		Right	3	1 small	
Combined EDH and SDH	Temporal	Right	2	-	3
	Parietal	Left	1	-	
Intracerebral haematoma	Frontal	Right	1	Small	1
Both supra- and infratentorial haematoma	Occipital	Right	1	Small	1

Small haematoma = no operation was needed.

Table 14 shows other CT scan findings such as cerebral haemorrhagic contusions (10), pneumocephalus (6), cerebral oedema (5), SAH (5) and the intracranial bullet 1. Few patients with a parietal depressed SF had MRI venography to test for the patency of superior sagittal sinus.

Table 14. Computerized tomography scanning finding: miscellaneous findings

Nature of lesion	Site	Side	Number	Total	Note
Haemorrhagic cerebral contusion	Frontal	Left	2	10	-
		Right	2		
	Parietal	Left	1		-
		Right	2		
	Temporal	Left	1		-
		Right	1		
		Bilateral	1		
Cerebral oedema				5	Diffuse
Subarachnoid haemorrhage				5	Diffuse
Intraventricular haemorrhage				1	Diffuse
Pneumocephalus	Intraparenchymal air			1	Diffuse
	Intraventricular air			1	Diffuse
	Subarachnoid air			6	Diffuse
	More than one compartment			1	Diffuse
Scalp soft tissue air				1	At inlet of bullet
Foreign body	Occipital	Left	1	1	Intracranial bullet

Discussion

In a personal communication with the Section of Biostatistics, Department of Planning, Ministry of Health, Baghdad, it seems that in Iraq, like many other countries, several thousands of patients are admitted to hospitals each year, having sustained a direct violence to the head.

In this study it is found that the males constituted the majority of patients as there were 72 male patients (72%), there were 28 females (28%); this result is similar to other studies who found males to be involved more than females in SFs[6-10]. This may be related to the fact that males are more exposed to dangers of work and RTA than females; Annegers et al think that among the groups at high risk of head trauma are those who have had head trauma previously[9].

HI (among which SFs occur) affects mainly young age groups (Table 1); the mean age in our study of 31.8 years is almost similar to Al-Rawi's study who found that 76.8 % of the patients were below age of 30; this is because the young are among the most active group in the community; this makes them more vulnerable to accidents than others[9]; other researchers had found similar results[11-14].

Another factor which applies to younger children is the relatively larger head size compared to the body than in adults. Also children are more vulnerable to head trauma as a result of carelessness, lack of judgment, and battering[12].

However, in societies where the aging population is marked, head injuries do constitute a health and social problem that deserves specific consideration(s) as reported by Ohno et al from Japan[15].

According to the residency (Table 3), most of the study patients come from urban areas (80%) rather than from rural areas (20%); again, the former group will be exposed to the hazards of fall off higher buildings, more road traffics, and accidents at work due to the pattern of life in the industrialized society; the author think that

HI may accompany the phenomenon of urbanization.

FFH as a major cause of HI (Table 4), shown in this study, is almost similar to other studies[8,16]; although most had happened at domestic (residential) sites and addressing the importance of family supervision as a preventive factor, unfortunately, few occurred at school when students climbed up schools' fences; these events address the importance of school supervision as well. However, many other studies address RTA as a predominating cause[7,9]. This difference is probably due to the study size and design and to local community circumstances. It is interesting to mention that none of our RTA patients was injured in a bicycle or motorcycle accident. This is due to the fact that such sport is not prevalent in Iraq; moreover, modern design-attractive bicycles and motorcycles are relatively expensive and that the majority of families cannot afford to buy them.

An interesting point to mention is that in the senior author's experience, in Iraq, though not reported, the phenomenon of child abuse is very unusual in our society; therefore, none of the patients in this study was hurt by such accident modality; unfortunately, these needless injuries may occur in other societies[17-18].

In the context of HI, from a biomechanical point of view, many variables interact in deciding the pattern, extent and distribution of primary injury sustained by the cranial bones, soft tissues covering and contents of intracranial cavity. One of these variables, is the force of the injurious agent; this force is in itself the product of many elements, namely the change of angular momentum, the time interval (duration of contact between the injurious agent and the head), weight and size of the agent used.

Concerning disturbance of consciousness, which is a sign of brain dysfunction, is a common sequel of HI (Table 6) and usually correlates well with the severity of the injury. Since this descriptive study of SF deals with patients seen at the A and E Department, there has been no mention of the post-traumatic amnesia experienced by the patients; the duration of amnesia usually lasts more that of loss of consciousness.

GCS scores seen on table 7, indicate the mild profile of HI in this study. Many other studies have shown similar results[7,16,19], however, this is also verified by the study design reported by other authors.

Many symptoms and signs are mentioned in table 8 which commonly occur in HI, except the uncommon bilateral VI nerve palsy, most of which are managed conservatively or with appropriate symptomatic drug therapy, although few of them may cause anxiety to the patient and / or his / or her family who need reassurance. For example, post-traumatic headache, not due to surgically correctable cause, responds, usually, to reassurance and simple analgesia, such as Paracetamol with or without Codeine Phosphate; the latter may be given by oral or intramuscular route. However, when it becomes persistent, then it deserves further investigation(s) and may need other appropriate treatment modality[20].

Similarly, interestingly, Hugenholtz et all addressing the problem of vomiting in HI, have concluded that post-traumatic emesis is more common: (1) following minor head injuries than following more severe head injuries (P less than 0.05); (2) in children over 2 years old; (P less than 0.001); (3) in children injured within an hour of a meal or snack (p less than 0.001)[21]. The presence of a skull fracture or the site of the impact does not influence the incidence or duration of post-traumatic emesis. Retching and vomiting generally subside within 3 h in children injured within an hour of a meal or snack. When vomiting appears in children injured more than an hour after a meal or a snack, it may be quite protracted (mean = 7.5 h).

Children over 2 years of age with post-traumatic emesis who are neurologically stable following a mild head

injury that occurred within an hour of a meal or snack can be expected to improve quickly. Their counterparts injured more than an hour after a meal or snack are likely to remain distressed much longer and are best admitted to hospital[21]. Sharma et al mention that one third of paediatric HI were brought to hospital with vomiting, however, the incidence of vomiting in this study is 16%; this is probably due to the inclusion of older age groups[16].

The incidence of post-traumatic seizure by the time the HI-patients presented to the A and E Department, is quite low, (2%), and is similar to other studies[22]. This is probably due to the mild profile of HI in this study.

Tables 9 shows the lack of family supervision to 36 (58.1%) of the children below the age of 14, a problem that has been addressed by many authors (6-7), although many accidents have taken place outside residential areas, such as on the roads while going to or coming back from school, the authors think that it is the duty of the family to provide a state of child watch in order to avoid such unfortunate events. Moreover, although this study does not report the occurrence of accident at schools, however, Hammarstrom et al have reported HI occurring at school sites[23]; therefore, it is advisable to extend children supervision to school premises.

According to the pattern, site and side of the fractures (Tables 10 and 11), there were fissure fractures (78, 66.1%) outnumber other types of SF; this is probably due to the more diffuse distribution of the biomechanical energy input rather than to the localized injury site that results in the depressed and comminuted SF. Most of the patients who had the fissure SF were children. Older patients had mainly the depressed comminuted SF probably due to the inter-personal violence (assault).

The majority of SFs in this study has involved the frontal, parietal and temporal bones, probably because these sites are most prominent (apparent) and not protected. Those SF on the right side are more than those on the left (73, 61.9% versus 40, 33.9%); this is probably due to the fact that most people are right-handed and that they tend to protect themselves by turning to the right in order to use their right-sided limbs for defense.

