

Ataxia Caused by medications

Ataxia means lack of coordination, and is the result of damage to a part of the brain called the cerebellum which is responsible for coordinating movement. Common signs of ataxia are unsteadiness, clumsiness, and slurred speech.

Ataxia is a symptom of many different disorders and can be transient or permanent. Some drugs may produce temporary ataxia as a side effect that only continues whilst you are on the medication but others may be associated with permanent cerebellar damage leading to ataxia and other neurological symptoms.

When cerebellar damage has occurred as a result of drug toxicity, there are usually signs of damage to other parts of the brain as well as the cerebellum so there are often other neurological or mental symptoms.

The most common drug causing permanent cerebellar ataxia is alcohol, but there are also a number of medications that have been implicated. This information sheet discusses some of the better-known drugs that have been linked with ataxia. It is not meant to be an exhaustive list and there are other medications that can cause ataxia which are not described here.

PHENYTOIN

This is an antiepileptic drug, primarily taken to prevent seizures in people with epilepsy. All antiepileptic drugs list ataxia as a side effect e.g. phenytoin, carbamazepine, gabapentin, levetiracetam, and the ataxia may disappear when the medicine is reduced or discontinued. Permanent ataxia and cerebellar damage (seen on MRI scan) has been described in patients with epilepsy who are taking large doses of phenytoin and researchers agree that there is an association. However changes to the brain, including the cerebellum, can also occur as a result of repeated seizures in epilepsy.

There is a correlation between ataxic symptoms and the dose of phenytoin, with lower doses producing the early sign of nystagmus (involuntary eye movements) and gait and then limb ataxia becoming more obvious as the dose increases. Symptoms generally progress very slowly and may improve slightly if the dose of phenytoin is reduced or stopped.

The precise doses that can be tolerated and at which symptoms may occur vary between individuals so some people can tolerate higher doses without developing ataxia. It is not precisely known why this happens, but there is a suggestion that people who already have a degree of cerebellar damage are more at risk and should avoid phenytoin if possible. Unfortunately unless you have symptoms, you cannot tell if you have cerebellar damage without having a brain scan such as an MRI/CT scan.

AMIODARONE

Amiodarone is a drug used to control heart rate in people with abnormal heart rhythms, and has been used in this way for many years. Abnormal heart rhythms can be dangerous as there is an increased risk of stroke and heart failure. Amiodarone is only used when it is really necessary and under specialist supervision as it is associated with many unpleasant side effects; lung damage affecting breathing, skin rashes, eye and visual disturbances, and neurological symptoms including ataxia, tremor, and dizziness may occur. It is thought that 20-40% of patients taking amiodarone may experience one or more neurological side effects and the association with ataxia has been published in numerous research reports. The symptoms begin to reduce when the drug is withdrawn.

ANTINEOPLASTIC DRUGS

People may be exposed to these drugs in the treatment of cancer. Several antineoplastic agents (e.g. *cytarabine*, *methotrexate*, *5-fluorouracil*) have been associated with neurological symptoms, where ataxia might be a prominent early feature. Although this is very rare, neurological toxicity of these drugs should be considered as a possible cause in patients who develop ataxia or other brain and nervous system symptoms whilst undergoing chemotherapy. In these cases ataxic symptoms are usually reported to resolve when treatment finishes.

SOLVENTS

Organic solvents are volatile compounds widely used in industrial manufacturing and cleaning processes. Solvents found in many products such as glues, paint thinners and petrol have been linked to neurological damage in people who have been exposed to high doses, e.g. some industrial workers and people who abuse solvents (i.e. glue sniffers).

Toluene is found in glues, paint thinners, printing inks and laquers. The association between toluene and damage to the nerves has been known since research in the 1960s, but cases still occur due to the continued use of toluene and its presence in glues and adhesives that mean it is widely used by people who abuse solvents. Its toxic effects cause damage to the cerebellum resulting in ataxia, which is permanent, although may improve slightly if exposure to the substance is stopped.

Carbon disulfide has been used industrially in the manufacture of viscose rayon and cellophane, and widely used in the rubber industry. Workers in places using carbon disulfide may be at risk of neurological damage from inhalation, skin absorption or accidental ingestion. Symptoms may resemble alcoholic intoxication with dizziness, loss of coordination (ataxia) and nausea, as well as many other neurological and non-neurological problems.

n-hexane is a constituent of the glue used in shoes, roofing and leather products and in the textile and furniture industries. Chronic exposure can cause polyneuropathy- dysfunction of the peripheral nerves. This may first appear as a tingling or cramps in the fingers, toes and limbs and progress to weakness and loss of coordination (ataxia).

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