Gait disorder

- Wearable-Derived Patterns of Performance Fatigability During Gait in Spinal Muscular Atrophy
- A Gait Sub-Phase Switching-Based Active Training Control Strategy and Its Application in a Novel Rehabilitation Robot
- Online Occupational Therapy as a Rehabilitation Intervention for Parkinson's Disease: A Systematized Review
- Spinal Arachnoid Cysts: A Single-Center Preliminary Surgical Experience with a Rare and Challenging Disease
- Influence of Gait Speed on Inter-Joint Coordination in People with and Without Parkinson's Disease
- Commentary: Treating Diseases from Alzheimer's to Parkinson's Using Transcranial Pulse Stimulation: Mechanistic Insights, Recent Evidence, and Ethical Considerations
- Identifying Clinical Measures Related to Falls in Ambulatory Patients with Spinal and Bulbar Muscular Atrophy
- Idiopathic Normal-Pressure Hydrocephalus Revealed by Systemic Infection: Clinical Observations of Two Cases

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Abnormality from normal walking (gait). Watching a patient walk is the most important part of the neurological examination. Normal gait requires that many systems, including strength, sensation and coordination, function in an integrated fashion. Many common problems in the nervous system and musculoskeletal system will show up in the way a person walks.

Gait disorders are a common and significant cause of reduced quality of life and independence. Falls are one of the most important consequences of gait disorders, but slow and insecure gait and ‘fear of falling’ also have great clinical significance.

Classification

Gait disorders can be classified according to the system responsible for the abnormal locomotion, according to the underlying disease associated with the abnormal gait or by its phenomenology.

Parkinsonian gait

see Parkinsonian gait.

Most gait disorders can be diagnosed and classified after obtaining a good history and a detailed physical and neurological exam. Detailed assessment with ambulatory gait monitoring devices or in a sophisticated gait laboratory are justified prior to surgery, to help document or identify impairments, subtle changes over time and therapeutic effects, and research.

Increased attention has recently been given to the cognitive aspects of gait. These also should be assessed as part of the routine evaluation of gait disturbances. Fall risk assessment is an essential part of the evaluation of a patient with gait disturbance including internal and external risk factors.

Treatment of gait disturbances should include an active intervention to decrease fall risk as well as medical, surgical and physical interventions which usually are given simultaneously.

Hemiplegic Gait

The patient stands with unilateral weakness on the affected side, arm flexed, adducted and internally rotated. Leg on same side is in extension with plantar flexion of the foot and toes. When walking, the patient will hold his or her arm to one side and drags his or her affected leg in a semicircle (circumduction) due to weakness of distal muscles (foot drop) and extensor hypertonia in lower limb. This is most commonly seen in stroke. With mild hemiparesis, loss of normal arm swing and slight circumduction may be the only abnormalities. Diplegic Gait

Patients have involvement on both sides with spasticity in lower extremities worse than upper extremities. The patient walks with an abnormally narrow base, dragging both legs and scraping the toes. This gait is seen in bilateral periventricular lesions, such as those seen in cerebral palsy. There is also characteristic extreme tightness of hip adductors which can cause legs to cross the midline referred to as a scissors gait. In countries with adequate medical care, patients with cerebral palsy may have hip adductor release surgery to minimize scissoring. Neuropathic Gait

(Steppage Gait, Equine Gait)

Seen in patients with foot drop (weakness of foot dorsiflexion), the cause of this gait is due to an attempt to lift the leg high enough during walking so that the foot does not drag on the floor. If unilateral, causes include peroneal nerve palsy and L5 radiculopathy. If bilateral, causes include amyotrophic lateral sclerosis, Charcot-Marie-Tooth disease and other peripheral neuropathies including those associated with uncontrolled diabetes.

Myopathic Gait trendelenburg

Hip girdle muscles are responsible for keeping the pelvis level when walking. If you have weakness on one side, this will lead to a drop in the pelvis on the contralateral side of the pelvis while walking (Trendelenburg sign). With bilateral weakness, you will have dropping of the pelvis on both sides during walking leading to waddling. This gait is seen in patient with myopathies, such as muscular dystrophy. Choreiform Gait

(Hyperkinetic Gait)

This gait is seen with certain basal ganglia disorders including Sydenham's chorea, Huntington's Disease and other forms of chorea, athetosis or dystonia. The patient will display irregular, jerky, involuntary movements in all extremities. Walking may accentuate their baseline movement disorder. Ataxic Gait

(Cerebellar)

Most commonly seen in cerebellar disease, this gait is described as clumsy, staggering movements with a wide-based gait. While standing still, the patient's body may swagger back and forth and from side to side, known as titubation. Patients will not be able to walk from heel to toe or in a straight line. The gait of acute alcohol intoxication will resemble the gait of cerebellar disease. Patients with more truncal instability are more likely to have midline cerebellar disease at the vermis.

Sensory Gait

As our feet touch the ground, we receive propioreceptive information to tell us their location. The sensory ataxic gait occurs when there is loss of this propioreceptive input. In an effort to know when the feet land and their location, the patient will slam the foot hard onto the ground in order to sense it. A key to this gait involves its exacerbation when patients cannot see their feet (i.e. in the dark). This gait is also sometimes referred to as a stomping gait since patients may lift their legs very high to hit the ground hard. This gait can be seen in disorders of the dorsal columns (B12 deficiency or tabes dorsalis) or in diseases affecting the peripheral nerves (uncontrolled diabetes). In its severe form, this gait can cause an ataxia that resembles the cerebellar ataxic gait.

Tandem gait

Gait (method of walking or running) where the toes of the back foot touch the heel of the front foot at each step. Neurologists sometimes ask patients to walk in a straight line using tandem gait as a test to help diagnose ataxia, especially truncal ataxia, because sufferers of these disorders will have an unsteady gait. However, the results are not definitive, because many disorders or problems can cause unsteady gait (such as vision difficulties and problems with the motor neurons or associative cortex). Therefore, inability to walk correctly in tandem gait does not prove the presence of ataxia.

Profoundly affected tandem gait with no other perceptible deficits is a defining feature of posterior vermal split syndrome.

Suspects may also be asked to perform a tandem gait walk during the “walk and turn” part of a field sobriety test.