Concerning communication between the SF and external environment, although 55 (55%) patients have compound injuries, however, there is a marginal increase of closed SF over compound SF (Table 12). The compound nature of the injury puts deeper tissue at risk of contracting microbial infection.

In our study, seizure has not occurred in our patients; however, other studies showed low percent of occurrence of seizure; this is, probably, because of smaller size of our patient population.

Regarding the association of most common intracranial haematomas with the presence of SFs, and since this study involves patients selected for having SFs, evidently, all intracranial haematomas were associated with one or more SFs. Kaye analyzing a consecutive series of 200 cases of EDH, mentions that a fracture overlies the haematoma in nearly all (95%) adults and most (75%) children and that 66% of EDH are in the temporal region, 11% in the frontal region and 7% in the parietal region. However, in this study the frontal and parietal EDH are of near frequency and each outnumbers the temporal ones[24]. This is probably due to the small size of this study. He, also, mentions that over 80% of acute SDH are associated with SFs and that intracerebral haematoma is frequently associated with SDH[24]. In this study, however, not all haematomas needed surgical evacuation, as many of them were managed conservatively because of their small size and the lack of mass effects (Table 13).

Apart from SFs and intracranial haematomas, and as far as other CT scan findings are concerned, e.g., pneumocephalus, intracranial contusion, SAH, and other lesions (Table 14), their

presence is similar to the huge studies mentioned in the neurosurgical literature, though the incidence of various lesions may differ, some substantially. For example, while this study reports a low incidence of intracranial pneumocephalus, Steudel et al found pneumocephalus in 40 out of 49 (82%) of head injury patients within 6 hours of the accident. They think that while injuries associated with a pneumatocele or a single intracranial air bubble have a good prognosis, as do frontobasal lesions, injuries associated with multiple air bubbles have a bad prognosis[25]. Some of such findings may represent a serious threat to the patient and should prompt the neurosurgeon to adopt active appropriate clinical measures that may include surgical intervention[25].

The MRI study, venography, that has been done for few patients with a depressed parietal compound fracture, showed an established blood flow through the superior sagittal sinus; this finding, and the improvement in the condition of the patient during subsequent neurological observation, obviated the need for surgery, an intervention that was not without risk to the patients.

In spite of the descriptive profile of this study, however, many researchers think that with a greater number of patients now surviving HI, the emphasis of medical research must turn to ways in which to limit the extent of neuronal damage, and promote the functional recovery of neurons. It is these factors that will determine the ultimate quality of life of patients who survive[2].

Conclusions and Recommendations

1. SF affects mainly young age groups who sustain HI; males are more involved than females.
2. Most of SFs are the fissure (linear) type.
3. Conventional PSXR and modern neuroradiological technology, like spiral CT scan and MRI are essential for determination of the type of SF and also if there is any associated structural lesion(s). In certain situations, the MR venography of the dural sinuses, or the conventional cerebral angiography, will demonstrate the patency of the latter, and saved the patient a possible surgical intervention.
4. The majority of the causes of SFs, we think, are preventable, like FFH and RTA, by adequate measures such as children supervision at residential and school premises, traffic regulation legislation and community education campaigns. Therefore, in this context, safety measures to protect citizens should be addressed by a multidisciplinary team approach.
5. Although the majority of cases had high GCS scores (mild trauma), however, a proper management and skilled care would contribute to avoidance of complications that may threaten life and effective recovery.
6. Since HI can be a consequence of urban life, it is the duty of health workers, community figures and city construction planners and designers to consider possible solutions or measures to avoid and deal with this problem.

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المجلة العراقية للعلوم الطبية
قائمة المحتويات

المقالات

الملخصات العربية

التشريح الجراحي للشريان الشرسو في العلوي

حيدر حمادي عبد الامير[١]، أكرم عبود جعفر[١]، حسن أحمد حسن[٢]

الخلاصة

خلفية الدراسة: يكتسب الشريان الشرسوفي العلوي و المحافظة عليه خلال التداخلات الجراحية اهمية اكبر في الوقت الحاضر. حيث لم تتوصل الدراسات التشريحية المتعلقة بالاوعية الشرسوفية الى نتائج حاسمة، كما انها ركزت بشكل اكبر على الشريان الشرسوفي السفلي على حساب نظيره العلوي.

هدف الدراسة: توضيح التشريح العياني للشريان الشرسوفي العلوي مع تركيز خاص على مناطق الادخال في جراحة استئصال المرارة بواسطة تنظير البطن و ذلك لغرض تحديد منطقة آمنة.

طريقة العمل: تم تشريح (١٥) جثة، اضافة الى مراجعة المضاعفات المتعلقة بالشريان الشرسوفي العلوي لدى (٩٠) مريض اجريت لهم جراحة استئصال المرارة بواسطة تنظير البطن.

النتائج : لوحظ وجود اتصال تشريحي ظاهر بين الشريان الشرسوفي العلوي و السفلي في (٣٣٪) من الجثث و ذلك في مستوى اعلى من السرة. كان الجذع الرئيسي للشريان الشرسوفي العلوي واقعا في منطقة لا تتجاوز ٥سم عن الخط الناصف. وجد بان الشريان الشرسوفي السفلي يكون عادة اكبر من نظيره العلوي، الا انه في جثة واحدة (٧٪) كان الشريان الشرسوفي العلوي مقاربا في القطر لنظيره السفلي. تعرض (٤،٤٪) من حالات جراحة استئصال المرارة بالناظور الى نزف عندما تم مد مدخل الناظور الى شق يزيد عن ١٠-١٢مليمتر عند النقطة الواقعة على بعد ٥سم من الذيل الخنجري لعظم القص.

الاستنتاج: يجب توقع وجود شريان شرسوفي علوي بحجم كبير اثناء التداخلات الجراحية. ان غياب الشواذ الشريانية المرافقة يدل على ان الحجم الكبير للشريان ناتج عن اختلاف تشريحي طبيعي. يمكن تحديد نطاق آمن في المنطقة الشرسوفية يقع بعيدا عن ٥سم من الخط الناصف. في جراحة استئصال المرارة بواسطة تنظير البطن فان شق الادخال عند المنطقة الشرسوفية يجب ان لا يمتد اكثر من ١٢ مليمتر عن الخط الناصف و اذا اضطرت الضروف فان المدخل يجب تكبيره بواسطة موسع.

مفتاح الكلمات: الشريان الشرسوفي العلوي، الاختلاف التشريحي، جراحة استئصال المرارة بواسطة تنظير البطن

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[٢] فرع الجراحة (كلية الطب-جامعة النهرين)

المجلة العراقية للعلوم الطبية ٢٠٠٦ م المجلد ٥ العدد ١ ص ٣-٧

الملخصات العربية

دراسة فعالية مؤكسدات السيتوكروم في خلايا القرن الأمامي للحبل الشوكي في الأرنب بواسطة المجهر الالكتروني.

علي عبد الستار الطائي

الخلاصة

خلفية الدراسة: أجريت دراسة لديناميكية الخلايا القرن الأمامي في الحبل الشوكي للأرنب باستعمال انظيم مؤكسدات السيتوكروم الموجود في المتقدرات و هو المسؤول عن عملية النقل الالكتروني في مؤكسدات الفسفتة اللازمة في العمليات الحيوية.

