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A review on bell palsy: Etiology, epidemiology, pathophysiology, diagnosis, management strategies and treatment modalities

Priyanka Tanwar[1*], Mamta Naagar[2], Manish Kumar Maity[2]
[1] Department of Pharmacology, Bhagvan Mahavir Institute of Medical Sciences, Sonipat, Haryana, India
[2] Department of Pharmacy Practice, Maharishi Markandeshwar (Deemed to be University), Mullana, Ambala, Haryana, India
Corresponding Author: rphpriyanka1995@gmail.com

Abstract
The most prevalent kind of unilateral, sudden-onset peripheral paralysis of the seventh cranial nerve is called bell palsy. This is an idiopathic illness that results in alterations to taste, sensitivity to hearing, lacrimation, and salivation, as well as partial or total weakening of one half of the face. This study will provide an overview of the assessment and treatment of Bell palsy as well as the function of the interprofessional team in enhancing patient care.

Keywords: Bell palsy, facial nerve, paralysis, salivary gland

Introduction
The most prevalent kind of unilateral, sudden-onset peripheral paralysis of the seventh cranial nerve is called bell palsy. The diagnosis which is one of exclusion is often made after a physical examination. The branches of the face nerve are intracranial, intratemporal, and extratemporal. The facial nerve supplies taste to the anterior two-thirds of the tongue in addition to motor and parasympathetic functions. Moreover, this nerve regulates the lacrimal and salivary glands. The lower and upper face muscles are under the motor function of the peripheral facial nerve. Bell palsy diagnosis thus necessitates close observation of forehead muscular strength. A primary source of weakness should be taken into consideration if forehead strength is maintained. Despite doubts about the effectiveness of antivirals, medical intervention is still necessary, and the majority of researches advise combining corticosteroids with antiviral drugs [1, 2, 3]. The most frequent cause of unilateral facial paralysis is bell palsy. Pregnant or diabetic people are more likely to have bell palsy.

Etiology
Bell palsy is an idiopathic condition by definition. Several researches indicate a variety of possible clinical disorders and diseases that are known to partially or totally appear as a period of unilateral facial paralysis. Numerous viral diseases, including the Epstein-Barr virus, varicella-zoster virus, and herpes simplex virus, have been emphasised in the literature. When there may be a recognised etiologic mechanism, providers may refer to a Bell palsy diagnosis in an unclear or erroneous manner. For instance, in the presence of established correlations (such as Lyme disease and Ramsay-Hunt syndrome) this may happen [4]. Although there are other possible causes, such as idiopathic, traumatic, neoplastic, congenital, and autoimmune, Bell palsy is the diagnosis for over 70% of facial nerve palsies.

Epidemiology
With 40,000 new cases annually, the incidence is 15 to 20 per 100,000. The risk over a lifetime is 1 in 60. Recurrence rates range from 8% to 12%. Seventy percent of patients will resolve completely even in the absence of therapy. Palsy can strike at any age and has no preference for a person's gender or race. However, the majority of cases occur in middle and late life, with a median age of onset of 40 years. Preeclampsia, diabetes, obesity, hypertension, and pregnancy are risk factors [5].

Pathophysiology
It is believed that compression of the seventh cranial nerve at the geniculate ganglion causes bell palsy. The labyrinthine segment, which is the first and narrowest part of the facial canal, is where most compression instances arise. Because of the facial canal's small aperture, inflammation compresses and ischaemias the nerve. A unilateral facial paralysis involving the forehead muscles is the most frequent finding.

