

The Recapitulation on Bell's palsy Conditions and Their Management Criteria

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ABSTRACT:

Bell's palsy is acute mononeuropathy that affects the single nerve (7th cranial nerve) that causes muscle weakness in one side of the face which results in rapid unilateral facial palsy or paresis. This condition has peak symptoms in the first week and resolves after three weeks to three months. Among the 15 to 40 age group, people are affected in which 1 in 60 people will have lifetime risk. The etiology of this condition is idiopathic and unknown even though it resembles polyneuritis with possible viral, inflammatory, autoimmune, and ischemic etiologies. It increases evidence in latent herpes zoster virus and herpes simplex type 1. It is self-limited and causes temporary oral competence and so on. It is diagnosed by imaging studies, laboratory tests, and electro diagnostic tests. This article explains the possible etiology and pathogenesis and what are the recent development in Bell's palsy condition.

KEYWORDS: Bell's palsy, viral infection, autoimmune disease, Treatment.

I. INTRODUCTION:

Bell's palsy is a peripheral palsy of the facial nerve it produces muscle weakness in one side of the body it is also called acute mononeuropathy or disorder⁽¹⁾. It mostly affects the 7th cranial nerve which arises from the brain stem on both sides of the medulla oblongata which is responsible for respiratory function and heartbeat. These nerves split into the following branches temporal, zygomatic, buccal, Marginal mandibular and cervical branches. The facial nerve exits the skull from the stylomastoid foramen⁽²⁾. It is a foramen between the styloid and mastoid processes of the temporal bone of the skull. It splits the facial nerve and styloid artery at the termination of the facial canal. When this facial nerve is inflamed it causes Bell's palsy⁽²⁾⁽³⁾.

HISTORY OF BELL'S PALSY:

The term Bell's palsy originated from Sir Charles Bell (1774-1842) who is the first person, to describe the anatomy of the facial nerve and the idiopathic cause of facial palsy in the 19th century. In the 18th century preceded him it was discovered by Nicolaus Anton Friedreich (1761-1836) and James Douglas (1675-1742). But recent accounts confirmed that Stalpart van der wile (1620-1702) was the first one to record Bell's palsy in 1683 at Hague in the Netherlands and he pay the way for further historical research. (4).

ETIOPATHOGENESIS:

Bell's palsy commonly produces rapid unilateral facial paresis/paralysis the etiology is idiopathic it is captious to rule out the causes of Bell's palsy. It mainly occurs due to inflammation by the body-directed immune response it is also associated with Diabetes, High blood pressure, Injury, Guillain-Barre syndrome, and viral infection by Herpes Simplex virus, the reactivation of this virus at the geniculate ganglion of the facial nerve which is causes for the common cold sores⁽⁵⁾. Pregnancy, lung infection, diabetes, and environmental factors (cold exposure) are the risk factors⁽⁷⁾. It affects all age groups of people but mainly occurs at 15-40 years of age and peaks at 45⁽⁵⁾. 1 in 60 peoples have lifetime risk, and others are recovered within several weeks to months⁽⁶⁾⁽⁸⁾.

HOW DIABETES AFFECTS THE 7TH CRANIAL NERVE:

The high blood sugar level in the blood affects the nerve over 2-5 years after being diagnosed with a diabetic condition. Diabetes is more common among Bell's palsy patients than those who have never had that disease, and the risk of Bell's palsy also increased in patients with diabetes. Nerve degeneration is more susceptible in a diabetic patient than in non-diabetic patients but it is not an age-related condition it mostly affects the patient younger than 39 years older. Diabetics

affect a nerve called neuropathy but diabetics damage a single nerve as a facial nerve called mononeuropathy⁽⁹⁾.

HIGH BLOOD PRESSURE AND BELL'S PALSYS:

There is a well-known association between elevated systemic pressure and facial nerve palsy blood pressure was dropped or elevated due to an untreated condition it damaged the cranial nerve⁽¹⁰⁾. A patient above 45 years with elevated blood pressure has a high risk for Bell's palsy. But diabetes affects both age groups of people⁽¹¹⁾.

