



Original Research Article

A retrospective study on management of bell's palsy in a tertiary care hospital

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ABSTRACT

Introduction: Bell's palsy is the most common facial nerve disorder. The clinical symptoms of Bell's palsy include facial muscle paralysis, difficulty in eating, drinking and talking. Bell's palsy management is still controversial. Many patients recover spontaneously; some require medicines like corticosteroids, antiviral drugs and other managements.

Aim: To study the effectiveness of Bell's palsy management that has been followed in our institution.

Materials and Methods: This analysis had carried out from June 2016 to June 2019 at SRM Medical College Hospital and Research Institute, Chennai. Total of 30 patients with Bell's palsy who had admitted in the Department of Otorhinolaryngology had enrolled in this study. All the patients underwent thorough clinical examination and laboratory investigation, and the results were statistically analyzed and discussed.

Results: Out of 30 patients, 16(53%) patients were males, and 14(47%) patients were females. 53.3% of patients had onset of symptoms after 48 hours. There was a statistical significant improvement in House-Brackman scale on 6 months follow-up.

Conclusion: The therapeutic measures for Bell's palsy if initiated within 72 hours of onset aids in bringing better outcome and improves the quality of life in patients.

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1. Introduction

Bell's paralysis is characterized by a sudden onset of paralysis or muscle weakness on one side of the facial nerve supplies. It is also known as facial paralysis of the acute idiopathic lower motor neurons. Various etiological factor contributes to facial nerve paralysis include trauma, infection, neoplasm, autoimmune reaction, ischemia and by birth, but still, the causing factor of Bell's palsy is unknown.¹⁻⁵ Many viruses like HIV, EBV and HBV had reported as triggering organism, but HSV is the most involved.⁶

The early signs of Bell's palsy are inability to close the mouth and the eye on the affected side causing dryness of mouth and eye, reduced taste on the affected side; altered

taste on the anterior two-thirds of the tongue and late signs will be ear pain, synkinesis, facial spasm and contracture, Peripheral dysfunction of the facial nerve, Dysfunctional lacrimation, noise intolerance, hyperacusis and abrupt onset (over hours), with maximal facial weakness at 24 to 72 hours. The resulting impairment can contribute to significant emotional distress during bell palsy.

Bell's palsy incidence is about 20 to 30 cases for 100,000. Either sex is equally affected and may occur at any age, the median age is 40 years, and the incidence is lowest under 10 years of age and highest in people over the age of 70. Left and right sides are equally affected.

Most of the patients do not need any laboratory investigation, thorough history taking, and clinical examination is more than enough. If the symptoms persist and paralysis is present, and there is no improvement, then

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the laboratory investigation is much needed. However, diagnosis and early prediction of the course of the disease are essential to avoid irreversible axonal damage. In determining the degree of nerve damage and potential subsequent dysfunction, electrophysiological tests can give useful information. The results of the Topo diagnostic test and electrophysiological test like an EMG, ENOG, NCT also aid in the prognosis.

Therapeutic management of Bell's palsy is still controversial. Corticosteroids considered to be the most commonly accepted bell palsy medication with or without antiviral medicine.⁷⁻⁹ If the pain has been present for more than ten days, then no medical treatment is needed. Most widely used corticosteroids include prednisone 1mg/kg bd weight in divided doses for five days and then tapered, IV methylprednisolone 500mg single dose. The leading cause of Bell's palsy is inflammation and oedema, inducing irritation of the facial nerve as it passes through the fallopian canal. Potent anti-inflammatory agents such as oral corticosteroids target the inflammatory processes, presumably decreasing nerve oedema and thereby results in the normal facial nerve function. Protection of eyes is necessary. Surgical treatment includes surgical nerve decompression. Other treatment modalities include electrotherapy, facial exercise, botulinum toxin injection. Therefore, we conducted a retrospective study to evaluate systematically the effects of treatment method that has followed in our institution for our patients with Bell's palsy.

2. Aim

To study the effectiveness of Bell's palsy management that has been followed in our institution.