Clinical Presentation
Patients frequently have symptoms that begin quickly and worsen over the course of a day to a week, peaking in intensity after 72 hours. The eyebrows, forehead, and mouth angle will all become weaker due to partial or total weakening in one side of the face. Individuals may arrive unable to close their afflicted lip or eyelid on the affected side. A weakening of the forehead, either partial or total, is the main physical exam finding. If the strength of the forehead remains intact, a core reason has to be looked into. In addition, patients may report changes in taste, otalgia, sensitivity to sound, and variations in salivation and tears. Ocular features include the following:

1. Corneal exposure
2. Lagophthalmos
3. Brow droop
4. Paralytic ectropion of the lower lid
5. Upper eyelid retraction
6. Decreased tear output
7. Loss of nasolabial fold

Evaluation
The evaluation is guided by the physical examination and history. The degree of facial nerve weakening can be expressed using the House-Brackmann Facial Nerve Grading System. This grading scheme ranges from I, which

indicates no weakness, to VI, which indicates total weakness. No laboratory or radiographic testing is necessary if the presentation is compatible with Bell palsy. Patients may require evaluation for a core cause of their symptoms if there are uncommon characteristics. Similarly, a history of potential tick-borne infections serves as the basis for Lyme disease testing. It is not advised to undergo routine testing for Lyme disease in the absence of other symptoms including a history of arthritis, skin rashes, or tick bits. While opinions on the best time to have imaging for Lyme disease are divided, most authorities advise waiting two months if the facial palsy has not improved. Since facial nerve palsy is not classified as diabetic neuropathy, diabetes testing should not be done. The preferred imaging modality is magnetic resonance imaging (MRI). An MRI can identify inflammation of the facial nerves and exclude diseases such schwannoma, haemangioma, and space-occupying lesions [6]. Patients with severe Bell palsy may benefit from nerve conduction investigations and electromyography (EMG) to help predict their prognosis. Electroneurography use electromyography (EMG) to track the disparity in potentials produced by the bilateral face muscles. Auditory evoked potentials and audiography should be carried out if hearing loss is suspected. Tests for saliva flow, tear production, and nerve excitability are further measures. Bell palsy is clinically evaluated using a grading system. The dysfunction is graded on a spectrum from minor to severe.

Management strategies and treatment modalities

Since spontaneous healing does happen, the necessity of therapy is still debatable. The main course of therapy consists of corticosteroids, which are taken 60 to 80 mg each day for about a week. Research indicates that when corticosteroids and antivirals are taken together, the results can be better than when corticosteroids are taken alone [7]. Antivirals were not statistically significant when added to steroids as a therapy for Bell palsy, according to a 2009 meta-analysis [8]. In patients with severe facial nerve palsy (House-Brackmann IV or above), antivirals and steroids may be used in combination. There has been no discernible rise in side effects associated with antivirals when compared to placebo or corticosteroids. In order to reduce the risk of corneal abrasion, patients should be instructed on how to use eye lubricant and put a patch to the afflicted eye before bedtime. The long-term impact of this condition has decreased with the availability of botulinum toxin [9]. As a final option, surgery can be necessary in situations that are persistent. There are intricate restorations available in situations where the face muscles do not degenerate over a number of years. Methods for presenting ocular desiccation include muscle transfers and eyelid weights. Treatment options are not always suggested, and facial nerve decompression is evaluated case-by-case. The quality of earlier research assessing facial nerve compression was lacking. If no progress is shown after 4 weeks, it is advised to seek more aggressive therapies by referring the patient as soon as possible to a specialist, such as a plastic surgeon, neurologist, or otolaryngologist [10, 11, 12].

Diagnosis

It is important to exclude out conditions like Lyme disease and Ramsey-Hunt syndrome as causes of peripheral seventh nerve palsy. It is important to rule out other, less prevalent causes of facial palsy, such as neoplasms, HIV, trauma, sarcoidosis, and vasculitis. Speciality referral centres have a misdiagnosis rate of 10.8%, according to reports. Additionally, physicians must to take Melkersson Rosenthal syndrome into account if there are recurrent instances. This is an uncommon neurocutaneous condition characterised by fissured tongue, orofacial oedema, and recurrence of facial palsy. Females are diagnosed with Melkersson Rosenthal syndrome more frequently than men.

