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Endocrinology & Metabolic Syndrome

Short Communication

A Brief Note on Anterior Spinal Artery Syndrome

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Anterior spinal artery syndrome (also known as anterior spinal cord syndrome or Beck's syndrome) caused by anterior spinal artery, resulting in the loss of function of the anterior spinal cord (about two-third portion of spinal cord). The region affected spinal cord includes the ascending spinothalamic tract, descending corticospinal tract, and autonomic fibers which is characterized by loss of pain, loss of motor function, temperature sensation, and hypotension.

Anterior spinal artery syndrome is the seen commonly in the form of spinal cord infarction. The anterior spinal cord is increases risk for infarction because it is supplied by the single anterior spinal cord, which has little collateral unlike the posterior spinal cord which is supplied by two posterior spinal arteries.

Signs and symptoms of spinal artery syndrome

Complete motor paralysis below the level of the lesion is due to the interruption of corticospinal tract

Loss of pain and loss of temperature sensation at below levels of the lesion is due to the interruption of spinothalamic tract.

Retained proprioception and vibratory sensation is due to intact dorsal columns.

Autonomic dysfunction may be present and can manifest as hypotension (either hypotension or orthostatic), bowel dysfunction, sexual dysfunction, and bladder dysfunction.

Areflexia, flaccid external and internal anal sphincter, intestinal obstruction and urinary retention also present in individuals with anterior cord syndrome.

Symptoms occur quickly & often experienced within hour of the initial damage. MRI can detect the magnitude and location of the damage 10–15 hours after the initiation of symptoms. Diffusion-weighted imaging may be used as it is able to identify the damage within a few minutes of symptomatic onset.

Clinical features include quadriparesis or paraparesis (depends on the level of the injury) and impaired pain and temperature sensation. Complete motor paralysis below the level of the lesion due to interruption of the corticospinal tract, and loss of pain and temperature sensation at and below the level of the lesion. Proprioception and vibratory sensation is preserved, as it is in the dorsal side of the spinal cord.

The cause of anterior spinal artery is due to the improper supply of aorta to the branches spinal cord. These include aortic aneurysms, dissections, direct trauma to the aorta, surgeries, and atherosclerosis. Acute disc herniation, cervical spondylosis, kyphoscoliosis, damage to the spinal column and neoplasia all could result in ischemia from anterior spinal artery occlusion leading to anterior cord syndrome. Another cause includes vasculitis, polycythemia, sickle cell disease, decompression sickness, and collagen and elastin disorders. Any embolus or thrombus in largest feeder vessel known as the artery of Adamkiewicz, can lead to an anterior spinal syndrome. This is the most feared, though rare complication of bronchial artery embolization done in massive hemoptysis.

Anatomy

The anterior portion of the spinal cord is supplied by the anterior spinal artery. It begins at the foramen magnum where branches of two vertebral arteries merge, and exit, and descends along with the anterior spinal artery. As the anterior spinal artery proceeds inferiorly, it receives branches originating from aorta.

An MRI is used in diagnosing for this syndrome.

Treatment is based on primary cause of anterior cord syndrome. The mortality rate is 20%-50% of individuals with anterior cord syndrome with few or no changes in the symptoms.

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