3. Materials and Methods

This retrospective study had conducted in SRM Medical College Hospital and Research Institute, Chennai, from June 2016 to June 2019. Thirty patients diagnosed with Bell's palsy who had admitted in the Department of Otorhinolaryngology had enrolled in this study. Cases with indications of the steroid treatment were selected. Exclusion criteria including patients with paralysis of other cranial nerves, passing more than three days of onset of symptoms, patients with age below 18 years and above 60 years, suspected Ramsay Hunt syndrome, meningitis, myelitis or vasculopathy, uncontrolled diabetes, hypertension, neuropsychiatric disease and refusal to participate in the study.

All the cases underwent thorough history taking and a detailed clinical examination, topo diagnostic tests like Schirmer's test and electrodiagnostic test like EMG, ENOG and Nerve conduction time test. All the patients were graded by House-Brackman grading system according to their severity of the facial palsy. All patients received prednisone

1mg/kg/body wt. in divided doses for five days and then tapered, antiviral consisted of Valacyclovir 1 gram, three times a day for five days, gingiko Biloba 120mg, oral vitamin B-complex and multi oral vitamin, vitamin C and facial physiotherapy is given according to the strength-duration curve and eye care. Steroids had given as Guideline development group, ten days' course of oral steroids with at least five days at a high dose (prednisone 60mg for five days and then five days' taper) within 72hours of onset.

The nerve conduction time was performed on the eighth and 14 days' post-onset using electromyography machine. The facial nerve was percutaneously stimulated just below the ear by a bipolar electrode and anterior to the mastoid process. A pulse current of 0.2 milliseconds was then applied with an intensity greater than that needed for maximum response to be achieved. The time of nerve conduction was either read directly from the cathode tube or a photograph. The mean facial nerve conduction time for an unaffected side was 3.53 milliseconds, and the maximum time for the normal facial nerve is 4.3 milliseconds.

After two weeks of the onset of facial palsy electromyography test had conducted. The following six muscles had examined orbicularis oculi, zygomaticus major, orbicularis oris, levator labia superior and depressor angular oris. The presence or absence of Blink reflux was analyzed simultaneously and classified as favourable or unfavourable.

For follow up, patients had instructed to visit the hospital assessment on 3rd week, 3rd and 6th month of treatment. According to House-Brackman grading system, the response was graded as complete recovery (grade 1), a partial recovery (grade 2-5), and no response (grade 6) and also depending on the duration of onset of Bell's palsy.

4. Results

Out of 30 patients, 16(53%) patients were males, and 14(47%) patients were females.

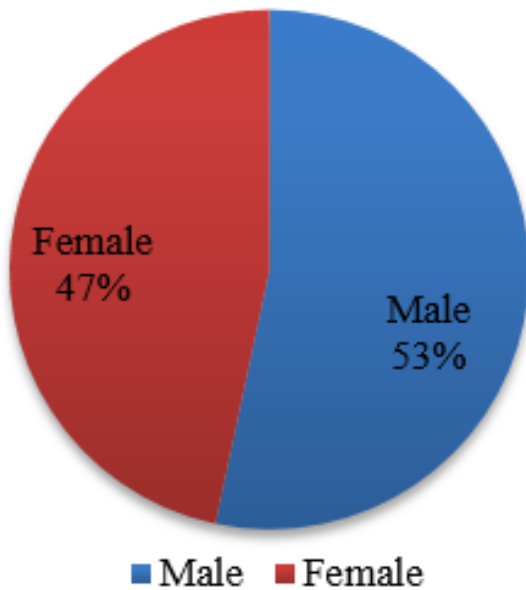
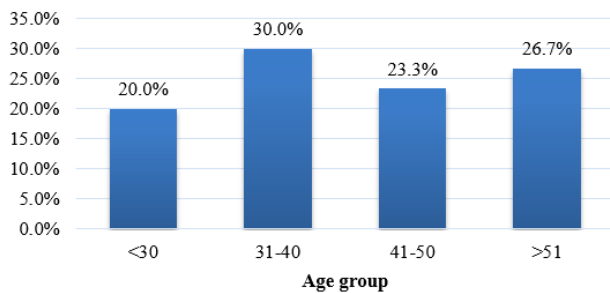
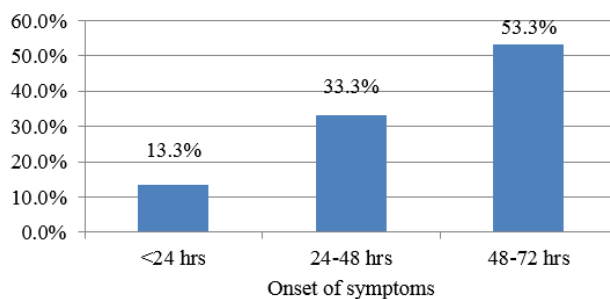
Out of 30 patients, 16(53%) patients were males, and 14(47%) patients were females. Based on age group 6(20%) patients had age less than 30 years, 9(30%) patients between 31-40 years, 7(23.3%) patients between 41-50 years and 8(26.7%) patients greater than 51 years.

