

Bell's Palsy: Evaluation of Clinical Response to Medical Treatment

Hasan A Al-Hamadani¹ FICMS, Atheer J Abdul-Ameer² FICMS, Ahmed N Abed³ FICMS,
Munther T Hamzah⁴ FIBMS

¹Dept. medicine, Section of Neurology, ²Dept. of Community Medicine, College of Medicine, Al-Nahrain University, ³Dept. of Medicine, Aldiwaneya Teaching Hospital, Al-Diwaniya, ⁴Dept. of Medicine, Al-Kadhimiya Teaching Hospital, Baghdad.

Abstract

Back ground	Corticosteroid and antiviral agents are widely used to treat the acute phase of Bell's palsy but their effectiveness is still uncertain.
Objective	This study aimed to compare the therapeutic effect of Acyclovir and steroid versus steroid alone, in combination with physiotherapy, in patients with Bell's palsy.
Methods	This interventional study was conducted in Al-Yarmok Teaching Hospital and Al-Kadhimiya Teaching Hospital, during the period from July 2007 to July 2008. It involved (58) patients, who were divided into two groups: Group A; 28 patients, treated by steroid for 10 days. Group B; 30 patients, treated by steroid and acyclovir for 10 days. Physiotherapy for one month for both groups was followed and reassessment according to House-Brackmann grading system was done after completion of each therapy.
Results	The recovery of patients treated with steroid and Acyclovir was (66.6%), while the patients treated with steroid alone was (46.4%), however, the difference was statistically insignificant. After one month physiotherapy the responses were (76.7% and 53.5%) for patients in both groups respectively.
Conclusion	The addition of Acyclovir therapy in Bell's palsy has not found to be beneficial.
Keywords	Bell's palsy, Corticosteroid, Antiviral agents, Physiotherapy.

Introduction

Bell's palsy is a dysfunction of the seventh cranial nerve that results in the paralysis of the facial muscles on the affected side of the face ⁽¹⁾. It has an annual incidence of 11 to 40 cases per 100000 population ⁽²⁾. Male and female, are equally affected, although the incidence was found to be higher in pregnant women (45 cases per 100000) ⁽³⁾.

Many patients recover without intervention; however, up to 30% have poor recovery of facial muscle control and experience facial disfigurement, psychological trauma, and facial pain ⁽²⁾. Two main types of pharmacological treatment have been used to improve outcomes

from Bell's palsy: steroids and antivirals ⁽⁴⁾. Recent guidelines from the American Academy of Neurology suggest that acyclovir combined with prednisone is "possibly effective" for Bell's palsy ⁽⁵⁾. Two recent placebo-controlled trials demonstrated full recovery in a higher percentage of patients treated with an antiviral drug in combination with prednisolone than with prednisolone alone ⁽⁶⁾. The rationale for these treatments is based on the presumed pathophysiology of Bell's palsy, namely inflammation and viral infection ⁽²⁾. In 2001 a report of the quality standards subcommittee of the American Academy of Neurology mentioned

that the available evidence suggests that steroids are probably effective and acyclovir (combined with prednisone) is possibly effective in improving facial functional outcomes and a well-designed studies of the effectiveness of treatments for Bell's palsy are still needed⁽⁷⁾.

The objective of this study is to determine whether steroids plus antivirals provide a better degree of facial recovery in a sample of Iraqi patients with Bell's palsy than steroids alone.

Methods

This study was performed in Al-Yarmouk Teaching Hospital and Al-Kadhimiya Teaching Hospital (2 of the main teaching hospitals in the capital Baghdad, Iraq) from July 2007 till July 2008.

A randomized controlled trial was done on 58 patients attended the consultant of neurology complaining from symptoms suggestive of Bell's palsy. Patients consent to participate in the study was taken verbally from the patient.

Detailed history was taken from each patient and all patients were clinically examined of seventh cranial nerve in addition to the systemic examination. Then the patients were graded according to House–Brackmann grading system⁽⁸⁾. House–Brackmann grading system started with grade I, normal facial in all areas and ended in grade VI with total paralysis. All were sent for routine laboratory investigations including: Complete blood picture, ESR, blood sugar, metabolic screen, and connective tissue screen, to identify or exclude any associated illness which may interfere directly or by its treatment with the outcome of Bell's palsy.

Then the patients were randomly assigned to two groups:

Group (A): Included 28 patients, who received medical treatment in the form of Prednisolone tablets, 60 mg/day in divided doses, for 5 days, tapered gradually over the next 5 days. Then those patients were reevaluated clinically according to House-Brackmann grading system for Bell's palsy.

Group (B): Included 30 patients, who were put on medical treatment in the form of oral

Prednisolone tablets, 60 mg/day in divided doses, with Acyclovir tablets, 400 mg, five times per day, for 10 days. Then these patients were reevaluated clinically according to House-Brackmann grading system for Bell's palsy.

