CONDITION

Multiple system atrophy - cerebellar subtype

Multiple system atrophy of the cerebellar subtype is a progressive brain condition that affects balance, coordination, and automatic body functions.

WHAT IT IS
Progressive brain condition affecting coordination and automatic body functions

BODY SYSTEM
Nervous system

MAIN SYMPTOMS
Poor balance, clumsy movement, dizziness, bladder problems

WHAT CAUSES IT
Unknown, with abnormal protein buildup in brain cells

HOW IT IS DIAGNOSED
Clinical criteria and MRI; certainty only by tissue examination

MAIN TREATMENT
Symptom control, rehabilitation, and supportive care

CAN IT BE CURED?
No, treatments currently manage symptoms

IS IT AN EMERGENCY?
Sometimes, with severe choking or breathing difficulty

LONG-TERM OUTLOOK
Progressive disability requiring increasing support over time

Overview

Multiple system atrophy of the cerebellar subtype, or MSA-C, is a rare, progressive condition of the brain and nervous system. "Cerebellar" refers to the cerebellum, the part of the brain that helps control balance, coordination, and accurate movement.

MSA also damages parts of the nervous system that control automatic body functions. These include blood pressure, bladder control, sweating, digestion, sexual function, and breathing during sleep. This combination of movement and automatic-function problems helps distinguish MSA from conditions that affect coordination alone.

In MSA-C, problems with balance and coordination are usually more prominent than stiffness or slowed movement. However, some people develop both cerebellar symptoms and features that resemble Parkinson's disease.

MSA-C becomes more disabling over time. There is currently no cure or treatment proven to stop its progression, but treatment can reduce some symptoms, support independence, and lower the risk of complications.

Symptoms

Symptoms often begin gradually. Their order and severity are not the same for everyone.

Cerebellar symptoms may include:

These coordination problems are called ataxia . Unlike muscle weakness, ataxia means the brain cannot control the timing and accuracy of movement normally.

Problems with automatic body functions are also central to MSA. They may appear before, during, or after the movement symptoms. Common examples include:

A fall in blood pressure after standing is called orthostatic hypotension . It can increase the risk of fainting and falls.

Other possible symptoms include stiffness, slowed movement, reduced facial expression, swallowing difficulty, sleep apnoea, and disturbed sleep. Some people make movements or call out while dreaming because the usual temporary muscle paralysis during dream sleep is lost.

A high-pitched or harsh breathing sound called stridor may develop, particularly during sleep. It happens when the upper airway becomes narrowed and needs medical assessment.

- Unsteady walking and frequent loss of balance
- Poor coordination of the arms, hands, or legs
- Slurred, slow, or irregular speech
- Difficulty controlling eye movements
- Shaking during purposeful movement
- Trouble with tasks such as writing, eating, or fastening clothes
- Dizziness, blurred vision, weakness, or fainting after standing
- Urgent or frequent urination
- Difficulty starting or fully emptying the bladder
- Loss of bladder control
- Erectile dysfunction
- Constipation

- Reduced sweating or difficulty regulating body temperature

Causes and risk factors

The exact cause of MSA-C is unknown.

In affected areas of the brain, a protein called alpha-synuclein builds up abnormally inside support cells known as glial cells. These changes are associated with the loss of nerve cells involved in coordination, movement, and automatic body functions. Researchers do not yet know why the buildup begins or how to stop it.

MSA is usually considered a sporadic condition, meaning it occurs without a clear family pattern. It is not normally passed directly from parent to child. Genetic differences may influence susceptibility in some people, but MSA is not generally treated as a straightforward inherited disorder.

There are no well-established lifestyle choices that cause MSA-C. It is not caused by stress, poor fitness, or something the affected person did. It is not contagious.

Diagnosis

There is no single blood test or scan that can conclusively diagnose MSA-C during life. Diagnosis is based on the pattern of symptoms, examination findings, test results, and changes over time.

A neurological examination may assess walking, balance, coordination, speech, eye movements, reflexes, muscle tone, and speed of movement. Blood pressure is often measured while lying down and again after standing.

Tests may include:

Certain MRI findings, including the so-called "hot cross bun" sign in the brainstem, can support the diagnosis. This sign is not unique to MSA and does not confirm the condition by itself.

MSA-C can resemble inherited spinocerebellar ataxias, Parkinson's disease, progressive supranuclear palsy, immune-related ataxia, and other neurological conditions. Follow-up over time may be needed before the pattern becomes clear.

The highest level of diagnostic certainty requires examination of brain tissue after death. In practice, specialists use established clinical criteria to classify how strongly the findings support MSA.

- MRI of the brain to look for changes supporting MSA or another cause
- Blood tests to exclude treatable causes of poor coordination
- Bladder scans or urodynamic tests to assess bladder emptying
- Autonomic tests of blood pressure, heart rate, and sweating
- A swallowing assessment if eating or drinking has become difficult
- A sleep study when sleep apnoea, stridor, or dream-enactment symptoms occur
- Genetic testing when the history suggests an inherited form of ataxia

Treatment and management

There is no treatment currently proven to cure MSA-C or stop the underlying nerve-cell loss. Care focuses on symptoms, safety, mobility, communication, nutrition, and quality of life.

A rehabilitation team may include physiotherapists, occupational therapists, speech and language therapists, dietitians, bladder specialists, and respiratory or sleep specialists.

Physiotherapy can help maintain movement, strength, and flexibility. Walking aids or a wheelchair may improve safety and allow continued activity. An occupational therapist can suggest changes to the home, bathroom, seating, and everyday tasks.