Out of 30 patients, 16(53%) patients were males, and 14(47%) patients were females. Based on the onset of symptoms, 4(13.3%) patients had symptoms within 24 hours, 10(33.3%) patients had 24-48 hours, and 16(53.3%) patients had 48-7 hours.

Out of 30 patients, 16(53%) patients were males, and 14(47%) patients were females. Based on house- Brackman grading in baseline category four patients had grade 2, eleven patients had grade 3; twelve patients had grade 4, three patients had grade 5. By the end of 3rd-week, four patients had grade 0, six patients had grade 1, five patients had grade 2, twelve patients had grade 3, two patients had grade 4, one patient had grade 5. And at 3rd-month eight

Table 1: Cross-tabulation between House-Brackman grading scale.

House-Brackman grading	Grade 0	Grade 1	Grade 2	Grade 3	Grade 4	Grade 5	Grade 6	P-value
Baseline	0	0	4	11	12	3	0	<0.0001
3rd week	4	6	5	12	2	1	0	
3rd month	8	7	7	6	1	1	0	
6th month	14	5	7	3	1	0	0	

**Fig. 1:** Gender distribution.**Fig. 2:** Age distribution.**Fig. 3:** Onset of symptoms.

patients had grade 0, seven patients had grade 1, seven patients had grade 2, six patients had grade 3, one patient had grade 4, one patient had a grade . At 6th-month 14 patients had grade 0, five patients had grade 1, seven patients had grade 2, three patients had grade 3, one patient had grade 4.

5. Discussion

Among 30 patients who underwent treatment, we graded the facial nerve paralysis with house Brackman Grading. In our study, the rate of complete recovery is in 90 percent of the patients, and around 10 percent of the patient had partial recovery due to the delay in the start of treatment especially if the therapy had started after 72 hours' onset.

In our study male and females had equal proportion and age distribution suggest that mostly it affects the younger age compared to older age and majority had onset of symptoms within 72 hours.

A study done by Mathews WB et al¹⁰ showed that the path of the disease could be badly affected by older age. In his study, Heath et al¹¹ found that the mean age of patients with rapid and full recovery was 35.8 ± 15.9 years, while patients with incomplete recovery were 55.4 ± 18.8 years, respectively.

Gordana Djordjević, Stojanka Djurić et al. have shown in their clinical trials that, within the first two weeks of the disorder, a certain number of patients had a changing neurological deficit. They say that in the early phase of the disease,¹² the prognosis depending on the degree of the motor deficit was substantially reduced.

May M et al¹³ and Hauser WA et al¹⁴ suggest that the majority of patients with symptoms of incomplete third and fourth-degree facial paralysis had a fast and full recovery on the fourteenth day of the disease.

Research by Yasukawa et al¹⁵ found that 80 percent of 47 Bell's palsy patients had < 90 percent facial nerve degeneration, all of whom improved satisfactorily within 4 months. Another research by Wang et al¹⁶ showed that 22 patients with full facial paralysis showed that 83.3 percent of those < 90 percent loss of ENOG response had a complete recovery, while 70 percent had partial recovery at 6 months after the onset of Bell's paralysis. In his study, Hato et al.¹⁷ suggested that the recovery rate was higher in patients treated with valacyclovir and prednisolone than in patients treated with prednisolone alone. A study performed by Kawaguchi et al.¹⁸ found that 34% of patients with bell

paralysis had VZV, HSV-1 reactivation and the recovery rate was substantially higher than prednisolone in patients receiving combined prednisolone and valacyclovir.

6. Conclusion

Various management strategies have been followed worldwide for Bell's palsy. From this study, we concluded that managing Bell's palsy in the early three days had a good recovery rate and patients had fewer symptoms alone. Management of Bell's palsy followed in our institution is more successful and the therapeutic measures for Bell's palsy if initiated within 72 hours of onset aids in bringing better outcome and improves the quality of life in patients.

