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Bell's palsy clinical presentation, diagnosis, treatment and follow up: A case report

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Abstract

Bell's palsy is palsy of the seventh cranial nerve resulting from a dysfunction in the peripheral part of the seventh cranial nerve at the level of the pons or distal. This paper presents a case of a 24-year-old female patient who reported to the Department of Oral Medicine and Radiology with the chief complaint of loss of sensation on the right side of her face for 2 days. The clinical examination reveals gross facial asymmetry, loss of wrinkles when frowning, inability to close the right eye, and deviation of the smile line to the left. The exact etiology was not identified, so unilateral idiopathic Bell's palsy was diagnosed on the right side of her face. The patient was recommended steroids, antivirals, and multivitamins, followed by facial exercise. Full recovery was achieved 6 weeks after the presentation.

Keywords: Bell's palsy, seventh cranial nerve, corticosteroid

Introduction

Bell's palsy is a seventh cranial nerve disorder and it is an abrupt, isolated, unilateral, idiopathic facial paralysis resulting from dysfunction in the peripheral part of the seventh cranial nerve at the level of pons or distally. It was first described by Scottish anatomist Sir Charles bell's in 1821 ^[1]. It is slightly more common in females than males, with a 1.5 to 1 ratio, and there is no racial predilection ^[2]. The disease has a median onset age of 40 years, but it can occur at any age. The incidence is lowest in children under the age of 10 years old and rises from 10 to 70 years ^[3]. In the spring and fall, the disease appears more frequently than at other times of the year ^[4]. The etiology of bell's palsy is still not known but many studies have shown that viral infection (HSV-1), Nerve inflammation, and Nerve compression are associated with this condition. Diabetes, pregnancy, severe preeclampsia, obesity, and hypertension are all risk factors for this conditions ^[5].

Clinically, this condition presents acute and sudden dysfunction of the facial nerve with their associated signs and symptoms.

Bell's palsy is diagnosed through a thorough examination of the patient's history, evaluation of clinical signs and symptoms, laboratory investigation, and an assessment to rule out other possible causes of facial paralysis, such as Ramsay Hunt Syndrome, tumors, Lyme disease, or Sarcoidosis, etc. Treatment of bell's palsy is controversial as the exact etiology of this condition is unknown ^[4]. The goal of the treatment is to reduce the nerve inflammation induced by the HSV-1 virus and symptomatic relief to the patients.

Case report

A female patient aged 24 years old reported to the Department of Oral Medicine and Radiology with a chief complaint of loss of sensation on the right side of her face for 2 days. On further eliciting, The patient gave a history of pain in the right side of the forehead, temporal and preauricular region for 2 days, followed by loss of sensation on the right side of the face, inability to close the right eye, smile, and blow. The patient had normal hearing, speech, and taste. There was no history of fever, trauma, third molar extraction, or prolonged exposure to cold wind. Medical history was non-contributory. On general physical examination, the patient was fully conscious, well oriented, well built, well-nourished with a normal gait and erect posture. Vital signs were under normal limits.

On extraoral examination, Facial gross asymmetry was seen, Sagging of the right eyebrow, inability to close the right eye, drooping corner of mouth seen on the right side of the face, and deviated smile line toward the left side, and the eyeball was rolling upward while closing (bell phenomenon). No ulceration was noticed in her ears and labial surface. The intraoral examination was non-contributory. Based on patient history and clinical examination, the patient was diagnosed as unilateral idiopathic bell's palsy of the right side of the face with House-Brackmann facial nerve grading as Grade-IV dysfunctions [6]. She was advised Tab. Wysolone (prednisolone) 50 mg BD (40 mg in the morning and 10 mg in the evening) for 1 week after food, then tapered over 3 days. Tab. Zovirax (Acyclovir)400mg TID for 5days, Tab. Pantocid DSR (pantoprazole sod. 40mg+domperidone 30mg) OD for 3 weeks, Tab. Nuhenz (multivitamin) OD for 1 month. The patient was demonstrated and advised for facial exercises while standing in front of a mirror and include trying to raise the eyebrows, opening and closing the eyes, blowing, and whistling, 5 times each, 4-5 times per day. The patient was recalled after 1 week and there was a moderate improvement in signs & symptoms [Figure 2]. A complete recovery was achieved 6 weeks after presentation [Figure 3].