Speech and language therapy can help with speech clarity and communication aids. The same specialist may assess swallowing and suggest safer food textures, eating positions, or techniques. If swallowing no longer provides enough nutrition or becomes unsafe, tube feeding may be discussed. This is a personal decision based on risks, goals, and likely benefits.

Measures for low blood pressure may include standing up slowly, compression garments, raising the head of the bed, or changes to meals and fluid intake. Extra salt or fluid is not safe for everyone, particularly people with some heart or kidney conditions, so it should be discussed with the clinical team. Medicines may be considered when non-drug measures are insufficient.

Bladder management depends on whether the main problem is urgency, leakage, retention, or a combination. Options can include bladder training, medicines, intermittent catheter use, or other forms of catheter drainage.

A trial of levodopa, a medicine used for Parkinson's disease, may help stiffness or slowed movement in some people. The response in MSA is often limited or temporary, and the medicine can sometimes worsen low blood pressure. There is no established medicine that reliably controls the cerebellar coordination problems.

Sleep apnoea or stridor may require overnight breathing support, such as continuous positive airway pressure. In selected cases, a tracheostomy may be considered to protect the airway. This is an opening made through the front of the neck into the windpipe.

Palliative care can be included alongside active treatment. It focuses on symptom relief, planning, emotional support, and quality of life; it is not limited to the final stage of illness.

Complications

Poor balance and low blood pressure can lead to falls, fractures, and head injuries. Mobility problems may eventually make transfers, bathing, dressing, and other daily activities difficult without help.

Swallowing problems can cause weight loss, dehydration, or food entering the airway. Material that reaches the lungs may lead to aspiration pneumonia.

Other possible complications include:

Regular review can identify many of these problems early and allow treatment or equipment to be adjusted.

- Repeated fainting from low blood pressure
- Urine retention and urinary tract infections
- Loss of speech or difficulty being understood
- Sleep-related breathing problems
- Pressure injuries when mobility is very limited
- Increasing dependence on carers for daily activities

Prevention

MSA-C cannot currently be prevented. There is no proven screening test, medicine, diet, or lifestyle change that stops it from developing.

Some complications can be reduced. Fall-prevention measures, timely swallowing reviews, bladder care, mobility equipment, and assessment of sleep-related breathing can improve safety. Staying active within safe limits may help preserve function, although it does not stop the condition itself.

Because MSA is not usually inherited in a simple way, family members do not normally need routine testing. Genetic counselling may be appropriate if several relatives have unexplained

ataxia or if testing suggests another inherited condition.

Living with it and what to expect

MSA-C usually progresses over years. Balance, coordination, speech, swallowing, bladder control, and blood-pressure regulation may become more difficult. The speed and order of these changes cannot be predicted precisely for one person.

Early on, a walking aid, home adaptations, and changes to daily routines may support independence. Later, a wheelchair, transfer equipment, communication aids, or help with personal care may be needed. Planning for these changes before a crisis can make transitions less stressful.

Thinking and memory are often less affected than movement and automatic body functions, although changes in attention, mood, or thinking can occur. Depression, anxiety, grief, and social isolation deserve the same attention as physical symptoms.

Regular follow-up is used to review falls, blood pressure, bladder emptying, sleep, nutrition, communication, and equipment needs. Advance care planning can record preferences about breathing support, tube feeding, hospital care, and who should speak for you if you cannot communicate. These discussions can be updated as circumstances change.

Many people continue to take part in relationships, hobbies, family life, and decisions about their care, with activities adapted to their abilities. Support needs generally increase, and help for family members or other carers is often important.

When to get medical help

Arrange routine follow-up if symptoms are gradually worsening, equipment is no longer suitable, medicines cause unwanted effects, or daily activities are becoming harder. Report repeated falls, weight loss, new swallowing difficulty, worsening bladder symptoms, or increasing dizziness rather than waiting for the next planned review.

Seek urgent medical assessment for:

Call emergency services for severe breathing difficulty, choking that does not clear, loss of consciousness with failure to recover normally, or a serious fall or head injury. Sudden facial drooping, one-sided weakness, or abruptly changed speech may be signs of a stroke and also require emergency help.

- New or worsening noisy, high-pitched breathing

- Repeated fainting or a faint that causes injury
- Inability to swallow fluids
- Inability to pass urine with a painful or swollen lower abdomen
- Fever, cough, chest discomfort, or breathlessness after choking
- A sudden major decline in walking, speech, or alertness

Common questions

Is MSA-C the same as Parkinson's disease?

No. Both conditions can cause stiffness, slow movement, and automatic-function problems, but MSA is a separate condition. MSA-C is especially associated with poor coordination and balance. Parkinson's medicines are also less likely to give a strong or lasting response.

Is MSA-C inherited?

Usually not. Most cases occur without a clear family history. If several relatives have coordination problems, specialists may investigate inherited forms of ataxia that can resemble MSA-C.

Does a "hot cross bun" sign on MRI prove I have MSA-C?

No. This MRI pattern can support the diagnosis, but it can occur in other neurological conditions. The scan must be considered alongside symptoms, examination findings, and other tests.

Can MSA-C be cured?

There is currently no cure or proven treatment that stops progression. Treatment can still make an important difference by managing blood pressure, bladder symptoms, swallowing, breathing, mobility, sleep, and communication.

How quickly does MSA-C progress?

It usually worsens over years, but the pace is not identical for everyone. Changes may be gradual or occur in steps after infections, falls, or periods of reduced mobility. Regular assessments help match support to current needs.

Is MSA-C the same as spinocerebellar ataxia?

No. Spinocerebellar ataxias are a group of conditions, many of which are inherited. They can look similar to MSA-C, so family history, genetic tests, autonomic symptoms, MRI findings, and follow-up may help distinguish them.

Sources

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