

## Columbia University College of P & S Complete Home Medical Guide

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*Brain, Nerve, and Muscle Disorders*

### **NERVE DISORDERS**

#### **BELL'S PALSY**

##### **DEFINITION**

Bell's palsy is the term used to describe paralysis of muscles on one side of the face.

##### **CAUSE**

The paralysis results from temporary damage to the facial nerve (the seventh cranial nerve). The severity of muscle paralysis depends on the extent of nerve damage. Although the cause is unknown, a viral infection is suspected. The facial nerve passes through a narrow hole (foramen) in the skull and it is thought that inflammation at this point compresses and blocks function of the nerve. The disorder occurs at all ages, but is most frequent between 30 and 60.

##### **DIAGNOSIS**

Bell's palsy occurs suddenly and is often first noticed when the patient wakes up and looks in the mirror. Normally there is no pain, but there may be a slight discomfort in the region of the jaw or behind the ear. Features of the syndrome include sagging of the muscles of the lower half of the face on one side. In mild cases, the facial weakness is noted only when the patient smiles. Sometimes, the eye cannot be fully closed on the affected side; when this is attempted, the eye elevates. Abnormal tearing from the eye may result when the weakened eyelid can no longer funnel tears into the lacrimal ducts.

Examination by a neurologist is important to exclude the possibility of injury to other nerves or the central nervous system. In some cases, electrophysiologic testing of facial nerve function may locate a lesion. Although this test is not required for diagnosis, it can offer a more detailed evaluation of the condition if weakness persists and recovery has not begun in 6 or more months.

##### **TREATMENT**

Fortunately, 90 percent of patients with Bell's palsy recover completely, or nearly completely, without treatment. Some physicians prescribe prednisone (a cortisone substance) to reduce inflammation if the diagnosis is made within the first 48 hours. Other physicians believe this is unnecessary. If eyelid function is compromised, the eye must be covered to prevent drying or inadvertent injury from foreign objects. (For more information, see chapter 31, Diseases of the Ear, Nose, and Throat.)

#### **TRIGEMINAL NEURALGIA**

##### **DEFINITION**

Trigeminal neuralgia (tic douloureux), the most frequent of all neuralgias, causes severe,

stabbing paroxysmal pain on one side of the face. The condition results from dysfunction of the trigeminal nerve that runs from the brain stem to the face. Attacks of trigeminal neuralgia may be incapacitating and interfere with eating, but it is not fatal and causes no other symptoms.

### **CAUSE**

The cause of this condition is unknown, but the disorder occurs most frequently in middle or old age.

### **DIAGNOSIS**

The cardinal symptom is severe paroxysms of sharp, bulletlike pain in the gums, teeth, and lower face. Often a "trigger"—touching a particular part of the face, chewing, or a particular jaw motion—initiates the pain. In most instances, the pain is present for weeks or months and then ceases spontaneously for a variable period. As the patient grows older, the condition recurs more frequently. Diagnosis is based on the patient's medical history and a thorough examination that rules out other conditions.

### **TREATMENT**

The drug carbamazepine (Tegretol), which stabilizes irritable nerve membranes, is effective for many individuals. Other useful medicines include phenytoin (Dilantin) and amitriptyline (Elavil). In some intractable cases, surgery on the nerve is required for pain relief.

## **PERIPHERAL NEUROPATHY**

### **DEFINITION**

Diseases that selectively damage the peripheral nerves without affecting the brain and spinal cord are termed peripheral neuropathy. The peripheral nervous system's motor nerves convey the brain's commands to the muscles of the body while the sensory nerves relay sensory information back to the brain. Peripheral neuropathy may involve either a single nerve (called mononeuropathy or mononeuritis) or many nerves and their terminal endings (called polyneuropathy).

### **CAUSE**

Many diseases cause peripheral neuropathy. In the United States the most frequent causes include diabetes, chronic alcoholism, and malnutrition; leprosy is the most common cause throughout the rest of the world. The disorder is also associated with cancer and prolonged exposure to various toxic chemicals such as arsenic, mercury, and lead.

### **DIAGNOSIS**

Serial examinations by a neurologist over time can be essential to diagnose the disease and suggest a prognosis. Symptoms of polyneuropathy usually begin gradually, over the course of a few months. Initially, numbness in the hands and feet (sometimes called a "stocking-glove distribution") is accompanied by a prickly pins-and-needles feeling, called paresthesia, in the same body areas. If the condition is untreated, loss of sensation grows increasingly severe and spreads up the legs and forearms. As sensory impairment worsens, the muscles of the feet, ankles, fingers, and hands weaken, and sometimes the skin becomes so sensitive that the merest touch causes pain. Diagnostic testing called nerve conduction studies, electromyography, or nerve/ muscle biopsy may provide crucial information.

## TREATMENT

Although there is no specific medical or surgical therapy to regenerate damaged nerves, proper treatment of the underlying disease may slow the disorder's progress.

## CARPAL TUNNEL SYNDROME

### DEFINITION

This common form of mononeuropathy causes pain and numbness in the fingers. The problem originates in a branch of the forearm's median nerve that is compressed as it passes through the tunnel formed by the wrist bones (carpals) and a ligament that lies just under the skin (see [figure 26.5](#)). Carpal tunnel syndrome occurs most often in middle age.

### CAUSE

The syndrome is usually due to arthritis or other disorders affecting bones and ligaments or causing inflammation. Repetitive wrist motion such as typing on a computer keyboard can also cause the condition. Sometimes fluid accumulation (edema) or sudden weight gain (such as occurs in pregnancy) may also squeeze the nerve.

### DIAGNOSIS

Initially intermittent, the symptoms eventually become constant. Numbness and tingling begin in the thumb and first two fingers; then the hand, and sometimes the whole arm, becomes painful. The pain may be severe enough to interrupt sleep. Gradual weakness and wasting of the thumb muscles can occur if the condition is not treated.

### MALE/FEMALE DIFFERENCES

For unknown reasons the syndrome affects more women than men.

### PREVENTION

Weight loss can help alleviate the condition. Wrist rests for typists may help reduce the stress of using a keyboard.

### TREATMENT

Relatively mild symptoms may be relieved by a wrist splint. Control of edema (usually with diuretics) and treatment of arthritis with aspirin or other antinflammatory medication may also decrease pain and numbness.

**Surgical Treatment.** If the symptoms progress despite medication or splinting (and especially if weakness appears) a simple surgical procedure cuts the ligament at the wrist and relieves pressure on the nerve.

## GUILLAIN-BARRÉ SYNDROME

### DEFINITION

The Guillain-Barré syndrome causes symmetric weakness in the limbs, sometimes progressing to total body paralysis. This condition usually occurs 1 to 2 weeks after a mild viral infection such as a sore throat, bronchitis, or flu.

**CAUSE**

The illness results from nerve inflammation and myelin destruction similar to that seen in multiple sclerosis, but while multiple sclerosis repeatedly attacks the central nervous system, Guillain-Barré syndrome affects the peripheral nerves and rarely recurs. The nerve damage is thought to be caused by an abnormal immune reaction directed against the myelin of the peripheral nervous system.

**DIAGNOSIS**

Weakness of the limbs develops over a few days, and the facial muscles may be paralyzed as well, making it impossible to swallow normally. Diagnosis is made by observation of these clinical features, characteristic changes in cerebrospinal fluid, and electromyography (EMG), electrical studies of the peripheral nerves and muscles.

**TREATMENT**

In severe cases, paralysis of respiratory muscles requires a tracheostomy and mechanical ventilation to maintain breathing. With intensive medical treatment and support, the majority of patients recover, but about one-third suffer residual weakness.

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