7. Conflict of Interest

The authors declare that there are no conflicts of interest in this paper.

8. Source of Funding

None.

References

- Hadar T, Tovi F, Sidi J, Sarov B, Sarov I. Specific IgG and IgA antibodies to herpes simplex virus and varicella zoster virus in acute peripheral facial palsy patients. *J Med Virol*. 1983;12(4):237-45. doi:10.1002/jmv.1890120403.
- McCormick D. Herpes simplex virus as a cause of Bell's palsy. *Lancet*. 1972;299(7757):937-9. doi:10.1016/s0140-6736(72)91499-7.
- Adour KK, Bell DN, Hilsinger RL. Herpes simplex virus in idiopathic facial paralysis (Bell palsy). *JAMA*. 1975;233:527-30.
- Devriese PP. Compression and Ischaemia of the Facial Nerve. *Acta Otolaryngol (Stockh)*. 1974;77(1-6):108-18. doi:10.3109/00016487409124605.
- Abramsky O, Webb C, Teitelbaum D, Arnon R. Cellular immune response to peripheral nerve basic protein in idiopathic facial paralysis (Bell's palsy). *J Neurol Sci*. 1975;26(1):13-20. doi:10.1016/0022-510x(75)90109-4.
- Murakami S. Bell palsy and herpes simplex virus: identification of viral DNA in endoneurial fluid and muscle. *Ann Intern Med*. 1996;124:27-30.
- Bauer CA, Coker NJ. Update on Facial Nerve Disorders. *Otolaryngol Clin North Am*. 1996;29(3):445-54. doi:10.1016/s0030-6665(20)30366-2.
- Adour KK. Medical Management of Idiopathic (Bell's) Palsy. *Otolaryngol Clin North Am*. 1991;24(3):663-73. doi:10.1016/s0030-6665(20)31121-x.
- Adour KK, Ruboyianes JM, Trent CS, Doersten PV, Quesenberry CP, Byl FM, et al. Bell's Palsy Treatment with Acyclovir and Prednisone Compared with Prednisone Alone: A Double-Blind, Randomized, Controlled Trial. *Ann Otol Rhinol Laryngol*. 1996;105(5):371-8. doi:10.1177/000348949610500508.
- Mathews WB. Prognosis in Bell's palsy. *BMJ*. 1961;2:215-7.
- Heath JP, Cull RE, Smith IM, Murray JAM. The neurophysiological investigation of Bell's palsy and the predictive value of the blink reflex. *Clin Otolaryngology All Sci*. 1988;13(2):85-92. doi:10.1111/j.1365-2273.1988.tb00747.x.
- Djordjević G. Stojanka Djurić Early prognostic value of electrophysiological tests in Bell's palsy - estimating the duration of clinical recovery. *Med Biol*. 2005;12(1):47-54.
- May M, Wette R, Hardin WB, Sullivan J. The use of steroids in Bell's palsy: a prospective controlled study. *Laryngoscope*. 1976;86(8):1111-22. doi:10.1288/00005537-197608000-00003.
- Hauser WA, Karnes WE, Annis J, Kurland LT. Incidence and prognosis of Bell's palsy in the population of Rochester, Minnesota. *Mayo Clin Proc*. 1971;46:258-64.
- Yasukawa M, Yasukawa K, Ohnuma H. Prognostic diagnosis of facial palsy with electroneurography. *Masui-Jap J Anesth*. 1995;44:378-87.
- Wang Y, Zhang S, Xu H. A report of 164 cases of Bell's palsy. *Chin J Otorhinolaryngol*. 1996;31:334-7.
- Hato N, Matsumoto S, Kisaki H, Takahashi H, Wakisaka H, Honda N, et al. Efficacy of Early Treatment of Bell's Palsy With Oral Acyclovir and Prednisolone. *Otol Neurotol*. 2003;24(6):948-51. doi:10.1097/00129492-200311000-00022.
- Kawaguchi K, Inamura H, Abe Y. Reactivation of herpes simplex virus type 1 and varicella-zoster virus and therapeutic effects of combination therapy with prednisolone and valacyclovir in patients with Bell's palsy. *Laryngoscope*. 2007;117(1):147-56.

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