هدف الدراسة: لتوضيح جزء من الخريطة الأيظية في هذة الخلايا باستعمال هذا الأنظيم حيث وجد حديثا أن لهذا الأنظيم دورا أساسيا في عملية أستماتة هذة الخلايا.

طريقة العمل: استعمل لهذة الدراسة أرنب نيوزيلندة و بعد استئصال الصفيحة الفقرية من المنطقة القطنية العجزية استخرج الحبل الشوكي و بالتحديد المادة السنجابية في القرن الأمامي و قد عومل بطريقة كيميانسجية اعتمدت على أكسدة بلمرات ثنائي أمين البتريدين و بعد ذلك تم فحصها بواسطة المجهر اللاكتروني.

النتائج: بينت الدراسة أن هنالك تباين واضح في تركيز الأنظيم على المستويات الخلوية و دوين الخلوية داخل المتقدرات.

الاستنتاج: و هذا مما يعكس التباين في عملية الأكسدة الأيضية في هذا الجزء من الجهاز العصبي المركزي و أن عملية أستماتة هذة الخلايا تتناسب طرديا مع تركيز فعالية هذا الانظيم على المستوى الخلوي و دوين الخلية.

مفتاح الكلمات: مؤكسدات السيتوكروم، التسلسل الرقمي للأنظيمات، الجهاز العصبي المركزي، الناتج النهائي للتفاعل

فرع التشريح البشري (كلية الطب-جامعة النهرين)

المجلة العراقية للعلوم الطبية ٢٠٠٦ م المجلد ٥ العدد ١ ص ٨-١٢

الملخصات العربية

المبيضات بين النساء العراقيات: بعض المتغيرات الوبائية

وليد العبيدي[١]، ندى العبادي[٢]

الخلاصة:
خلفية الدراسة: العديد من الدراسات قد تمت حول داء المبيضات بين مجموعات محددة في المجتمع.

هدف الدراسة: هذه دراسة لانتشار داء المبيضات لدى النساء اللواتي يعانين من افرازات المهبلز

طريقة العمل: شملت الدراسة ١٠٠ سيدة يراجعن العيادة الاستشارية للامراض النسائية في مستشفى بغداد التعليمي.

النتائج: ظهرت المبيضات لدى ٣٨٪ من النساء اللواتي شملتهن الدراسة. وكانت ٣٥٪ من النساء اللواتي يعانين من افرازات المهبل مصابات بالمبيضات و ١٥٪ من النساء المصابات بداء السكر و لا يعانين من افرازات المهبل مصابات بالمبيضات و لم تظهر المبيضات لدى النساء الغير مصابات بداء السكر و لا يعانين من افرازات المهبل. الاصابات بالمبيضات لكل اعمار النساء اللواتي راجعن العيادة الاستشارية مع نسب عالية للاصابة في العقدين الثاني و الخامس. كانت اعلى نسبة للاصابة بين النساء الحوامل. ظهرت الاصابات لدى المتزوجات و المطلقات و الارامل.

الاستنتاج: المبيضات ذات انتشار عالي بين النساء اللواتي يعانين من افرازات المهبل و لدى المتزوجات و المطلقات و الارامل.

مفتاح الكلمات: المبيضات، افرازات المهبل، النساء العراقيات.

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الملخصات العربية

مستويات الكالسيوم و المغنيسيوم في مصل دم المرضى المصابين بالمنشقات البولية و سرطان المثانة

أمينة صباح محمود جمعة، طارق ابراهيم الجبوري

الخلاصة

خلفية الدراسة: داء المنشقات البولية من الأمراض الموغلة في القدم و ذو علاقة وثيقة بسرطان المثانة. الكالسيوم هو العنصر الخامس من ناحية توفره في جسم الأنسان و له علاقة وثيقة بفعالية خلايا T، و المغنيسيوم هو العنصر الرابع من ناحية الوفرة مع احتمال وجود دور له في استجابة الأجسام المناعية.

هدف الدراسة: لبحث علاقة مستويات الكالسيوم و المغنيسيوم في حالة الأصابة بداء المنشقات البولية و هبوط مستوى المناعة في هذا الداء بالأضافة الى معرفة دورهما في تطور مرض سرطان المثانة.

طريقة العمل: تضمنت الدراسة ٢٠٠ شخصاً مريضاً مصاب بداء المنشقات البولية الحاد، ١٨ مريضاً بداء المنشقات المزمن، ٢٠ مريضاً بداء المنشقات المزمن مع سرطان المثانة، ٥٠ مريضاً بسرطان المثانة و ٥٦ شخص صحي كمجموعة سيطرة. جمع الدم الوريدي لكل شخص و تم قياس مستويات الكالسيوم و المغنيسيوم في مصل دم كل شخص.

النتائج: مستوى الكالسيوم كان أقل معنوياً في المرضى المصابين بداء المنشقات البولية الحاد و أعلى معنوياً في المرضى المصابين بداء المنشقات البولية المزمن مع سرطان المثانة و سرطان المثانة عند مقارنته بالمستويات في الأشخاص الأصحاء. لم يوجد فرق معنوي في مستوى الكالسيوم بين المصابين بداء المنشقات البولية المزمن و الأشخاص الأصحاء. مستوى المغنيسيوم كان أقل معنوياً في المرضى المصابين بداء المنشقات البولية الحاد، داء المنشقات البولية المزمن مع سرطان المثانة و سرطان المثانة. لم يوجد فرق معنوي في المصابين بداء المنشقات البولية المزمن عند مقارنتها بالأشخاص الأصحاء.

الأستنتاج: لان للكالسيوم و المغنيسيوم دور حيوي في الاستجابات المناعية فان الاختلافات في مستوياتهما قد تكون واحدة من العوامل المؤدية لحدوث سرطان المثانة في المرضى المصابين بداء المنشقات البولية.

مفتاح الكلمات: داء المنشقات البولية، كالسيوم، مغنيسيوم، سرطان المثانة

فرع الأحياء المجهرية (كلية الطب-جامعة النهرين)

المجلة العراقية للعلوم الطبية ٢٠٠٦ م المجلد ٥ العدد ١ ص ١٧-٢١

الملخصات العربية

تنقية و توصيف انزيم الأسبارتيل بروتينيز من الفطر المبيضات

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الخلاصة
خلفية الدراسة: يعد انزيم الأسبارتيل بروتينيز (EC.3.4.23) من مجموعة انزيمات التميؤ و المعزول من المبيضات لمرضى سرطان الدم الحاد اللمفي و الجذعي.

هدف الدراسة: تنقية و توصيف انزيم الأسبارتيل بروتينيز من الفطر المبيضات.

طريقة العمل: تمت تنقية الأنزيم من المبيضات باستخدام كروموتغرافيا التبادل الأيوني و الترشيح الهلامي Sephacryl S-200.

النتائج: تم الحصول على فطر المبيضات المعزول من المبيضات لمرضى سرطان الدم الحاد اللمفي و الجذعي لأنتاج انزيم البروتينيز. استخدمت نخالة الحنطة مع مرق سابروويد لزيادة انتاجها من الأنزيم، و كانت الفعالية النوعية للأنزيم المنقى ٤٠٠ وحدة/ملغم بروتين و عدد مرات التنقية 19.68 و بحصيلة انزيمية 8.48%. بلغ الوزن الجزيئي للأنزيم المنقى ٥٧٦٧٦ دالتون عند تقديره باستخدام عمود السفاكريل S-200، تم تقدير ثباتية انزيم البروتينيز و فعاليته باستخدام ارقام هيدروجينية مختلفة و درجات حرارة مختلفة.

