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Bell's Palsy: Causes, Symptoms, Diagnosis and Treatment

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Abstract

Bell's palsy is a form of facial paralysis resulting from a dysfunction of the facial nerve. Its an inability to control facial muscles on the affected side. Several conditions can cause facial paralysis, e.g., brain tumor, stroke, myasthenia gravis, and Lyme disease. However, if no specific cause can be identified, the condition is known as Bell's palsy. Named after Scottish anatomist Charles Bell, who first described it, Bell's palsy is the most common acute mononeuropathy (disease involving only one nerve) and is the most common cause of acute facial nerve paralysis (>80%).Bell's palsy is defined as an idiopathic unilateral facial nerve paralysis, usually self-limiting. The hallmark of this condition is a rapid onset of partial or complete paralysis that often occurs overnight. In rare cases (<1%), it can occur bilaterally resulting in total facial paralysis.[1][2]It is thought that an inflammatory condition leads to swelling of the facial nerve. The nerve travels through the skull in a narrow bone canal beneath the ear. Nerve swelling and compression in the narrow bone canal are thought to lead to nerve inhibition, damage or death.Corticosteroids have been found to improve outcomes, when used early, while anti-viral drugs have not.[3] Most people recover spontaneously and achieve near-normal to normal functions. Many show signs of improvement as early as 10 days after the onset, even without treatment.Often the eye in the affected side cannot be closed. The eye must be protected from drying up, or the cornea may be permanently damaged resulting in impaired vision. In some cases denture wearers experience some discomfort.

INTRODUCTION

Bell's Palsy is the paralysis or severe weakness of the nerve that controls the facial muscles on the side of the face - the facial nerve or seventh cranial nerve. Patients typically find they suddenly cannot control their facial muscles, usually on one side.A person might have Bell's Palsy first thing in the morning - they wake up and find that one side of the face does not move. If an eyelid is affected, blinking might be difficult.Bell's Palsy usually starts suddenly.Bell's palsy must not be confused with cerebral palsy, a completely different condition. Most people who suddenly experience symptoms think they are having a stroke.

However, if the weakness or paralysis only affects the face it is more likely to be Bell's palsy. Approximately 40,000 Americans develop Bell's palsy each year. The National Health Service (NHS), UK, reports that about 25 to 35 people out of every 100,000 develop Bell's palsy each year. It is classed as a relatively rare condition.

It more commonly affects people over 15 and under 60 years of age, and affects men and women equally.Bell's palsy is the abrupt paralysis of the facial nerve, resulting in an inability to control facial muscles on the affected side. A common condition, Bell's palsy has an annual incidence of 11 to 40 cases per 100 000 population(.1) 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(.3) The rationale for these treatments is based on the presumed pathophysiology of Bell's palsy, namely inflammation and viral infection.For decades, surgeons have noted facial nerve swelling during decompression surgery.(4) More recently, enhancement of the facial nerve on magnetic resonance imaging has been observed in Bell's palsy, suggesting that inflammation is in part responsible for the associated paralysis(.5) As a consequence, steroids have been used to treat Bell's palsy and have been shown to significantly improve outcomes compared with placebo.(6)The neuronal inflammation associated with Bell's palsy is thought to be secondary to viral infection. Herpes simplex virus has been detected in the endoneurial fluid in patients with Bell's palsy.(7)On the basis of this evidence, some clinicians treat patients with antivirals, including aciclovir, famciclovir, and valaciclovir.(8) The benefits of antivirals alone are not clear, thus the role of combination therapy with steroids plus antivirals has been investigated for the treatment of Bell's palsy.(6 9 10 11 12 13 14 15 16 17) Studies have produced somewhat conflicting results, however, and there is debate over the effectiveness of antivirals on top of steroids.(18) The most recent guidelines from the American Academy of Neurology suggest that aciclovir combined with prednisone is "possibly effective" for Bell's palsy.(19) Despite a lack of clear evidence, many clinicians treat Bell's palsy with combination therapy. Given the emergence of this clinical practice and the conflicting data on the benefits of antivirals over and above those of steroids, we performed a meta-analysis to determine whether steroid treatment plus antivirals provides a better degree of facial muscle recovery than does steroids alone.