Prognosis

In 71% of treated instances, bell palsy cures entirely without any intervention. It has been shown that corticosteroid treatment increases the chance of better nerve healing. Recurrence does occur, and one research showed a recurrence incidence of 12% [11]. According to a different research, symptomatic recurrence occurred in up to 10% of Bell palsy patients after a mean delay of 10 years [13]. Complete paralysis, age 60 or above, and diminished salivation or taste on the ipsilateral side are risk factors linked to unfavourable results. The longer the recovery, the more likely those residual sequelae may develop.

Complications

Some complications related to Bell palsy are as follows:

- Corneal dryness leading to visual loss
- Permanent damage to the facial nerve
- Abnormal growth of nerve fibers

Postoperative and rehabilitation care

Bell palsy patients need to be closely watched to make sure their rehabilitation is going well. Supportive treatment is advised if the EMG investigations reveal that less than 25% of the muscles are affected. It is advised to seek counselling if the paralysis is severe. The quality of studies in the existing literature limits the suggestions for rehabilitation. On the other hand, various phases of rehabilitation frequently call for different therapy. The literature has listed a number of therapies, including massage, mirror therapy, electrotherapy, and face exercises. Early rehabilitation efforts have demonstrated the most promising outcomes with customised face workout regimens and mirror therapy. However, further investigation is required to develop standardised care and recovery plans [14, 15, 16, 17].

Consultations

Consultations that may be necessary when managing Bell palsy are as follows:

- Ophthalmologist
- Neurologist
- Otolaryngologist
- Speech pathologist

Other issues

As said there is a potential misdiagnosis rate of 10.8%. Thorough history taking and physical examination are necessary. The physical examination focusses on the muscles of the forehead. Bell palsy requires activation of the forehead muscles since it is a peripheral facial nerve palsy. Finding the source of facial nerve weakness is guided by the physical examination and medical history. Patients who do not have a history of tick bites or who exhibit rash and arthritic symptoms should not be tested for Lyme disease. Patients may receive medical care at home with careful monitoring to make sure their symptoms improve. If there is

minimal progress in the first few weeks of the condition, there should be considered for a quick referral to a speciality. Eight to twelve percent of patients will experience a recurrence, and there are no recognised prevention strategies.

Discussion and conclusion

The most frequent cause of unilateral facial paralysis is bell palsy. Despite being benign, the illness can cause visual loss and has a significant morbidity rate. Therefore, an interprofessional team is most suited to handle the condition [18]. Bell palsy's aetiology is still a mystery, and opinions on its course of therapy are still divided. Although antiviral drugs and steroids are frequently administered, experts disagree on the best course of action. The majority of instances end on their own, which exacerbates the issue. However, an interprofessional team must treat patients with chronic facial paralysis who also have impaired speech, partial eyelid closure, or unattractive appearance [19]. Due to the fact that the illness impacts several organ systems, an interdisciplinary team consisting of technicians, nurses, and doctors has shown to be successful. Being patient-focused rather than symptom-focused is the treatment's most crucial component. In any event, doctors need to inform patients about lubricating and protecting their eyes. It is important to avoid eye dryness by utilising artificial tears and other liquid formulations. In the event that the nurse or chemist observes indications of noncompliance or if the patient's eye is getting dry and inflamed, they should notify the clinical team leader. The patient has to be taught face exercises by the neurology nurse, which can aid with facial coordination and muscular strength. These exercises can help enhance face muscle function and lessen unsightliness. The nurse should notify the clinical team leader and help with additional patient education if the patient refuses to comply. When it comes to Bell palsy treatment and results, evidence-based medicine is deficient. The complexity of the issue is increased by the fact that many instances end by their own. Results from case reports or small case series have been reported the most. While most people do recover, it sometimes takes months or even years to fully heal. Not everyone reacts to the same treatment, thus an interdisciplinary team should be engaged in the management because there are numerous therapeutic options available in addition to drugs [20].

