Date: Fri, 01 Mar 2002 11:27:39 -0800
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Subject: ***Bells Palsy***

Bell's Palsy-Idiopathic Facial Nerve Paralysis

Bell's palsy, named after British physician Charles Bell, is an idiopathic, neurological, temporary facial paralysis of cranial nerve VII affecting facial muscles, the musculoskeletal system, nerves, and the nervous system. Cranial nerve VII passes through the stylomastoid foramen found posterior to the ear on either side of the skull. The nerve then branches into thousands of smaller nerves which innervate the face (affecting expression), the neck (affecting the muscles), the anterior 2/3's of the tongue, the salivary and tear glands, and the outer ear (affecting sound volume). If Bell's palsy is present, all features on either side of the face are affected. If only a few of the numerous symptoms are seen, a tumor, stroke, or trauma may be the cause.

The facial nerve resembles a cable and is about the diameter of a strand of thin spaghetti. Within that strand are between 6000-7000 different nerve fibers (wires) which conduct the electrical signal from the brain to the facial muscles causing them to contract. They are very delicate and inflammation from the Bell's palsy can harm some of these fibers. With time these fibers heal, but at a rate of about 1.5 mm per day. Unfortunately, these fibers may not be directed into their original muscle. When the brain sends a signal to that nerve and the nerve reforms into a completely different muscle, a different part of the face is affected. The nerves that branch out of cranial nerve VII are responsible for over 2000 distinct facial expressions (punctuation and signals conveyed by facial movements, anger, disgust, happiness, surprise). It's no wonder that facial nerves can get reconnected incorrectly. The onset of Bell's palsy is usually sudden with most cases occurring overnight. Bell's palsy affects about 40,000 people in the U.S. every year.

CAUSES:

Bell's palsy, being idiopathic, causes physicians to be circumspect about its origin. However, it is thought to have viral, bacterial, and autoimmune ties. Such ailments include nerve inflammation/muscular signal block from herpes simplex 1 via unknown carriers (most reinforced), impaired immunity (stress, illness (i.e. HIV, AIDS), trauma) or anything directly or indirectly compromising the immune system (e.g. Bacterial infections such as Lyme disease and middle ear infection (Otitis Media), or trauma, tumors, and congenital defects). Anything that causes inflammation and swelling of cranial nerve VII can trigger Bell's palsy.

Bell's palsy can be caused by several other things. Cold temperatures to one side of the face fan cause irritation to CN VII. Stress is also known to trigger Bell's palsy and can appear in different forms. Pregnancy (due to stress), diabetes, and M.S. have also been known to trigger Bell's palsy.

DIAGNOSIS:

When apparent cause of facial paralysis is discovered, Bell's palsy is diagnosed. Weakness, glandular problems, slow onset of paralysis, or a condition where paralysis inconsistent with Bell's palsy is present, it is ruled out and other tests are done (blood, scans).

Diagnosing Bell's palsy may be relatively simple, but treating it can be difficult. Depending on the cause of the paralysis, certain medications may help reduce the inflammation and subsequent compression on the nerve. However, there is no firm research indicating that drugs help recovery.

SIGNS:

Weakness on one side of the face affecting all parts of the face innervated by CN VII is the main sign of Bell's palsy. The mouth pay droop, the eye may not close, taste may be altered, tears and saliva may not form, and ear pain may be present. General facial asymmetry is noticed.

SYMPTOMS:

Bell's palsy usually begins with a mild tingling around the lips or an eye that is dry on the affected side. These symptoms quickly progress to become more devastating over the next 48 hours and unilateral facial weakness occurs.

Physical symptoms are few, but powerful. Bell's palsy, affecting one half of the face, disrupts several different systems. The most noticeably afflicted, and most vulnerable is the eye. The muscles around the eye lose strength and closing/blinking the eye may be become impossible. The eye typically loses the ability to make tears and becomes sensitive to light, too.

The nose, tongue, muscles of the mouth, and the ear are also affected. The nose may become stuffy or runny and the muscles of the mouth (as well as the other muscles on the half of the face suffering from paralysis) become weak. There might be a dull pain behind the affected ear and dryness of the mouth, also. Asymmetry in muscle formation is noticed. Sound sensitivity and ear pain is also a symptom of Bell's palsy as is altered taste.

PROGRESSION:

Recovery varies among patients with Bell's palsy. Tingling or pain may be present in areas regaining strength and altered taste may return differently for different people. Long term paralysis typically requires time for nerve healing to occur once facial movement is regained. Once the inflammation subsides, the paralysis should diminish. When it doesn't, long term effects can be expected. As nerves recover, limited movement may be noticed.

Muscles can develop spasms due to cross-wiring before the correct muscle movements are relearned through focused, diligent voluntary movements. After a few months this condition, known as synkinesis, may arise. This occurs when uncoordinated or unsynchronized facial movements occur along with normal movements. Synkinesis can be mild or severe. Questions asked may give therapist and physicians more information about a patient's progress. These may include inquisitions referring to eating, drinking, speaking, eye care, and oral hygiene.