INJURY:

Result temporary facial palsy due to trauma in the 7th cranial nerve is the most common cause of Bell's palsy. It produces 23% of Bell's palsy condition among other etiology its impact is least one. It is mainly associated with skull bone fracture but in some cases, mild injury pays the way for Bell's palsy without fracture in the temporal bone⁽¹²⁾.

BELL'S PALSYS AND AUTOIMMUNITY:

Autoimmune mechanism against a myelin basic protein which is cell-mediated is the main pathogenesis of Bell's palsy. It is autoimmune demyelinating cranial neuritis, often it is a Guillain-Barre syndrome a neurological disorder in which cell-mediated immunity against peripheral nerve myelin antigen⁽¹³⁾.

VIRAL INFECTION CONTRIBUTION IN BELL'S PALSYS:

The latent herpes viruses such as herpes simplex mainly herpes simplex virus type-1 and herpes zoster are reactivated from cranial nerve ganglia. The viral infection is identified by an increase in antibody titers or the presence of IgM antibodies⁽¹⁴⁾. Higher prevalence for HSV antibodies in both complement fixation test and radioimmunoassay. Moreover, titers of HSV CF antibody and antibodies against HSV antigen (RIA) were higher and there is a high chance of reactivation of this virus. HSV rupture from the nerve axon infects the Schwann sheath and progresses centripetally. Paralysis due to compression of facial nerves is done by herpetic endoneuritis which reaches the enclosed space of the bony fallopian canal⁽¹⁵⁾. Varicella zoster virus reactivation detects without detection of zoster sine herpette. In Bell's palsy patient's common occurrence of HSV antibodies than VZV

antibodies. In HSV-seronegative patients, there is a high chance of VZV reactivation⁽¹⁶⁾⁽¹⁷⁾. Among the above etiology condition, viral infection and autoimmune diseases are the main path mechanism of Bell's palsy.

DIFFERENCE BETWEEN FACIAL PARALYSIS CONDITION AND BELL'S PALSYS:

Some other condition also mimics Bell's palsy condition such as Lyme disease, Myasthenia gravis, and Ramsay hunt syndrome.

Lyme disease: This affects 10-15% nervous system by tick-borne spirochetes of borrelia species that come under the Borrelia Burgdoferi group. It is a bacterial infection but Bell's palsy is mainly due to viral infection. It affects 1 in 4 persons⁽¹⁸⁾.

Acoustic neuroma: Rare benign (non-cancerous) growth in the 8th cranial nerve also called a vestibular schwannoma. Its causes are unknown this nerve runs from the inner ear to the brain and it is responsible for hearing. 90% of people have a loss of hearing on one side as an initial symptom and also have tinnitus and imbalance or dizziness. This condition is due to the tumor that disrupts the ability of the 8th cranial nerve to transmit signal

Ramsay hunt syndrome: Rare neurological disorder mainly affects adults who are above 60 years. It is caused by varicella zoster virus it gives an experience like Ringing in the ear(tinnitus) and hearing loss also presents the main difference between Bell's palsy occurring without a rash and Ramsay hunt syndrome occurring with rashes.

Myasthenia gravis: It is a neuromuscular disorder condition abnormal immune response in the body and produces an antibody that attacks and injures the muscle receptor that receives the nerve impulse and has primary characteristics like muscle weakness and muscle fatigue this condition is evident in adulthood but the occurrence of a symptom does not have any age limitation. It develops diplopia, ptosis, dysarthria, dysphagia, and proximal limb weakness condition. It affects any part of the body however Bell's palsy affects only the face and sometimes it is also associated with Myasthenia gravis⁽¹⁹⁾.

SIGNS AND SYMPTOMS:

It varies depending on the severity of Bell's palsy from mild to severe condition they are⁽²⁴⁾⁽²⁵⁾⁽²⁶⁾

- Loss of feeling or sensation in the face
- Headache
- Tearing
- Drooling

- Loss of sense of taste on the front two third of the tongue
- Inability to close eyes on the affected face side
- Loss of nasolabial fold
- Drooping mouth and eye
- Asymmetrical smile and facial muscle tone.
- Dry eye and mouth
- Difficulty pronouncing certain words
- Cold, eye infection, and ear infection are common it develops after 2 weeks onset of Bell's palsy.

