What is Ataxia?

Ataxia is defined as a lack of muscle control or coordination of voluntary body movements. It usually presents itself as lack of control in the arms and legs and difficulty walking. Ataxic cerebral palsy is a medical diagnosis, and ataxia in general is usually a symptom of an underlying occurrence. It is most often caused by a loss of nerve cells, degeneration, or damage in the cerebellum (the part of the brain that controls muscle coordination). Many underlying conditions can cause ataxia, including:

- Head trauma
- Hypoxic-ischemic encephalopathy (HIE) or another oxygen-depriving birth injury
- Stroke
- Cerebral palsy
- Certain medications
- Multiple sclerosis
- Celiac disease
- Sarcoidosis
- Brain degeneration
- Inherited defective genes
- Paraneoplastic syndromes
- Toxic reaction
- Metabolic disorder
- Tumor

Signs and Symptoms

Ataxia can be characterized by the following symptoms:

- Difficulty swallowing
- Unsteady gait
- Poor muscle coordination or body movements
- Noticeable change in speech
Ataxia

- Fine motor difficulties
- Involuntary eye movements
- Loss of balance

The cerebellar degeneration that often causes ataxia can be slow in its progression. This should be reported to your doctor in order to evaluate its cause. If the damage or swelling of the cerebellum is acute and related to hemorrhage, edema, or another such cause, it can happen very quickly. Ataxia that comes on suddenly is a medical emergency.

Ataxia and the Cerebellum

Because ataxia is most often caused by a loss of nerve cells, degeneration, or damage in the cerebellum, it’s helpful to know what the cerebellum does. The cerebellum is the area of the brain that controls balance and coordination. It is split up into three basic structures, the midline cerebellum, the right cerebellar hemisphere, and the left cerebellar hemisphere.

The Midline Cerebellum

The midline cerebellar structures control rapid and slow eye movements, motor execution, vestibular function, and lower extremity coordination and balance. Damage to this area can bring about two specific types of ataxia: truncal ataxia and gait ataxia. Truncal ataxia can present itself as a patient’s inability to sit without the support of their arms, lack of coordination in the upper limbs, or swaying of the head and trunk. Individuals with gait ataxia may say they experience disequilibrium, have difficulty with gait, or fall when standing with their feet together.

The Cerebellar Hemispheres – Right and Left

The cerebellar hemispheres control the coordination of complex tasks as well as the planning of motor execution. The right hemisphere controls the movement of limbs on the left side of the body, and the left hemisphere control the movement of limbs on the right. Thus, damage to the cerebellar hemispheres can cause limb ataxia on the limbs controlled by that side.
Limb ataxia will present itself as difficulty with tasks completed by arms and legs. Damage to the area can also cause oral motor ataxia, which presents itself in the form of slurred, slow, irregular, or monotonous speech.

Treatments for Ataxia

Individuals with ataxia may find speech therapy, physical therapy, occupational therapy, regular aerobic exercise, certain medications, or the use of assistive technologies and adaptive devices helpful. The treatment plan should be based on the underlying cause(s) of the ataxia. In certain cases, the symptoms can be prevented or controlled. However, there is no cure for ataxia.

Ataxic Cerebral Palsy

Ataxic cerebral palsy is a subtype of cerebral palsy that brings about or is characterized by a lack of coordination. Ataxic cerebral palsy is rare, and can often be confused with progressive or genetic degenerative disorders. A patient can undergo metabolic studies, neuroimaging, and clinical courses to evaluate whether they have ataxic cerebral palsy or general ataxia.

Signs and Symptoms of Ataxic Cerebral Palsy:

Ataxic cerebral palsy is often characterized by the signs and symptoms of general ataxia. Some signs and symptoms may be more common in those with ataxic cerebral palsy, including:
• Slow, explosive, or jerky speech
• Delayed language skills and motor milestones
• Coordination issues and unsteady gait

Sources:

• Todd, P.K. Overview of cerebral ataxia in adults. In: UpToDate. Dashe, J (Ed), UpToDate, 2017.
• Mayo Clinic: Ataxia
• National Institute of Neurological Disorders and Stroke: Ataxias and Cerebellar or Spinocerebellar Degeneration
• MedlinePlus: Cerebellar Disorders