SIGNS AND SYMPTOMS

The twelth cranial nerve or the facial nerve's nuclei are in the brainstem . Bell's palsy is characterized by a one sided facial droop that comes on within 72 hours. The facial nerves control a number of functions, such as blinking and closing the eyes, smiling, frowning, lacrimation, salivation, flaring nostrils and raising eyebrows. They also innervate the stapedial (stapes) muscles of the middle ear and carry taste sensations from the anterior two-thirds of the tongue. Because both the nerve to the stapedius and the chorda tympani nerve (taste) are branches of the facial nerve, patients with Bell's palsy may present with hyperacusis or loss of taste sensation in the anterior 2/3 of the tongue. The forehead muscles are usually affected.Although defined as a mononeuritis (involving only one nerve), patients diagnosed with Bell's palsy may have "myriad neurological symptoms" including "facial tingling, moderate or severe headache/neck pain, memory problems, balance problems,

ipsilateral limb paresthesias, ipsilateral limb weakness, and a sense of clumsiness" that are "unexplained by facial nerve dysfunction".

The facial nerves control blinking, opening and closing of the eyes, smiling, salivation, lacrimation (production of tears), and frowning. They also supply the stapes muscles with nerves. The stapes is a bone in the ear which is involved in our ability to hear. When the facial muscle malfunctions, the following symptoms may emerge - symptoms of Bell's palsy:

1. It may be difficult or impossible to close one of the eyelids.
2. Irritation in the eye because it does not blink and becomes too dry. Changes in the amount of tears the eye produces.
3. Parts of the face may droop, such as one side of the mouth.
4. Drooling from one side of the mouth. The amount of saliva produced changes.
5. Difficulty with facial expressions.
6. Sense of taste may become altered.
7. An affected ear may lead to sensitivity to sound (hyperacusis). Sounds seem louder.
8. Pain in front or behind the ear on the affected side.
9. Headache.

CLINICAL PRESENTATION

Patients with Bell's palsy typically complain of weakness or complete paralysis of all the muscles on one side of the face. The facial creases and nasolabial fold disappear, the forehead unfurrows, and the corner of the mouth droops. The eyelids will not close and the lower lid sags; on attempted closure, the eye rolls upward (Bell's phenomenon). Eye irritation often results from lack of lubrication and constant exposure. Tear production decreases; however, the eye may appear to tear excessively because of loss of lid control, which allows tears to spill freely from the eye. Food and saliva can pool in the affected side of the mouth and may spill out from the corner. Patients often complain of a feeling of numbness from the paralysis, but facial sensation is preserved.Patients with Bell's palsy usually progress from onset of symptoms to maximal weakness within three days and almost always within one week. A more insidious onset or progression over more than two weeks should prompt reconsideration of the diagnosis. Left untreated, 85 percent of patients will show at least partial recovery within three weeks of onset.(19)

CAUSES

Some viruses are thought to cause a persistent (or latent) infection without symptoms, e.g., the varicella-zoster virus and Epstein-Barr viruses, both of the herpes family. Reactivation of an existing (dormant) viral infection has been suggested. as a cause of acute Bell's palsy. Studies suggest that this new activation could be preceded by trauma, environmental factors, and metabolic or emotional disorders, thus suggesting that a host of different conditions may trigger reactivation

CONCLUSIONS AND FUTURE

In patients with Bell's palsy, adding antivirals to steroids does not provide an added benefit in achieving at least partial facial muscle recovery compared with steroids alone; therefore, this meta-analysis does not support the routine addition of antivirals to steroids in Bell's palsy. The benefit of antiviral therapy combined with steroids for patients with severe facial muscle paralysis at presentation who do not have Varicella zoster virus reactivation is, however, an ongoing question. Future prospective double blind studies that use modern diagnostics, such as polymerase chain reaction, for the detection of Herpes virus reactivation are needed to resolve this issue. In addition, such trials should study newer antivirals, such as valaciclovir or famciclovir, on the basis of their improved bioavailability over aciclovir.

OTHER TREATMENTS

In the past, surgical decompression within three weeks of onset has been recommended for patients who have persistent loss of function (greater than 90 percent loss on electroneurography) at two weeks. However, the most widely cited study supporting this approach only reported results for a total of 34 treated patients at three different sites, included a nonrandomized control group, and lacked blinded evaluation of outcome.(21)The most common complication of surgery is postoperative hearing loss, which affects 3 to 15 percent of patients. Based on the significant potential for harms and the paucity of data supporting benefit, the American Academy of Neurology does not currently recommend surgical decompression for Bell's palsy.(20)Some published studies have reported benefit with acupuncture versus steroids and placebo, but all had serious flaws in study design and reporting(22).

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