DIAGNOSIS:

The physician usually examines the upper and lower facial weakness in most cases it involves the forehead, eyelid, and mouth. But the routine laboratory test is not required to treat Bell's palsy. Serum testing to detect herpes zoster is not notable because it confirms during the replication phase by the salivary polymerization reaction. For Lyme disease serological tests are done, and the Topognostic test and electroneurography give useful information. In the diagnosis of Bell's palsy following tests are taken to give appropriate treatment

- A blood test is taken to confirm whether the infection is bacterial or viral
- Blood tests to check the diabetic condition

- Electromyography (EMG) to detect any damage in nerves its intensity and the extent of the nerve involved
- Lumbar punctures also do in the diagnosis of Lyme disease conditions.
- Imaging test as CT scans and MRI to determine the structural cause of pressure on the nerve and also check other nerve conditions⁽²⁷⁾⁽²⁸⁾.

TREATMENT:

It is mainly caused by viral infection so the treatment is also based on antiviral therapy and corticosteroids are most commonly used to reduce the edema and inflamed condition of the facial nerves ⁽²⁸⁾⁽²⁹⁾. According to AAN's guidelines Acyclovir + Prednisone, the combination produces a positive effect to improve facial function. However, Cochrane when the corticosteroids and antiviral drugs are given in combined form has little or no effects with incomplete recovery condition. Corticosteroids alone are most effective than antiviral therapy and their combination with steroids; their combination reduces the late sequelae of Bell's palsy condition. The exclusive treatment of antivirals does not produce any effects.

Treatment	Drug	Dose	Frequency	Duration
Antiviral therapy	Acyclovir	400-800 mg	5 times	Daily
	Valacyclovir	1000mg	BD	5 Days
	Famciclovir	750mg	TDS	Daily
Corticosteroids	Prednisone	1mg/kg Max-80mg	OD	7 days

During the above mentioned therapy moisturizing gel or eye drops for 14 days or a full course of treatment. During steroid therapy, the patient was administered a proton pump inhibitor for prophylaxis. The oral glucocorticoids treatment - Acute Bell's palsy condition in chronic condition only combination therapy provided.

NON-PHARMACOLOGICAL TREATMENT:

It includes Physical therapy; Surgery; TENS- (Transcutaneous electrical nerve stimulation) and Acupuncture.

PHYSICAL THERAPY:The effectiveness of this therapy was unknown it involves facial exercise and massage

SURGERY:Formerly decompression surgery relieves the facial muscle stress but later its risk ratio overweighing the benefits. 15% of patients

who undergo this surgery experience permanent hearing loss.

Acupuncture treatment is effective in improving the consequence of Bell's palsy condition.

TENS- This unit helps to prevent muscle waste ease pain and also maintain a facial tone with help of electrical stimulation. Further development or study is essential to understand the effectiveness of TENS and Acupuncture.

Eye care: Due to irritation or dryness eyelids are drooped or feel difficult to close. To prevent this eye ointment or eye lubricant as artificial tears taken at night time for facial paralysis condition. Other eye care such as wearing goggles or sunglasses for protection against foreign particles⁽²⁰⁾⁽³⁰⁾.

II. CONCLUSION:

Bell's palsy condition affects people who are above 60 years its rate is decreased after 70 years group of people and peaks at 45 years. It mainly occurs due to viral infection and autoimmune conditions. If it is treated in acute condition within 75 hours it is curable but untreated cases cause life-threatening situations. The main challenge is the correct diagnosis of Bell's palsy condition and its severity for this condition we use the House-Brakmann scale based on the grade level at the treatment should be provided. Based on AAN's guidelines and the 2010 Cochrane review state that antiviral drugs inhibit viral DNA synthesis but their monotherapy produces Jarisch-Herxheimerr reaction, AAN's guidelines also not recommended antiviral therapy alone; the combination of antiviral drug and corticosteroid produce benefits ratio. But in history, their combination is controversial but nowadays expert opinion about the increased benefit of simultaneous use.

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