مفتاح الكلمات: المبيضات، انزيم الأسبارتيل بروتينيز، عمود السفاكريل S-200

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الملخصات العربية

استخدام المحلول المائي لزهرة نبات الكجرات كصبغة طبيعية للشرائح النسيجية

ايمان علي هاشم

المجلة العراقية للعلوم الطبية
ص

الخلاصة:
خلفية الدراسة: يزرع نبات الكجرات في مناطق مختلفة من العالم و العراق احد هذه الاقطار. المسخلص المائي لازهار الكجرات ذا لون احمر قاني و حامضي الطعم. بحوث كثيرة تناولت الفوائد الطبية و استخدامه كعشب طبي. و هنالك بحوث اخرى لهذا المستخلص في مجال التصنيع الغذائي و اخرى استخدامه و لوحده في تصبيغ مسحات الدم و الفطريات و النباتات. لاتوجد دراسة مسبقة لاستخدام هذا المسخلص ضمن الصبغة الروتينية الهيماتوكسلين– ايوسين و بديلاً عن الايوسين.
هدف الدراسة: محاولة لمعرفة امكانية اسخدام المسخلص المائي لازهار الكجرات كصبغة طبيعية نسيجية بديلاً عن صبغة الايوسن. و ذلك للتقارب ببعض الصفات بين الكجرات و الايوسين.
طريقة العمل: تحضير المستخلص المائي لازهار الكجرات و بتركيز ٢٠٪ وزن/حجم. و أدخل بالصبغة الروتينية الهيماتوكسلين– ايوسين بديلاً عن الايوسين في تصبيغ شرائح نسيجية محضرة من انسجة حيوانية من الجرذان البيضاء.
النتائج: اظهرت النتائج تقبل الانسجة الحيوانية للصبغة. اصطبغت خلايا الدم الحمراء، هيولي الخلايا الظهارية للنبيبات الكلوية و العضلات الملساء باللون البني الفاتح. اما الانوية اصطبغت باللون البنفسجي الداكن.
الاستنتاج: يحتاج المستخلص المائي لازهار الكجرات الى تنقية كيميائية لعزل جزءه الحامضي من القاعدي و توصي الدراسة باستخدام الجزءالحامضي من المستخلص حاملاً الصبغة كبديل للايوسين حيث يكون اقرب بالصفات الفيزياوية و الكيميائية للايوسن.

مفتاح الكلمات: زهرة نبات الكجرات، صفات نسيجية طبيعية

فرع التشريح و الأنسجة و الأجنة (كلية الطب-جامعة البصرة)

المجلة العراقية للعلوم الطبية ٢٠٠٦ م المجلد ٥ العدد ١ ص ٢٩-٣٣

الملخصات العربية

التصنيف النسيجي لابيضاض الدم المزمن في المرضى العراقيين

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الخلاصة

خلفية الدراسة: ابيضاض الدم المزمن(CML) هو من أمراض الخلايا الجذعية و الذي يتطور من الطور الحميد المزمن إلى الطور العصي الحاد. و الذي يتصف بوجود كروموسوم فلاديلفيا في اكثر من ٩٠٪ من الحالات.

هدف الدراسة : لأجل تحليل الصفات الخلوية و النسيجية للنخاع العظمي بصورة مقارنة في مرض ابيضاض الدم المزمن CML في وقت التشخيص و لأثبات مشروعية التصنيف النسيجي من وجهة النظر السريرية.

طريقة العمل: لقد تم جمع الحالات المرضية وفق دراسة استعادية من المختبرات التعليمية لمدينة الطب خلال الفترة من كانون الثاني ١٩٨٥ إلى نيسان ١٩٩٤. كانت هناك عناية خاصة بالباثولوجيا النسيجية للنخاع العظمي للخزع التشخيصية لـ ٧٢ مريضاً بابيضاض الدم المزمن في وقت التشخيص قبل اي علاج مع إشارة خاصة إلى توزيع الخلايا الدموية و توزيع الخلايا العرطلية لوحدة المساحة (MKCs) و التليف الشبكي و توزيع الأوعية الدموية في وحدة المساحة و مؤشر الأرومة العظمية و عرض العظم التربيقي.

النتائج : استنادا إلى العدد و الصفات الشكلية للخلايا العرطلية MKCs تم تصنيف الحالات إلى ٣١ مريضا مصابا بابيضاض الدم المزمن الشائع (CT-CML) و ٤١ مريضا مصابا بابيضاض الدم المزمن مع زيادة الخلايا العرطلية (MI-CML). لقد أظهرت كلا المجموعتين فروقات واضحة فيما بينهما في الصفات السريرية و النسيجية و الدموية. إن صنف MI-CML اتصف بتكاثر مختلط لخلايا الدم البيض المتعادلة و الحمضية و القاعدية إلى جانب الخلايا النقية العرطلية بينما اظهر صنف CT-CML تكاثر خلايا الدم البيض المتعادلة بصورة سائدة .

الاستنتاج: إن صنف MI-CML جمّع الحالات المتصفة بصفات تكهنية غير مرغوبة مثل: عمر اكبر وطحال اكبر و فقر الدم و ازدياد الخلايا الدموية البيضاء و ازدياد الصفيحات الدموية و نسبة عالية من الأرومة الحمراء و خلايا الدم البيض القاعدية و الخلايا الطليعية الغير ناضجة (الأرومة و الخلية الطليعية النقية). من ضمن المعايير الكمية المستحصلة من خزع نخاع العظم فان النسيج الليفي الكمي كان عاليا بصورة معنوية في حالات (MI-CML).

مفتاح الكلمات : ابيضاض الدم المزمن،المرضى العراقيين،التصنيف النسيجي.

[1] فرع الباثولوجي (كلية الطب-جامعة النهرين)
[2] مركز الثلاسيميا (مستشفى الكرامة التعليمي-وزارة الصحة-بغداد)

المجلة العراقية للعلوم الطبية ٢٠٠٦ م المجلد ٥ العدد ١ ص ٣٤-٣٩

الملخصات العربية

استعمال ممصة كريات الدم الحمراء لتشخيص الورم النقيي المتعدد بجانب السرير

فالح سالم سرحان

الخلاصة

خلفية الدراسة: يعتبر قياس لزوجة البلازما من التحاليل المهمة في تشخيص الامراض المتزامنة بنظائر البروتين. كما ان استعمالها قد ازداد انتشارا في تشخيص و تقييم اضطرابات الاوعية الدموية المحيطية، مرض السكري و الامراض السرطانية المختلفة. لقد اوصت منظمة الصحة العالمية باستعمال جهاز هاركنس الالكتروني لقياس اللزوجة البلازمية، غير ان هذا الجهاز مكلف و غير متوفر على نطاق واسع.

هدف الدراسة: لذلك فان استعمال جهاز مبسط، رخيص و دقيق في نفس الوقت كممصة كريات الدم الحمراء، امر يستحق التجربة من اجل التشخيص السريع (على جانب السرير) للورم النقيي المتعدد.

طريقة العمل: تم قياس اللزوجة النسبية للبلازما باستعمال ممصة كريات الدم الحمراء في ٣٠ مريضا بالورم النقيي المتعدد و ١٥٠ شخصا سليما بالغا نصفهم نساء و نصفهم رجال. كنوع من المقارنة قمت بقياس معدل ترسب كرات الدم الحمراء لاثبات ان قياس قياس اللزوجة النسبية للبلازما يعطي فوائد كثيرة كما و يعتبر تشخيصي لوجود نظير البروتين.