References

1. Ferreira-Penêda J, Robles R, Gomes-Pinto I, Valente P, Barros-Lima N, Condé A. Peripheral facial palsy in emergency department. Iran J Otorhinolaryngol,2018:30(98):145-52.
2. Somasundara D, Sullivan F. Management of Bell's palsy. Aust Prescr,2017:40(3):94-7.
3. Reich SG. Bell's palsy. Continuum (Minneap Minn),2017:23(2,Selected Topics in Outpatient Neurology):447-66.
4. Spencer CR, Irving RM. Causes and management of facial nerve palsy. Br J Hosp Med (Lond),2016:77(12):686-91.
5. Zhao H, Zhang X, Tang YD, Zhu J, Wang XH, Li ST. Bell's palsy: clinical analysis of 372 cases and review of related literature. Eur Neurol,2017:77(3-4):168-72.
6. Mower S. Bell's palsy: excluding serious illness in urgent and emergency care settings. Emerg Nurse,2017:25(1):32-9.
7. Dong Y, Zhu Y, Ma C, Zhao H. Steroid-antivirals treatment versus steroids alone for the treatment of Bell's palsy: a meta-analysis. Int J Clin Exp Med,2015:8(1):413-21.
8. Quant EC, Jeste SS, Muni RH, Cape AV, Bhussar MK, Peleg AY. The benefits of steroids versus steroids plus antivirals for treatment of Bell's palsy: a meta-analysis. BMJ, 2009, 339.
9. de Sanctis Pecora C, Shitara D. Botulinum toxin type A to improve facial symmetry in facial palsy: a practical guideline and clinical experience. Toxins (Basel), 2021, 13(2).
10. Tseng CC, Hu LY, Liu ME, Yang AC, Shen CC, Tsai SJ. Bidirectional association between Bell's palsy and anxiety disorders: a nationwide population-based retrospective cohort study. J Affect Disord,2017:215:269-73.
11. Cai Z, Li H, Wang X, Niu X, Ni P, Zhang W, *et al*. Prognostic factors of Bell's palsy and Ramsay Hunt syndrome. Medicine (Baltimore), 2017, 96(2).
12. Babl FE, Gardiner KK, Kochar A, Wilson CL, George SA, Zhang M, *et al*. PREDICT (Paediatric Research In Emergency Departments International Collaborative). Bell's palsy in children: current treatment patterns in Australia and New Zealand. A PREDICT study. J Paediatr Child Health,2017:53(4):339-42.
13. de Diego-Sastre JI, Prim-Espada MP, Fernández-García F. The epidemiology of Bell's palsy. Rev Neurol,2005:41(5):287-90.
14. Singh A, Deshmukh P. Bell's palsy: a review. Cureus, 2022, 14(10).
15. Baugh RF, Basura GJ, Ishii LE, Schwartz SR, Drumheller CM, Burkholder R, *et al*. Clinical practice guideline: Bell's palsy. Otolaryngol Head Neck Surg, 2013, 149(3 Suppl).
16. Khan AJ, Szczepura A, Palmer S, Bark C, Neville C, Thomson D, *et al*. Physical therapy for facial nerve paralysis (Bell's palsy): an updated and extended systematic review of the evidence for facial exercise therapy. Clin Rehabil,2022:36(11):1424-49.
17. Martineau S, Rahal A, Piette E, Moubayed S, Marcotte K. The "Mirror Effect plus Protocol" for acute Bell's palsy: a randomized controlled trial with 1-year follow-up. Clin Rehabil,2022:36(10):1292-304.
18. Eviston TJ, Croxson GR, Kennedy PG, Hadlock T, Krishnan AV. Bell's palsy: aetiology, clinical features and multidisciplinary care. J Neurol Neurosurg Psychiatry,2015:86(12):1356-61.
19. Butler DP, Grobbelaar AO. Facial palsy: what can the multidisciplinary team do? J Multidiscip Healthc,2017:10:377-81.
20. Glass GE, Tzafetta K. Bell's palsy: a summary of current evidence and referral algorithm. Fam Pract,2014:31(6):631-42.