Fig 1: The facial aspect of the patient showing Bell's palsy on the right side of the face, during 1st visit, (a) Sagging of the right eyebrow, (b) Corner of mouth deviated toward left side on smiling, and (c). Inability to close the right eye.



Fig 2: Follow-up of the patient after 1 week of the treatment.



Fig 3: Complete regression of the symptoms after 6 weeks of the treatment.

Discussion

Bell palsy is clinically characterized as idiopathic, acute, and unilateral peripheral facial palsy. The exact etiology of this condition is still unknown but many hypotheses have been proposed, including viral infection, microcirculatory failure of the vasa nervorum, Ischemic neuropathy, Anatomical, Autoimmune reactions, and cold stimulation. Among them, the concept of viral inflammatory immunity has gained the most support from clinical findings and experimental studies reported in the last 30 years. One of the most well-studied viruses is herpes simplex virus-1 (HSV-1) [7]. In the present case, the exact etiology is not known and it appears to be idiopathic. Bell's palsy is diagnosed through a thorough examination of the patient's history (Including Time of onset of the symptoms, previous history of facial paralysis, recent viral or upper respiratory tract infection, recent camping or hiking, ontological symptoms, disturbance in taste sensation, facial numbness, vesicles, and recent immunization), Evaluation of clinical signs & symptoms such as Puffing out of the cheek, widening of the palpebral fissure, flattening of the nasolabial fold, drooping of one corner of the mouth when

smiling, loss of wrinkle on the affected side, inability to close the eye completely, bell's phenomenon (classical condition in which the eye cannot close without a simultaneous upward and outward movement of the eyeball), pursed lips, Pain and numbness on the affected side, particularly around the temple, mastoid area, and along the angle of the mandible, dry mouth as a result of decreased salivary secretion, loss of taste sensation in the anterior two-thirds of the tongue, and hyperacusis on the affected side of the face [8] Laboratory investigations (complete blood count, a Syphilis and HIV test, fasting glucose, erythrocyte sedimentation rate, Lyme titer, antinuclear antibody level measurement, as well as a lumbar puncture for Cerebrospinal fluid (CSF) cell count and examination after a cerebral CT, IgG, IgM antibody tests, Acetylcholine receptor antibody test Imaging modalities like computed tomography, magnetic resonance imaging is done to detect any intracranial lesion), and an assessment to rule out other potential causes of facial paralysis which are mention in Table 1 [5, 9]

Table 1: Conditions and Clinical features of facial paralysis

Sl.no.	Condition	Example	Etiology	Distinguishing features
1.	Central nervous system lesion	Stroke	Ischemia, hemorrhage	Forehead sparing, headache, limb weakness, Multiple neurologic signs
2.	Autoimmune diseases	Guillain-Barré syndrome	Autoimmune/infectious	Acute polyneuropathy; ascending paralysis; weakness of hands, feet progressing to the trunk
		Multiple sclerosis	Unknown	Upper motor neuron signs, abnormal cerebrospinal fluid
3.	Metabolic diseases	Uncontrolled diabetes mellitus	Microvascular disease	Elevated blood glucose
4.	Infectious diseases	Meningitis, encephalitis	Viral, bacterial, fungal pathogen	Headache, fever, meningeal signs, abnormal cerebrospinal fluid
		Herpes simplex	Reactivation of herpes simplex virus type 1 from the geniculate ganglion	Fever, malaise
		Lyme disease	<i>Borrelia burgdorferi</i>	Rash, arthralgia, malaise, bilateral facial palsy
		Ramsay Hunt syndrome	Varicella-zoster	Pronounced prodrome of pain, vesicular eruption in the ear canal or pharynx
5.	Granulomatous disease	Sarcoidosis	Unknown	Bilateral facial palsy, elevated angiotensin-converting enzyme
6.	Neoplasm	Parotid tumor, facial nerve tumor, metastasis	Multiple carcinomas of the head and neck	Insidious onset, palpable mass, partial involvement of facial nerve branches
7.	Inherited conditions	Syphilis	<i>Treponema pallidum</i>	Other neurologic and cutaneous manifestations

Treatment of Bell's palsy is controversial as most of the patients with Bell's palsy recover spontaneously. The goal of treatment for the bell's palsy is to focus on maximizing recovery, improving facial nerve function, and minimizing associated complications such as facial synkinesis, facial contracture, facial spasm, residual facial weakness, and corneal abrasions.