النتائج: اثبتت النتائج ان اللزوجة النسبية للبلازما و معدل ترسب كرات الدم الحمراء في مرضى الورم النقيي المتعدد كانت مرتفعة بشكل كبير عن نتائج الاشخاص الطبيعيين مع فرق بالغ الجدوى احصائيا. ان نتائج اللزوجة النسبية للبلازما في الورم النقيي المتعدد يمكن اعتبارها نتائج مساندة و تشخيصية على عكس نتائج معدل ترسب كرات الدم الحمراء التي قد توجد في الكثير من الامراض الاخرى.

الاستنتاج: لقد تم اثبات ان قياس اللزوجة النسبية للبلازما باستعمال ممصة كريات الدم الحمراء تعتبر طريقة بسيطة و معتمدة و يمكن استعمالها في جانب السرير لتشخيص و فحص نشاط الورم النقيي المتعدد.

مفتاح الكلمات: لزوجة البلازما، الورم النقيي المتعدد

فرع الباثولوجي (كلية الطب-جامعة النهرين)

المجلة العراقية للعلوم الطبية ٢٠٠٦ م المجلد ٥ العدد ١ ص ٤٠-٤٣

الملخصات العربية

دراسة طبية عدلية بعد موتية لبعض الفوارق التشريحية في الغدة الدرقية عند البغداديين

فائق أمين بكر[١] ، نبيل غازي الخطيب[٢] ، معتز عبد المجيد القزاز[٣]

الخلاصة

خلفية الدراسة: لم تجر في القطر لحد الآن دراسة بعد موتيه عن الغدة الدرقية لتحديد الفوارق التشريحية فيها و نسب تواجدها.

هدف البحث : دراسة بعض الفوارق التشريحية في الغدة الدرقية عند البغداديين و تأكيد أهمية الطب العدلي في القيام بمختلف الدراسات الطبية.

طريقة العمل: أجريت دراسة ميدانية في معهد الطب العدلي ببغداد لمدة ٦ أشهر درست خلالها فوارق تشريحية مختارة من الغدة الدرقية في عينة عشوائية مكونة من ١٢٢ جثة لأجل الوصول إلى الأهداف المنشودة.

النتائج: ظهر إن وجود الفص الهرمي كان الفارق التشريحي الأكثر تواجدا في الغدة الدرقية عند البغداديين مقارنة مع الفوارق الأخرى حيث احتل ٥,٧٪ من مجموع الحالات بينما غاب البرزخ في ٤,٩٪ من الحالات و وجد الشريان الدرقي المفرد في ٤,٩٪ من الحالات و لم يكن هنالك فارق مهم إحصائي بين الذكور و الإناث.

الاستنتاج: احتل وجود الفص الهرمي اكثر الفوارق التشريحية وجودا تلاه غياب البرزخ و وجود الشريان الدرقي المفرد و بنسبتين متساويتين و لم يكن هنالك فارق مهم إحصائي بين الذكور و الإناث.

مفتاح الكلمات: بعد الموت، الغدة الدرقية، تشريح الجثة، الفوارق.

[١] معهد الطب العدلي (بغداد-وزارة الصحة)
[٢] فرع الباثولوجي و الطب العدلي (كلية الطب-جامعة بغداد)
[٣] فرع الباثولوجي و الطب العدلي (كلية الطب-جامعة النهرين)

المجلة العراقية للعلوم الطبية ٢٠٠٦ م المجلد ٥ العدد ١ ص ٤٤-٤٧

الملخصات العربية

عجز الانتباه و فرط النشاط مشكلة مهملة عند الأطفال

طارق سليم القره غولي

الخلاصة:

خلفية الدراسة: تعتبر هذه الحالة واحدة من أكثر الحالات شيوعاً عند الأطفال في سن المدرسة تعالج من قبل أطباء الأطفال و أطباء الأمراض العصبية لدى الأطفال. تتصف هذه الحالة بقلة الانتباه، فرط النشاط و التهوُر أو مركبات مشتركة من هذه الصفات. هذه الحالة (عجز الانتباه و فرط النشاط) من أكثر أسباب ضعف الأداء الدراسي لدى الطلاب. لا تزال هذه الحالة قليلة التشخيص و مهملة من قبل أطباء الأطفال.

هدف البحث: دراسة خواص حالة عجز الانتباه و فرط النشاط عند أطفالنا.

طريقة العمل: تمت دراسة ٤٢ طفلاً مصابين بحالة عجز الانتباه و فرط النشاط و تم تشخيصهم طبقاً لمواصفات الموجز الإحصائي للأمراض العقلية الطبعة الرابعة، و ذلك في العيادة الاستشارية للأمراض العصبية لدى الأطفال في مستشفى الكاظمية التعليمي للفترة من أيلول ٢٠٠٣ و لغاية أيار ٢٠٠٤. تم اختيار ٤٠ طفلاً غير مصابين بعجز الانتباه و فرط النشاط و ذلك للمقارنة و حساب المعنوية الإحصائية لخواص هذه الحالة.

النتائج: عدد الأطفال الذكور المصابين بحالة عجز الانتباه و فرط النشاط ضعف عدد الإناث. ٥٩,٥٪ من الأطفال المصابين كانوا من النوع المركب. ٤٢,٩٪ من الأطفال المصابين كان لديهم تبول ليلي و بأهمية إحصائية P= 0.01، ٧١,٤٪ من الأطفال المصابين كانوا معرضين للإصابات اليومية و بأهمية إحصائية P= 0.004، ٦١,٩٪ من الأطفال المصابين كان أدائهم المدراسي ضعيف و بأهمية إحصائية P=0.0001، ٨٠,٩% من الأطفال المصابين كان لديهم مشاكل في النوم و بأهمية إحصائية P= 0.0003 ، 69% من كل أنواع عجز الانتباه و فرط النشاط بدأت الأعراض لديهم بعد السنة السابعة من العمر و جميع الأطفال المصابين بنوع فرط النشاط فقط بدأت الأعراض لديهم قبل سن السابعة.

الاستنتاج: الأطفال الذكور معرضون للإصابة بعجز الانتباه و فرط النشاط أكثر من الإناث. النوع الأكثر شيوعاً من هذه الحالة هو النوع المركب، و الأقل شيوعاً هو نوع فرط النشاط. نوع فرط النشاط هو الأكثر شيوعاً في الأعمار الصغيرة. الأطفال المصابون بعجز الانتباه و فرط النشاط هم أكثر عرضة من غيرهم للتبول الليلي، الإصابات اليومية، ضعف الأداء الدراسي و مشاكل النوم.

مفتاح الكلمات: عجز الانتباه ، فرط النشاط ، الأطفال .

فرع طب الأطفال (كلية الطب-جامعة النهرين)

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الملخصات العربية

عوامل الأختطار في حالات الاسهال الحاد

لمياء عبدالكريم السعدي، حسام محي العلواني

الخلاصة

خلفية الدراسة: ان امراض الاسهال الحاد هو السبب الرئيسي للوفاة عند الاطفال خصوصا في الدول النامية. و السبب الرئيس للوفاة نتيجة الاسهال هو الجفاف الناتج عنه و الاسهال المزمن و مضاعفاته. أن الضرار الناتجة عن الاسهال و مضاعفاته يشكل عباءا كبيرا على الخدمات الصحية المقدمة و كذلك على الوضع الاقتصادي في هذه البلدان.

