Cerebellar ataxia

Cerebellar ataxia is a form of ataxia originating in the cerebellum.

It is an inability to coordinate balance, gait, extremity and eye movements.

Lesions to the cerebellum can cause dyssynergia, dysmetria, dysdiadochokinesia, dysarthria and ataxia of stance and gait.

Deficits are observed with movements on the same side of the body as the lesion (ipsilateral).

Clinicians often use visual observation of people performing motor tasks in order to look for signs of ataxia.

There are many causes of cerebellar ataxia including, among others, autoimmunity to Purkinje cells or other neural cells in the cerebellum,

CNS vasculitis, multiple sclerosis, infection, bleeding, infarction, tumors, direct injury, toxins (e.g., alcohol), and genetic disorders.

Damage to the cerebellum, particularly to the cerebrocerebellum area and the cerebellar vermis, is almost always associated with clinical depression and often with alcoholism. Due to difficulties in mobility, self-care, everyday activities, and pain/discomfort, those with cerebellar ataxia are more likely to be diagnosed with anxiety and depression.

Almost a third of patients with isolated, late onset cerebellar ataxia go on to develop multiple system atrophy.

In recent years the cerebellum's role has been observed as not purely motor. It is intimately combined with intellect, emotion and planning.

“For many years, it was thought that postural and balance disorders in cerebellar ataxia were not treatable. However, the results of several recent studies suggest that rehabilitation can relieve postural disorders in patients with cerebellar ataxia…There is now moderate level evidence that rehabilitation is efficient to improve postural capacities of patients with cerebellar ataxia – particularly in patients with degenerative ataxia or multiple sclerosis. Intensive rehabilitation programs with balance and coordination exercises are necessary. Although techniques such as virtual reality, biofeedback, treadmill exercises with supported bodyweight and torso weighting appear to be of value, their specific efficacy has to be further investigated. Drugs have only been studied in degenerative ataxia, and the level of evidence is low.”

One approach is that it can be ameliorated to varying degrees by means of Frenkel exercises.

Research using Transcranial direct-current stimulation (TCDCS) and Transcranial magnetic stimulation (TMS) shows promising results.

Additionally, mild to moderate cerebellar ataxia is treated by buspirone.

It is thought that the buspirone increases the serotonin levels in the cerebellum and so decreases ataxia.

Individuals with cerebellar ataxia have full cognitive awareness: it's usually only the physical

deterioration that prohibits them from participating in activities of daily living and any other relevant or desired interests. One of the most significant barriers in the lives of these individuals is dysarthria. Due to their cognitive stability, it is important that people who spend time with individuals with this disease are able to communicate as fully as possible with them. This is necessary in order to improve their day-to-day interactions.

Behavioral intervention is successful when it involves engaging knowledge of the interests and general backgrounds of individuals with cerebellar ataxia. Communication maximizing strategies are also useful, such as exaggeration of articulatory gestures, giving full attention to their responses, repeating where necessary, and slowing down speaking rate.

Another intervention technique for speech is to focus on optimizing respiratory and vocal resources as well as training compensatory strategies.

These listed intervention techniques can improve quality of life in individuals with this disease and can be helpful for professionals/clinicians in the field as well as loved ones of those affected.