PROGNOSIS AND TREATMENT:

The prognosis of Bell's palsy is great with most sufferers (90%) making a full recovery spontaneously within several weeks without treatment. However, nerve trauma can be severe in some cases and results can be long lasting for 10%. When other nerves assist the damaged nerve, signals can get crossed creating permanent asymmetry. Typically, the longer the healing process, the more long term the damage will be.

Over contracting muscles are common after facial paralysis subsides. The muscles operating the muscles around the eye, the mouth, and the rest of the facial muscles may exhibit a heightened level of tension and a decreased level of contraction decreasing overall movement. Physical therapy can decrease an asymmetrical appearance and can increase mobility. Eating, drinking, and speaking may also become a problem with Bell's palsy. It's imperative that functioning muscles assist the paralyzed muscles during daily activities.

TREATMENT:

When treating Bell's palsy, the nerve irritation must first be eliminated. Inflammation must be controlled and the pressure on the nerve must be reduced. Compression and damage are directly proportional. Medications to relieve compression/inflammation (e.g. Prednisone) may be used and should be started quickly (within 7 days) for maximum results.

When Bell's palsy strikes, the body's immune system is compromised and rest is essential. It's also important to take care of your eyes by wearing a patch to keep out dust and dirt and to apply eye drops. Cleaning between the teeth and gums is also important. Proper care of the ear needs to be considered if the affected ear is hypersensitive to sound by wearing an earplug.

Facial muscles work differently than skeletal muscles. These muscles aren't connected to bones; they instead connect directly to the skin and allow the many thousands of facial movements that are possible. When no signs of movement are apparent, immediate exercise isn't essential. Facial muscle atrophy is postponed when the signal for muscle movement isn't is shut off. Brian-to-nerve-to-muscle retraining is the highest priority. Problems may occur if the muscle movement is forced because some of the nerve threads may be active and can rewire incorrectly when forced to assist the inoperative muscles resulting in asymmetry in muscle development. Gentle massage is recommended to stimulate muscle activity. If pain and discomfort arise, moist heat can help.

When a virus is expected as the cause of Bell's palsy, no medication is usually used. The paralysis typically will not last long. However, when they are used to fight the effects of nerve compression, they prohibit the virus from replicating. Currently used antiviral drugs include Famciclovir and acyclovir. Foscarnet may be more effective for compromised immune systems. When steroids are used to decrease compression, they mimic the body 's ability to fight stress and act to eliminate the inflammation caused by the body's response to illness reducing cytokines. The recovery time is not changed, but the facial function is improved. Vitamin B12 may help reduce inflammations, strengthen the immune system, and is known to be important in nerve growth. Surgery is also an option when treating a compressed nerve, but the risks far outweigh the possible benefits. Hearing loss and facial nerve damage have been noticed following surgery. Appearance will improve with surgery, but muscle function will not change. Types of surgery include: Nerve and muscle grafts (improve facial muscle function and improve appearance), Nerve connection (connect a different, functioning nerve to a specific facial muscle, and the connection of different muscles to specific muscles controlling essential facial movements.

When diagnosed with Bell's palsy, massaging the face is an important part of rehabilitation. Massage both sides of the face using firm circular motions. Start in the center and work outward. Massage with the circular motion at the forehead, cheeks, nose, and chin. Then follow the jaw line from the mouth outward as well as from the chin outward. Treatment is usually limited to moist heat (soreness and swelling reduction), massage (relieve soreness, increase motion, muscle and circulation stimulation). When the muscles begin to gain function, it's important to try to gain control of them by exercising. Many different exercises have been developed to help regain control and strength of the facial muscles. The exercises should be done in front of a mirror to assist in symmetric formation and should be done 8-10 times, 3-10 times a day. The quality of the exercise is much more important that the number of times the exercise is done.

Some of the recommended muscles isolation exercises include:

Drinking through a straw to help the muscles around the mouth, wrinkling the nose, compressing, puckering, protruding lips, smile, squeeze the corners of the mouth, chew gum, closing and opening the eye, raising the eyebrows and hold, and frowning. Other exercises include saying vowels and words that contain M, B, F and P. Again, moist heat and massage are important. Working with the muscles gently is very important and holding and releasing is advised. Symmetric, balanced motion is also imperative. Forcing should never be done. This may promote cross-wiring during re growth. Setting and holding with little tension is better for regaining muscle function.

Not only is Bell's palsy physiologically devastating, it can also become a psychological burden affecting self-esteem. If Bell's palsy persists longer than normal, psychological effects are limitless. Psychological questionnaires help give medical professionals an idea of the extent of suffering with which their patients are dealing. Typical questions ask about social ramifications of the disease like the amount of time the patient has remained calm, remained isolated, been irritable, been sleepless, participated in activities outside the home.

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