هدف الدراسة: هودراسة و معرفةالعوامل الخطرة في حلات الاسهال الحاد و التي تؤدي الى الوفاة عند الاطفال الراقدين في المستشفى دون سن الثانية من العمر.

طريقة العمل: اجريت الدراسة في مستشفى الكاظمية التعليمي للفترة ما بين ١٩٩٦–٢٠٠٠للمرضى الداخلين الى ردهة الاطفال و الذين يعانون من الاسهال الحاد و البالغ عددهم خلال هذه الفترة ٣٣٦ مريضا و كان عدد الوفيات بينهم ١١ مريضا و تمت دراسة الاسباب و الصفات العامة التي تشترك فيها جميع الحالات المتوفية خلال هذه الفترة.

النتائج: العمر (اقل من السنة الواحدة)، الاطفال قليلي الوزن بالنسبة الى اعمارهم، الرضاعة الاصطناعية، محل السكن في الاماكن الريفية، جنس الطفل المتوفي كونه ذكر و كذلك الجفاف الشديد عند دخول المستشفى هي العوامل المهمة للوفاة في حالات الاسهال الحاد عند الاطفال دون سن الثانية من العمر. ان اعمار المتوفين من الذكور هو ٨ بينما الاناث كانوا ٣ فقط. و كان عمر ٩ من المتوفين اقل من السنة و اثنين فقط هو اكثر من سنة واحدة.

الاستنتاج: ان من اهم العوامل المؤثرة على الوفاة نتيجة الاسهال الحاد هي العمر دون السنة، الجنس، قلة الوزن بالنسبة للعمر، الجنس، السكن في المناطق الريفية، طريقة الرضاعة و درجة الجفاف.

مفتاح الكلمات: الاسهال الحاد، الجفاف الشديد، عوامل الاختطار .

فرع طب الأطفال (كلية الطب-جامعة النهرين)

المجلة العراقية للعلوم الطبية ٢٠٠٦ م المجلد ٥ العدد ١ ص ٥٥-٦٠

المجلة العراقية للعلوم الطبية
ص

الملخصات العربية

الإصابات الجسدية نتيجة الاختلاجات عند الأطفال المشخصين حديثاً بالصرع قبل المعالجة

طارق سليم القره غولي

الخلاصة

خلفية الدراسة: هناك زيادة بالإصابات الجسدية أثناء الاختلاجات عند الأطفال المصابين بالصرع قبل المعالجة أو الصرع غير المسيطر عليه بالعقاقير.

هدف الدراسة: دراسة نسبة و خواص الإصابات الجسدية نتيجة الاختلاجات عند الأطفال المصابين بالصرع حديثاً قبل المعالجة.

طريقة العمل: تم جمع ٦٢ طفلاً مصابين حديثاً بالصرع قبل بدء معالجتهم من العيادة الاستشارية للأمراض العصبية لدى الأطفال في مستشفى الكاظمية التعليمي و كذلك من مراجعي العيادة الخاصة للباحث. كان لدى الأطفال على الأقل نوبتان من الاختلاجات غير المحفزة و لا يصاحبها ارتفاع في درجة الحرارة و من مختلف الأنواع. كان مجال العمر من ١–١٤ سنة. تمت الدراسة خلال ١٢ شهراً (نيسان ٢٠٠٤– آذار ٢٠٠٥). جمعت المعلومات من ذوي الأطفال حول خواص الاختلاجات و إن كان هناك إصابات جسدية مع خواصها نتيجة الاختلاجات.

النتائج: كان ١١ طفلاً (١٧,٧٪) لديهم إصابات جسدية نتيجة الاختلاجات من أصل ٦٢ طفلاً مشخصين بالصرع حديثاً قبل بدء المعالجة. تسعة أطفال (٨١,٨٪) لديهم إصابات طفيفة و اثنان (١٨,٢٪) لديهم إصابات متعددة. ثمانية أطفال (٧٢,٧٪) كانت إصاباتهم داخل البيت ، اثنان (١٨,٢٪) في المدرسة و واحد (٩,١٪) في الحديقة. معظم الإصابات (٦٣,٦٪) كانت سحجات في الرأس أو الوجه. أكثر أنواع الاختلاجات المسببة للإصابات الجسدية هي الاختلاجات التوترية الإرتعاشية العامة (الصرع الأكبر) بنسبة (٧٢,٧٪). جميع الأطفال التسعة المصابين بالصرع الغيابي (الصرع الأصغر) لم يتعرضوا إلى أي إصابات جسدية نتيجة الاختلاجات .

الاستنتاج: الإصابات الجسدية نتيجة الاختلاجات ليست نادرة و لكنها طفيفة. يجب أن نجد توازناً ما بين المحافظة على الطفل من الإصابات الجسدية عند الاختلاجات و بين حرية الطفل للتمتع بحياته الخاصة .

مفتاح الكلمات: الإصابات الجسدية، الاختلاجات، الأطفال، الصرع .

فرع طب الأطفال (كلية الطب-جامعة النهرين)

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الملخصات العربية

العلاج الجراحي للخثره تحت الام القاسيه

سمير حسن عبود

الخلاصه:
خلفية الدراسه: الخثرة المزمنه تحت الام القاسيه مرض شائع في المسنين. معظم المصابين فوق الخمسين من العمر. عادة ما تكون نتيجة اصابه طفيفه للراس، و تكون في الجانبين في ٢٥٪ من الحالات. بالرغم من كون العلاج الجراحي ناجح في معظم الحالات، فلا يزال ينطوي على نسبه مرتفعه من الوفيات و عودة المرض.

هدف الدراسه: أقتراح طريقه جديدة للعلاج الجراحي و تجربته من ناحية المضاعفات و عودة المرض.

طريقة العمل: ٢٤ حاله متعاقبه من: الخثرة المزمنه تحت الام القاسيه، شخصت بواسطة المفراس و تصوير الرنين المغناطيسي و عولجت جراحيا باستعمال تثقيب مزدوج للجمجمه، و غسل تجويف الخثره بواسطة صوندة صغيره تحرك داخل التجويف.

النتائج: المرضى كانو ٢١ رجل و ٣ سيدات. متوسط العمر كان ٥٦ سنه. العرض الاولي كان ضعف شقي في معظم الحالات، متبوعا بالصداع و التشوش الذهني. تم شفاء جميع المرضى تماما عدا واحد و عادوا الى حالتهم قبل الاصابه. لم تكن هناك وفيات او عودة للمرض.

ألاستنتاج: التقنيه المستعمله في هذا البحث توفر طريقه بسيطة و فعاله لاخلاء الخثره و تقلل فرصه عودة المرض.

مفتاح الكلمات: مزمن، خثره داخل القحف، خثره تحت الام القاسيه، العلاج الجراحي.

فرع الجراحة-شعبة جراحة الجملة العصبية (كلية الطب-جامعة النهرين)

المجلة العراقية للعلوم الطبية ٢٠٠٦ م المجلد ٥ العدد ١ ص ٦٦-٧٣

الملخصات العربية

إصابات الرأس بكيفيات غير معتادة

وليد وهيب الراوي

الخلاصة

خلفية الدراسة: بالرغم من أنّ الكيفيات الشائعة الحدوث في إصابات الرّأس هي معروفة و مثبّة في مختلف دول العالم، إلاّ أنّه هناك كيفيات غير دائمة الحدوث تحدث عن دون قصدٍ بين الحين و الآخر. هذه دراسة مسترجعة عن كيفيات غير معتادة لإصابات في الرّأس متسبّبة عن دون قصد جمعت خلال سبع عشرة سنة تحت إشراف الباحث بين الأعوام ١٩٨٦ م – ٢٠٠٣ م.

