ANALYSIS OF THYROID SURGERY FOR 100 PATIENTS IN AL-KADHIMIYA TEACHING HOSPITAL

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Abstract

Background: Goiter is a common entity in this part of the world. The objective of this study was to analyze the clinical presentations, operative findings and histopathological results of 100 patients with goiter.

Subjects & Methods: This study was conducted on 100 patients who were presented with goiter, and were operated on in Al-Kadhimiya Teaching Hospital during the period from January 2000 through January 2001.
The diagnosis of goiter has been based on the clinical examination, thyroid function tests, ultrasonography and thyroid scan. The thyroid specimens obtained by surgical intervention where sent for histopathological study. The data obtained were analyzed and the results were evaluated.

Results: Depending on clinical examination the thyroid swellings were classified into solitary nodule 30%, multinodular goiter 50% and diffuse goitre 20%. Subsequent classification of goiter on the bases of intraoperative findings and histopathological examination revealed an increase in the number of multinodular goiter to 72%. The total number of patients with confirmed solitary nodule is 20 (20%). The histopathological examination showed that simple cyst constituted 50% of solitary nodules, adenoma 40% and malignancy 10%. The total incidence of malignancy in goiter is 4%. The overall correct prediction of histopathological diagnosis by FNA is 75%.

Conclusions: The true diagnosis of MN goiter should be based on clinical examination, intraoperative findings and histopathological confirmation. More than 33% of patients with solitary thyroid nodule under clinical examination were found to have additional nodules at operation and by histopathological examination. The incidence of malignancy in goiter in general is 4%. The diagnostic accuracy of FNAC was 75%.

Key words: Goiter, Thyroid surgery, FNAC, Histopathology.

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Introduction

The thyroid gland was described by Galen (130-200A.D) but the name was applied to it after Wharton (1656) named it (Thyroid) from its proximity to the thyroid cartilage. The cartilage was named thyroid (Shield like) by Galen because of its characteristic shape[1].

Thyroid enlargement is usually due to a variety of underlying pathologic conditions either neoplastic or non-neoplastic. Clinical distinction between these two pathologies is not usually possible[2]. Clinical distinction between these two pathologies is not usually possible. Several diagnostic modalities have been used such as thyroid function test, scintigraphy and ultrasonography. Fine needle aspiration of thyroid nodules has revolutionized the diagnostic approach to nodular goitre and is widely used in identifying malignant nodules and selecting patients for surgery[2].

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By the end of 1996, 14 countries had carried out a survey of iodine deficiency disorders to assess this deficiency was a problem in their countries.
As a result they have identified iodine deficiency as a public health problem and have decided to ionize their salt[3].

Patients & Methods

One hundred patients complaining of goiter have been operated on during the period from January 2000 till January 2001. The operations where done at Al-Kadhimiya Teaching Hospital.

All the patients underwent a full history and clinical examination plus laboratory investigations including thyroid function tests, thyroid scan and Ultrasonography. Fine needle aspiration cytology is done for some of the patients.

Perioperative preparation is done for thyrotoxic patients using neomercazole and propranolol. Propranolol is given alone in some of the cases.

All the resected thyroid tissues were sent for histopathological study.

During exploration, identification of the recurrent laryngeal nerve on both sides is done to

prevent nerve damage. In some patients Redi-Vac suction drains were left behind at the operative site and removed after 48 hours.

Postoperative treatment with thyroxine is given to the patients with non-toxic goiter, after receiving the histopathological report, starting with 0.1 mg daily and changing the dose depending on the clinical examination and on T3, T4 and T.S.H levels while no thyroxine replacement therapy was given to the patients with toxic goiter postoperatively until checking of their thyroid function tests at least 6 months postoperatively.

Results

In this prospective study, the data of 100 patients who underwent thyroid surgery at Al-Kadhimiya Teaching Hospital during the period of one year is analyzed. The prospective diagnosis of goiter supported by either ultrasonography or isotope scan. The thyroid swellings were classified into solitary nodule 30%, multinodular goiter (MN) 50% and diffuse goiter 20% as shown in table (1). Subsequent classification of goiter on the bases of intraoperative findings and histopathological examination revealed an increase in the number of multinodular goiter to 72% while the solitary nodule and diffuse goiter dropped to 20% and 8% respectively as shown in table (2).The incidence of multinodular goiter in females is 72% while in males it is 71% as shown in table (3).

The family history in multinodular goiter is positive in 56% of males, while it is positive in 59% of female patients as shown in table (4).

The total number of patients with confirmed solitary nodule is 20 (20%). The histopathological examination showed that simple cyst constituted 50% of solitary nodules, adenoma 40% and malignancy 10% as shown in table (5).

The total number of patients with toxic goiter is 20 cases which represent 20% of all cases of goitre (table 6). 14 patients were with multinodular toxic goiter and representing 70% of the total number of toxic goiters and 6 patients were with diffuse toxic goiter and representing 30% of toxic goiters (table 7).