After the medical treatment the patients in both groups were referred for physiotherapy in a physiotherapeutic department. Again they were reevaluated clinically after 4 weeks of physiotherapy.

The physiotherapy included:

1. Electrical Stimulation:

The electrical stimulation was done using a special electrical machine. It is usually started after the first week of medical treatment. One electrode is put on a finger of the hand and the other electrode was used as a stimulator for the facial muscles supplied by VII cranial nerve on selected points for few seconds on each point.

The usual voltage of the current is 100 μ V, while the intensity of the current ranged from 0 - 10, according to the patient's sensitivity to the current. Each setting lasted from 10 - 15 minutes. The number of sessions was depending on the response of the patient (from one week – one month, or more).

2. Facial Massage:

Facial massage was used after electrical stimulation either daily or on alternate day using the following techniques:

- a. Stroking: By applying powder on the face and massaging of the face by the hands of the physiotherapist. Rubbing started from the angle of the jaw to the angle of the mouth, and then to the temporal area. This rubbing was repeated with the same manner for at least 10 minutes.
- b. Percussion: By tapping the muscles of facial expression by fingers, for 10 minutes.
- c. Instruct the patients to do certain maneuvers at home, such; blowing, snuffing the nose, and rapid closing and opening of the eye, for 10 times daily or more in front of the mirror. Also all the patients were instructed to use antibiotic eye ointment daily.

Best clinical response was considered as clinical improvement and full recovery from the condition.

Data analysis was performed using descriptive statistics, Chi square, and student's t-test for proportions whatever applicable. The statistical package of social sciences (SPSS) version 15 was used for data input and analysis. P values of less than 0.05 were considered as statistically significant.

Results

The fifty eight patients participated in this study were between (18-47 years) of age, thirty seven of them were females making male:female ratio about 1:1.8. According to House-Brackmann score the patients were assessed before starting the treatment and found to be between grade 4 (G4) and grade 6 (G6) [as moderately severe to total paralysis]. Their distribution into the two treatment groups (A and B) are shown in table 1.

Table 1. Distribution of patients according to House-Brackmann’s grading system for Bell’s palsy in both groups before starting treatment.

Grade	Group A		Group B	
	No.	%	No.	%
G4	6	21.42	7	23.33
G5	14	50	15	50
G6	8	28.57	8	26.6
Total	28	100	30	100

$\chi^2 = 0.04 \quad P = 0.98$

After 10-days medical treatment reassessment revealed that the best clinical response occur in 13 patients out of the 28 (46.4%) for patients treated with Prednisolone, and in total 20

patients out of 30 (66.7%) had clinical improvement to treatment with steroids and acyclovir, however the difference in the proportions were insignificant $P = 0.12$ (table 2).

Table 2. Distribution of patients improved by treatment according to House-Brackmann’s grading system for Bell’s palsy in both groups after using drugs alone.

Grade	Group A		Group B		Significance*
	No./total	%	No./total	%	
G4	4/6	66.67	5/7	71.43	$P = 0.85$
G5	7/14	50	12/15	80	$P = 0.09$
G6	2/8	25	3/8	37.5	$P = 0.59$
Total	13/28	46.43	20/30	66.67	$P = 0.12$

*Student's t-test for proportion

Patients in both treatment groups underwent physiotherapeutic treatment at hospital and at home for one month, then reassessed clinically according to House-Brackmann grading, there

was an additional number of patients who got clinical improvement within each grade but with no statistically significant difference between both treatment groups (table 3).

Table 3. Distribution of patients improved by treatment according to House-Brackmann grading system for Bell's palsy in both groups after using drugs and physiotherapy

Grade	Group A		Group B		Significance*
	No./total	%	No./total	%	
G4	5/6	83.33	6/7	85.71	$P = 0.91$
G5	8/14	57.14	13/15	86.67	$P = 0.08$
G6	2/8	25	4/8	50	$P = 0.30$
Total	15/28	53.57	23/30	76.67	$P = 0.06$

* Student's t-test for proportion, #OR= 0.35 (95% C.I.=0.1-1.24)

Discussion

This study involved (58 patients) had onset of Bell's palsy of (3-5 days) duration, with male:female ratio of 1:1.76 that differs from many studies which reported equal male:female ratio of Bell's palsy or slightly in males more than females^(9, 10, 11).

Recovery rate of the 28 patients treated with steroid alone was (46.4%), and this was less than the recovery rate (61.8%) of the 34 patients reported by Shahidullah *et al*⁽¹²⁾, (65.2%) of the 210 patients reported by Engstorm *et al*⁽¹⁰⁾, (74.5%) of the 47 patients reported by Yeo *et al*⁽⁹⁾, (74.8%) of the 107 patients reported by Hato *et al*⁽⁶⁾, and the recovery rate (83.0%) of the 130 patients reported by Sullivan *et al*⁽¹¹⁾ who were treated by steroid alone.