هدف الدراسة: توجيه عناية جرّاح الأعصاب الممارس إلى إحتمال حدوث مثل هذه الكيفيات التي قد تهدّد حياة المصاب.

طريقة العمل: شملت الدراسة حالات إصابات بكيفيات غير معتادة واجهت الباحث في مستشفى الطوارىء بالعمارة و المستشفى التعليمي بالبصرة و مستشفى جراحة الأعصاب ببغداد و المستشفى التعليمي بالكاظمية ببغداد أيضاً. كانت معظمها في الجهة اليمنى الصدغية و الجبهوية و غير قاتلة بالرّغم من تهديدها لحياة المصابين. كان معظم كان معظم المصابين من الذكور (٢٤، ٨٠٪) و من مختلف الأعمار. و كان سلّم كلاسكو للسبات يتراوح بين ١٢ – ١٥. كلّ الاصابات كانت مضاعفة و البعض منها نافذة للتجويف القحفي. أثبتت الفحوص الشعاعية بالأجهزة التقليدية، دون تلوين الأوعية الدموية و قبل توفّرالفحص المحوري الطبقي و الرنين المغناطيسي، جدواها و فائدتها في تقييم الكسور و نفاذية الأجسام الغريبة الى التجويف القحفي. بالرغم من أنّ قسما من كسور الجمجمة كانت خطّية، الاّ أنّ غالبيتها من النوع المنخفضة المهشمّة. لم تكن في أي من المرضى إصابات أخرى خارج الرأس. تم إجراء التداخل الجراحي، بعد إعطائهم مضادّات الصرع و المضادات الحياتية، تحت التخدير العام بتنظيف و هندمة الجرح و رفع الكسر المنخفض و رفع الجسم الغريب و خياطة الأم الجافية (أو ترقيعها باستعمال لفّفة أو صفّاق العضلة الصدغية).

النتائج: تحسّن حال جميع المرضى بدون مضاعفات و أظهروا أداءً طبيعياً في النمو و المدرسة و العمل.

الإستنتاج: تحت ظروفٍ معيّنةٍ، و خصوصاً عندما تكون الموارد المالية المتاحة محدودة، أو في حال عدم توفّر أجهزة التشخيص الشعاعي الحديثة المتطوّرة، فإنّ جهاز الأشعّة السينية الإعتيادى في فحص الجمجمة يكون كافياً للتحرّي أو كشف مدى التلف العظمي أو نفاذية الجسم الغريب للتجويف القحفي. إن كثيرا من الأدوات و المستلزمات المستعملة يومياً، و كذلك بعض الحيوانات الأليفة، في حالات معينة، قد تسبب أذىً ملحوظاً كإصابات الرأس؛ و لما كان بالإمكان منع مثل هذه الحوادث كاتّخاذ الحيطة و الحذر و بوسائل الارشاد و التثقيف، و حتّى ارتداء خوذة الحماية، فأنّ احتمال حدوثها ينبغي أن يؤخذ على محمل الجدّ و يجب التذكير المستمر بهذه الأخطار التي من الممكن أن تهدّد حياة المصاب. فبالتعرّض للإدارة العلاجية لمثل هذه الحالات، ينبغي على جرّاح الأعصاب عدم التردّد في تطبيق الأسس القياسية عند التعامل مع حالات الإصابات النافذة للتجويف القحفي.

مفتاح الكلمات: إصابات الرأس بكيفيات غير معتادة، الاصابات النافذة، الفحوص الشعاعية بالأجهزة التقليدية

فرع الجراحة (كلية الطب-جامعة دهوك)

المجلة العراقية للعلوم الطبية ٢٠٠٦ م المجلد ٥ العدد ١ ص ٧٤-٨١

الملخصات العربية

كسور الجمجمة لدى المصابين بالرّأس المراجعين لقسم الطوارىء بالمستشفى التعليمي في الكاظمية: دراسة وصفية لمائة حالةٍ متتالية

وليد وهيب الراوي[1]، ريم فارس ناصر[2]

الخلاصة

خلفية الدراسة: إنّ وجود كسرٍ في الجمجمة في المريض المصاب باصابة الرّأس الحادّة، يمثّل حالة طارئة في جراحة الأعصاب و الّتي تستوجب دخول المصاب الى المستشفى كما تعني رضحاً في الرّأس ذا أهمّيةٍ قد تصاحبه إختلاطات مهدّدة للحياة.

هدف الدراسة: دراسة كيفيات كسور الجمجمة في المرضى المصابين باصابة الرّأس الحادّة المراجعين لقسم الطوارىء بالمستشفى التعليمي في الكاظمية.

طريقة العمل: شملت الدراسة مائة مريضٍ بكيفيات مصابٍ بكسور الجمجمة و المراجعين لقسم الطوارىء بالمستشفى التعليمي بالكاظمية ببغداد للفترة من شهر تشرين أوّل ٢٠٠١ م و لغاية نهاية شباط ٢٠٠٣ م. كلّ المرضى خضعوا للفحوص الشعاعية بالأجهزة التقليديةو الفحص المحوري الطبقي بالمفراس الحلزوني؛ و قلّة منهم بجهاز الرنين المغناطيسي حيث إستوجبت الحالة السريرية.

النتائج: من هؤلاء المائة مريض، ٢٨ (٢٨٪) منهم من الاناث و ٧٢ (٧٢٪) من الذكور، تراوحت الأعمار بين ٩ أشهر – ٧٠ سنة، المعدّل ١٧٫٧ سنة ± ١٦٫٧ الانحراف المعياري؛ ٨٠ (٨٠٪) منهم من المناطق الحضرية و ٢٠ (٢٠٪) من المناطق الرّيفية. أكثر اسباب الإصابات هي السقوط من المرتفعات ٤٠ (٤٠٪)، حوادث السير ٣٧ (٣٧٪)، الإعتداء ١٣ (١٣٪)، تهدّم الأبنية ٤ (٤٪)، الغوص الى الماء ١ (١٪)، و إصابة بقذوفٍ ناريٍ نافذٍ للرّأس، و أسباب متفرّقة ٤ (٤٪). في حين أنّ ٨٦ مريضاً كان عندهم كسر واحد في الرّأس، إلاّ أنّ ١٤ مريضاً كان مصاباً بأكثر من ذلك: ١٠ مرضى بكسرين و أربعة مرضى بثلاثة كسور لكلّ واحدٍ منهم؛ مجموع كسور الجمجمة في الدراسة ١١٨ كسراً. لدي مريضين، كسران عبرا خط الوسط الى الجهة الأخرى. كانت كيفيات الكسور كالتالي: كسر شقّي ٧٨ (٦٦٫١٪)، و كسر منخفض (منخسف) ٢٤ (٢٠٫٣٪)، و كسر قاعدة الجمجمة ١٠ (٨٫٥٪)، و كسر إنشطاري في دروز الجمجمة ٦ (٥٫١٪). لدى خمسة و خمسون مريضاً تهتّك في فروة الرّأس فوق الكسور (كسور مضاعفة). فيما يتعلّق بدرجات مقياس كلاسكو للسبات، فمعظم المرضى ٦٩ (٦٩٪) منهم حازوا على ١٣ – ١٥ درجة، و ٢٢ (٢٢٪) على ٩ – ١٢، و ٩ (٩٪) منهم على ٣ – ٨ درجات. بالنسبة للورم (النزيف) الدموي: ١٤٪ خارج الأمّ الجافية، و ٣ تحت الأمّ الجافية، و حالة نزف دموي واحدة داخل المخ. بالنسبة لـلإصابات خارج القحف فانّ مريضاً واحداً اصيب بكسر عظمي الوجنتين و مريضاً أخراً بكسر عظم الفك و آخر بكسر عظم الترقوة.