The total incidence of malignancy in goiter is 4%, the incidence of malignancy in multinodular goiter is 2.7% (2 patients) and in solitary nodules is 10% (2 patients) (table 8).

Fine needle aspiration is done for 8 patients with solitary nodule and the results were correlated with that of the histopathological reports to show the accuracy of FNA cytology in correlation with the final histopathological results. In 6 cases the FNA cytology was correctly predicted with final histopathological results. In two cases the FNA cytology results were suspicious (false positive) in correlation with final histopathological report. The overall correct prediction of histopathological diagnosis by FNA is 75% (table 9).

All the 100 patients in this study underwent thyroid surgery. The extent of thyroid surgery performed for patients with MN goiter, solitary nodule and diffuse goiter is shown in table (10). The duration of operations was ranging from 60-120 minutes .In cases with multinodular goitre, 62 patients underwent subtotal thyroidectomy. In patients with solitary nodule 18 patients underwent lobectomy and isthmectomy.

Near total thyroidectomy was done where the FNA cytology has showed papillary carcinoma and the histopathology of the specimen confirmed it. In diffuse goitre, near total thyroidectomy was done in 4 patients and subtotal thyroidectomy for the other 4 patients.

Postoperatively, the mortality rate was zero. Two patients got thyroid storm but they survived, other two patients got seroma, while only two patients got stitch abscess. In adddition, 12 patients (12%) developed atelactasis as shown in table (11).

Table 1: Types of goiter based on clinical examination aided by ultrasonography or isotope scan

Types of goiter	No. of patients	%
Solitary nodule	30	30
MN goiter	50	50
Diffuse goiter	20	20
Total	100	100

Table 2: Types of goiter based on operative and pathological findings

Types of goiter	No. of patients	Percentage
Solitary nodule	20	20
MN goiter	72	72
Diffuse goiter	8	8
Total	100	100

Table 3: Demography of 72 patients with MN goiter according to sex

Sex	No of patients	Percentage
Male	18	71
Female	54	72

Table 4: Types of MN goiter and family history incidence

Sex	No of patients	Toxic	Non toxic	Family history	%
Male	18	2	16	10	56
Female	54	12	42	32	58
Total	72	14	58	42	58.3

Table 5: Types of solitary nodules based on operative and pathological findings

Solitary nodule	No of patients	Percentage
Adenoma	8	40
Colloid cyst	10	50
Carcinoma	2	10
Total	20	100

Table 6: Total incidence of toxic goiter

	No of patients	Percentage
Toxic goiter	20	20
Non toxic goiter	80	80
Total	100	100

Table 7: Types of toxic goiter

	No of patients	Percentage
MN goiter	14	70
Diffuse goiter	6	30
Solitary nodule	0	0
Total	20	100

Table 8: The incidence of malignancy in different types of goiter

	No of patients	No of malignancy
M.N goiter	72	2 (2.7%)
Solitary nodule	20	2 (10%)
Diffuse goiter	8	
Total	100	4 (4%)

Table 9: The accuracy rate of FNAC for solitary nodules in correlation with histopathological results

No of patients with FNAC	FNAC correctly predicted with histopathology	Suspicious (False positive)	Accuracy rate
8	6	2	75%

Table 10: The extent of thyroid surgery in different types of goiter

Type of goiter	Total No. of patients	Hemithyroi-dectomy	Total thyroid-ectomy	Near total	Sub total	Isthme ctomy
MN Goiter	72	-	-	10	62	-
Solitary Nodule	20	18	-	2	-	-
Diffuse goiter	8	-	-	4	4	-

Table 11: Early postoperative complications

Complications	No. of cases
Thyroid storm	2
Seroma	2
Recurrent laryng.n.injury	-
Stitch abscess	-
Atelactasis	2
Mortality	12

Discussion

The World Health Organization (WHO) estimated that there are more than 200 million people in the world with goitre[15]. It occurs in almost every country in the world. It is still endemic in various parts of Iraq especially in the north. It is also frequently met within the middle of Iraq[16]. More than 33% of our patients with solitary thyroid nodule on clinical examination are found to have additional nodule at operation and by histopathological examination. This is not surprising since the sensitivity of clinical examination is reported to be as low as 54%[5]. The sensitivity of clinical examination in this study was 66%. We believe, like others, that the true diagnosis of multinodular goiters should be based on clinical examination, intraoperative findings and confirmation of the histopathological studies. In this study 72% of the patients were found to have multinodular goiter, and this incidence is comparable with that reported by others[5,6]. The family history is positive in more than 58% of our patients with multinodular goiter and it may be due to the interplay of many factors; such as the severity of iodine deficiency, the rate of iodine loss from the body, the relative efficiency of iodine trapping mechanism of the gland and its biosynthesis activity. This suggests a genetic factor which needs to be proved, although two patients with MN goiter included in this study were with Pendred's syndrome, where they were presented with multinodular goiter, sensorineural deafness and they were euthyroid and there were a positive family history.