Corticosteroid: Compression of the facial nerve due to inflammation and edema in the fallopian tube causing loss of its function, so to reduce the inflammation and edema, potent anti-inflammatory drugs such as corticosteroids are used.

According to the American Academy of Neurology and American Academy of Otolaryngology-Head and Neck guidelines, the maximum benefit is seen when oral corticosteroid is given within 72 hours of the onset of the symptoms of bell's palsy for patients age 16 and older.

The maximum recommended dose of oral corticosteroid is 50-60 mg for 10 days (50 mg daily for 10 days or 60 mg daily for 5 days, then tapered over 5 days)^[9].

In the present case, the patient was given an oral steroid (Prednisolone 50 mg) within 48 hours of the onset of the symptoms.

Antiviral agents: The purpose of the utilization of antiviral agents in Bell's palsy is the proof that the inflammation of the facial nerve may be associated with the herpes simplex virus (HSV). But It has been also seen that the use of antiviral drugs alone in the treatment of Bell's palsy is not helpful. However, the use of antiviral drugs in a combination with a corticosteroid may offer modest benefits if started within 72 hours of the onset of the symptoms^[9].

The maximum recommended dose for acyclovir is 400 mg five times daily for seven days and valaciclovir is 1000 mg/day for three days^[5].

In the present case, the patient was recommended antiviral drugs (Acyclovir 400mg, five-time per day) within 48 hours of the onset of the symptoms, and significant improvement was seen.

Eye Care: The Clinician or Ophthalmologist must

implement eye protection for the patients who cannot completely close their eyes to prevent exposure keratopathy. It is recommended to use sunglasses, lubricant eye drops with artificial tears, Eye patching, or in combination^[9].

Acupuncture: Usually not recommended. A study conducted by Sha-bei Xu et.al, found significant improvement in the symptom of Bell's palsy after the use of acupuncture in a combination of steroid therapy^[10].

Physical therapy: Bell's palsy is treated with a variety of physical therapies, including thermal treatment, electrotherapy, massage, facial exercise, biofeedback, and mime therapy(which includes massage, relaxation exercises, synkinesis inhibition, and emotional expressive exercise, is the most commonly offered physical therapy). The benefits of physical therapy in the management of Bell's palsy are debatable, as some small studies have shown a significant improvement in Bell's palsy symptoms after physical therapy, while a Cochrane systematic review concluded that there is no significant difference between patients treated with physical therapy and those who are not^[9].

Surgical decompression: Usually not recommended. Surgical decompression is indicated in case of complete paralysis with 90% loss of motor function of the facial nerve^[9].

Follow-up: Patients must be recalled within a week for follow-up. The clinician must refer patients to a neurologist if there has been no improvement or if new symptoms have developed. In case of serious ocular complications, patients should refer to an ophthalmologist for further evaluation^[5].

Prognosis: About 71% of patients recover completely within six months without any treatment and around one-third of patients may have incomplete recovery and residual effects such as crocodile tears(lacrimation of the ipsilateral eye during chewing), jaw-winking(closure of the ipsilateral eyelid when the jaw open), post-paralytic spasm, synkinesis, and

facial contracture^[11].

In the present case, the patient recovers completely with the treatment she received within 72 hours of the onset of symptoms.

Conclusion

Bell's palsy is a peripheral facial paralysis with unknown etiology. So, before making a definitive diagnosis, it is important to know the detailed history of the patient, a thorough clinical examination, and an investigation to eliminate the other possible facial paralysis. Which will further help in the treatment planning.

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