الإستنتاج: معظم كسور الجمجمة في هذه الدراسة هي كسور شقّية بسيطة (غير مضاعفة) تسبّبت معظمها نتيجةً للسقوط من المرتفعات و لحوادث السير و الإعتداء و تهدّم الأبنية في الشتاء و أسبابٍ متفرّقةٍ أخرى. معظم المصابين من اليافعين و الذكور أكثر

من الاناث. في أوقات السلم تكون كسور الجمجمة المتسبّبة عن المقذوفات النارية و الرياضة غير معتادة ببغداد. إنّ الفحوصات الشعاعية التقليدية و تلك التي تجرى بالتقنيات الحديثة كالمفراس الحلزوني و بالرنين المغناطيسي تكون أساسيةً في تحديد كيفية و نوع كسور الجمجمة و فيما إذا وجد ضرر نسيجي في الدماغ مصاحب لنفس الإصابة. بالرغم من أنّ عمل إختصاصيي جراحة الأعصاب و الأشعّة كفريق واحد هو ممارسة قياسية في جراحة الأعصاب، فانّ هكذا تعاون في حالات خاصّة في كسور الجمجمة المصاحبة لإصابات الرّأس الحادّة سيحلّ المعضلات السريرية المحيّرة و يحسّن في أداء إتّخاذ القرار و ربما يساعد في تجنيب المريض تداخلاً جراحياً غير ضروري. و لمّا كانت معظم الإصابات قد وقعت في المناطق الحضرية، فانّ الباحثان يعتقدان بأنّ هذه الإصابات قد تكون من ظواهر العيش في المناطق الحضرية. و أيضاً، فانّ إنعدام الرقابة العائلية قد يكون مسؤولاً عن بعض هذه الحالات التي يمكن تفاديها. كما يعتقد الباحثان إنّ معظم الإصابات كالسقوط من المرتفعات (من سطوح المنازل مثلاً) و حوادث السير يمكن منعها باتّخاذ الإجراءات الكافية كرقابة الأسرة و التثقيف الإجتماعي و البناء السليم للمنازل و أنظمة المرور. بالرّغم من معظم الحالات حصلت على درجات عالية على مقياس كلاسكو للسبات، ممّا يشير إلى خفّة شدّة الحالة، إلاّ المعالجة المناسبة و العناية بمهارة تؤدّى إلى تجنّب الإختلاطات المهدّدة للحياة و تساعد في الشفاء.

مفتاح الكلمات: إصابة الرّأس، كسر الجمجمة، التصوير العصبي، الفحص الطبقي المحوري الحلزوني، التصوير الرنيني المغناطيسي الوريدي، الرقابة العائلية و المدرسية.

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المجلد الخامس، العدد الأول، ١٤٢٧ هـ، ٢٠٠٦م

المجلة العراقية للعلوم الطبية

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الهيئة الأستشارية

نزار الحسني (الهيئة العراقية للأختصاصات الطبية)

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Editorial:

Thoughts on Examination of Medical Students

Khalid Abdulla *FRCP*

Assessment of medical students should ideally be continuous throughout their training. In practice, however, most of the weight is put on examinations done at certain points during training, mostly at the end of terms, the end of a year or on finishing training at the end of the final year. These examinations usually consist of written, clinical and oral parts or any one or combination of these. The clinical part comprises a long case and a short case sessions. Each part is intended to assess certain qualities. Examination is not just testing medical knowledge. Ability to use this knowledge in making proper decisions, skills and attitudes are important and enter in the assessment to various degrees in different parts of the examination.

The proportion of the final mark allotted to each part of the examination takes into account the qualities that part assesses and how well it assesses them. A good examiner, therefore, confines himself in each part to what that part is intended to assess. Ignoring this may mean increasing the weight given to some qualities on the expense of others. A common practice of this kind is to convert a large proportion of the clinical examination to assessment of knowledge by asking theoretical questions on the expense of assessing the ability to use this knowledge and assessing skills and attitudes. By doing so the examiner wastes a large part of the clinical examination time in assessing attributes the assessment of which was assigned to the written examination. He also increases the proportion of the mark allotted to theoretical knowledge beyond the proportion assigned to it.

The classical clinical examination comprising a long case and short cases sessions is to a large extent subjective. An attempt to make it objective was made by the introduction of what is called the objective structured clinical examination (OSCE). Applying this needs a lot of staff and preparation which is not available to many centres. In our teaching centres, the classical long and short case examinations are practiced and are likely to remain in use for the foreseeable future. It is therefore advisable to try to make them as good and fair as possible.

The long case examination:

The aim of this is to assess the ability of the candidate to deal properly with a common and important medical problem which shows that he has encountered it during his training. Rare and mysterious cases should be avoided. Since dealing with a case includes obtaining information by history taking and physical examination, deciding on appropriate investigations, interpreting the information gathered and making decisions of management, all these abilities should be assessed. Questions and discussions should centre on the particular patient and not on the disease. Questions outside the case itself do not serve the required purpose, shorten the time left for relevant questions and unduly increase the mark given for general theoretical knowledge.

The examiner should try to ascertain as far as possible that the information told by the candidate as he presents the history and physical examination are correct by

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checking on them (or some of them) himself. Since laboratory, radiology and other technological tests form an important part of the practice of modern medicine using the results of these tests available in the patient's notes is recommended. Treatment should be included in the discussion.

The short case examination:

The main aim here is to assess the ability of the candidate to perform physical examination properly, detect physical signs, interpret them and draw rapid conclusions concerning possible diagnosis or differential diagnosis. Examining on patients without physical signs will therefore fail to fulfill these aims and may confuse the candidate. Theoretical questions which go beyond the above mentioned aims assess factual knowledge for which other parts of the examination are assigned.

Additional remarks:

1. To be fair students should be allowed equal times with their patients and be subjected for equal times to their examiners. This means they should receive their long cases at set intervals and not simultaneously and the examiner should stop when his time expires.
2. The main purpose of the examination is to assess the student. Although some examiners like to use the opportunity to teach him, this should not be allowed to affect the assessment. Therefore correcting student's mistakes, if it is to be done, should be done gently so that it does not confuse him or depress his morale. Blaming the student for his mistakes and humiliating him should be avoided however poorly he performs. The examiner's job is to give him the mark he deserves.
3. When it becomes obvious that the candidate does not know the answer to a question the examiner should leave it without dwelling on it too long and wasting time which can be used to test the candidate's competence in other areas.
4. Fluency or difficulty in English may bias the examiner. Although good English is helpful to a doctor, the examiner should keep in mind that his main job is to assess the candidate's competence in medicine.
5. The examiner is likely to be unduly affected by the last or first thing the student says or does or by some particular point the examiner likes or dislikes. It is therefore useful, on deciding the mark to revise the performance of the student in the various details of the examination and try to make an overall assessment. It is even better to have specially prepared checklists indicating the various details and the mark assigned to each.