Although most of the patients with Pendred's syndrome are euthyroid, some of the patients are hypothyroid. The etiology of the sensorineural deafness is not known and the disease is inherited with an autosomal recessive pattern[8].

The incidence of 20% solitary nodules is similar to that in other studies which varies from (10%-20%)[2,17]. The types of solitary nodules based on intraoperative and histopathological findings were as follows: - colloid cyst forming 50%, adenoma 30% and malignancy 10%.

The incidence of thyroid malignancy in goiter is still controversial. In this study, the total incidence in solitary thyroid nodules is 10% and in MN goiter is 2.7%. The incidence of 4%

malignancy in goiter is comparable to a study in Iraq, where they reported an incidence of malignancy in 5.7% of the thyroid specimen which they studied[11]. The incidence of 10% carcinoma of solitary thyroid nodules in this study is comparable to that reported by others 12.7%[4,6].

The incidence of 2.7% carcinoma in MN goiter in this study is lower than that reported by others (5%-30%)[5]. This discrepancy may be due to difficulties of interpreting the very varied histological pattern which may present in different parts of the gland. Further confusion has arisen from the fact that most statistics showing the incidence of carcinoma are based on examination of glands that have been removed, and taking no account to the large number of nodular thyroids that are not operated upon[10].

The incidence of hyperthyroidism among patients with thyroid swelling in this study is 20%. Seventy percent of patients with hyperthyroidism have multinodular goiter and 30% have diffuse toxic goiter (Graves' disease).

Comparison of toxic goiter incidence in different studies is shown in table 12[9,10,11].

Table 12: The incidence of toxic goiter in different studies

Study	Period	Country	Incidence
Furzyfer	1935-67	USA	19.8
Thjodleiffson	1938-67	Iceland	12
Thommesen	1964-68	Denmark	22
Mogenson	1972-74	Denmark	27
Haraldson	1980-82	Iceland	23
Barker	1982	UK	22
Adel M. Ahmed	1993	Iraq	19
Our study	2002	Iraq	20

The incidence of Graves' disease appears to differ in our locality compared with 80% incidence in western countries[17]. A study in Saudi Arabia showed that 20% incidence of Graves' disease among the patients with thyrotoxicosis[12].

This low incidence could be due to the fact that our patients consult their doctors late, and that diffuse goiter in some cases progresses to MN goiter over a period of 10-20 years[14].

The results of FNA cytology were correlated with the histological results of the thyroid specimens. The accuracy of FNAC in this study was 75%, while 25% was suspicious (false positive), which is similar to the results in Saudi Arabia[2]. In other studies, the accuracy of FNAC varies from 83% to 99%[4]. Criteria for papillary carcinoma are non-specific and can occur in other lesions[12].

All our patients underwent thyroid surgery, and in the majority of them, subtotal thyroidectomy was done, but none of them is subjected to total thyroidectomy.

Regarding the postoperative complications, the mortality rate is zero. Two patients has got thyroid storm, but they survived though it is mentioned that the incidence of thyroid crisis is rare. In this study the incidence is high because some of our patients with toxic goiter are prepared with propranolol alone, due to the non availability of carbimazol in some circumstances.

Two patients have got seroma, the serous fluid was aspirated and the patients became well. None of our patients has got hemorrhage, and this is due to the precise ligation of thyroid vessels and perfect hemostasis.

The incidence of tetany is zero. This result not reflects the true incidence of hypocalcemia, as we did not do serum calcium measurement postoperatively. Other studies reported incidence of 2.8% postoperative hypocalcemia[13]. It is stated that ligation of the inferior thyroid artery distal to the end arteries supplying 90% of the parathyroid glands, will prevent the postoperative parathyroid insufficiency.

After total thyroidectomy the incidence of hypothyroidism is up to 29%[17].

Postoperative recurrent laryngeal nerve injuries, is not reported in this study, possibly due to meticulous dissection and identification of the recurrent laryngeal nerves during operation. Furthermore, none of our patients where subjected to total thyroidectomy. After total thyroidectomy, the recurrent laryngeal nerve damage is reported at an incidence of up to 23% of patient with thyroid malignancy[14].

Conclusion

The true diagnosis of MN goiter should be based on clinical examination, intraoperative findings and histopathological confirmation. More than 33% of patients with solitary thyroid nodule under clinical examination, ere found to have additional nodules at operation and by histopathological examination.

On the bases of surgery 72% of the patients with goiter had MN goiter, while 20% of them had

solitary nodules and 8% of them had diffuse goiter.

The incidence of malignancy in goiter in general is 4% based on the findings that the incidence of malignancy in solitary nodules was 10% and in MN goiter was 2.7%. No malignancy was found in diffuse goiter.

The incidence of thyrotoxicosis among patients with goiter in general was 20% .Seventy percent of them were with toxic MN goiter and 30% of them had diffuse toxic goiter. The diagnostic accuracy of FNAC was 75%.

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