On the other hand, recovery rate of the 30 patients treated with steroid and acyclovir was (66.7%), and this was close to the recovery rate (65.0%) of the 206 patients reported by Engstorm *et al*⁽¹⁰⁾, but less than the recovery rate (79.9%) of the 124 patients reported by Sullivan *et al*⁽¹¹⁾, (81.8%) of the 44 patients reported by Yeo *et al*⁽⁹⁾, (82.5%) of the 114 patients reported by Hato *et al*⁽⁶⁾, and the recovery rate (94.1%) of the 34 patients reported by Shahidullah *et al*⁽¹²⁾ who were treated by steroid and antiviral therapy.

Despite the addition of physiotherapy in the treatment regimen treating Bell's palsy with antivirals plus corticosteroid may lead to slightly higher recovery rates (66.67%) compared to treating with prednisone alone (46.43%), but this does not reach statistical significance. This goes with the conclusion of many studies^(6,9,10,11,) and 4 meta analyses who found that antivirals did

not provide an added benefit in achieving recovery compared with steroids alone in patients with Bell's palsy^(2,13,14,15). This result may explained by the nerve palsy is due to the effect of the edema of the inflammatory reaction of the infection rather than the infection itself.

In conclusion: in spite of the small sample size of this study but it can be concluded that adding of Acyclovir in patients with Bell's palsy, had no significant improvements, as compared to those treated by steroid alone.

References

- Oskoyi DS, Abedi A. Survey of Enviromental factors in incidence of Bell's palsy in Ardabil. Res J Biol Sci. 2008; 3 (1): 18-20.
- Quant EC, Jeste SS, Muni RH, et al. The benefits of steroids versus steroids plus antivirals for treatment of Bell's palsy: a meta-analysis. BMJ. 2009; 39: b3354.
- Holland NJ, Weiner M. Recent developments in Bell's palsy. BMJ. 2004; 329: 553-7.
- Gilden DH. Clinical practice. Bell's palsy. N Engl J Med. 2004; 351: 1323-31.
- Grogan PM, Gronseth GS. Practice parameter: Steroids, acyclovir, and surgery for Bell's palsy (an evidence-based review): report of the Quality Standards Subcommittee of the American Academy of Neurology. Neurology. 2001; 56: 830-6.
- Hato N, Yamada H, Kohno H, et al. Valacyclovir and prednisolone treatment for Bell's palsy: a multicenter, randomized, placebo-controlled study. Otol Neurotol 2007; 28: 408-13.
- Grogan PM, Gronseth GS. Practice parameter: steroids, acyclovir, and surgery for Bell's palsy (an evidence-based review) report of the quality standards subcommittee of the American Academy of Neurology. Neurology. 2001; 56: 830-836.
- House JW, Brackmann DE. Facial nerve grading system. Otolaryngol Head Neck Surg. 1985; 93: 146-7.
- Yeo SG, Lee YC, Park DC, et al. Acyclovir plus steroid vs

- steroid alone in treatment of Bell's palsy. *Am J Otolaryngol.* 2008; 29(3): 163-6.
10. Engstrom M, Berg T, Stjernquist-Desatnik A, et al. Prednisolone and valaciclovir in Bell's palsy: a randomised, double-blind, placebo-controlled, multicentre trial. *Lancet Neurol.* 2008; 7: 993-1000.
 11. Sullivan FM, Swan IR, Donnan PT, et al. Early treatment with prednisolone or acyclovir in Bell's palsy. *N Engl J Med.* 2007; 357: 1598-607.
 12. Shahidullah M, Haque A, Islam MR, et al. Comparative study between combination of famciclovir and prednisolone with prednisolone alone in acute Bell's palsy. *Mymensingh Med J.* 2011 Oct; 20(4): 605-13. [Abstract].
 13. Numthavaj P, Thakkestian A, Dejthevaporn C, et al. Corticosteroid and antiviral therapy for Bell's palsy: A network meta-analysis. *BMC Neurology.* 2011; 11: 1-10.
 14. de Almeida JR, Al Khabori M, Guyatt GH, et al. Combined corticosteroid and antiviral treatment for Bell palsy: a systematic review and meta-analysis. *JAMA.* 2009; 302(9): 1003-4. [Abstract]
 15. Goudakos JK, Markou KD. Corticosteroids vs corticosteroids plus antiviral agents in the treatment of Bell palsy: a systematic review and meta-analysis. *Arch Otolaryngol Head Neck Surg.* 2009; 135(6): 558-64. [Abstract]

Correspondences to: Dr. Hasan A Al-Hamadani

E-mail: hah_hamdani@yahoo.com

Received 3rd Apr. 2012: Accepted 10th Sept. 2012.