

## **MULTIPLE SCLEROSIS**

***This information sheet is for your information and is not a substitute for medical advice. You should contact your doctor or other healthcare provider with any questions about your health, treatment or care.***

### **What is multiple sclerosis?**

The nervous system of our body is comprised of the brain and the spinal cord. The tissues of these organs are differentiated into areas called the grey matter and the white matter. Multiple sclerosis affects the white matter of the nervous system. The white matter is responsible for transmitting message impulses from our brain and spinal cord to other areas of our body that control movements, sensation, temperature perception and reflexes, amongst others.

During an episode, the white matter becomes inflamed and the body mounts up an immune response that destroys the white matter. These inflamed areas become scarred, hence the term 'sclerosis'. The damage is therefore caused by the body's own immune/inflammatory response, also known as an auto-immune disease, for which the trigger is unknown. Transmission of impulses to our organs and limbs are therefore impaired. This results in a loss of function and/or sensory perception of that organ or limb and results in symptoms and signs that resemble a stroke.

### **Who may develop multiple sclerosis?**

Multiple sclerosis usually presents in adults between the age of 20 and 45. The condition may also occasionally present itself during childhood and late middle age. It is twice as common in women as in men, and also in individuals with other auto-immune diseases.

### **Symptoms and signs of multiple sclerosis**

The symptoms (what you feel) and signs (your body's physical response) of multiple sclerosis are non-specific. This means that these symptoms and signs may be present as part of other conditions as well and are not exclusive to multiple sclerosis.

These symptoms include:

- numbness or tingling pain
- visual impairment (reduced acuity or double vision)
- dizziness or vertigo
- depression
- fatigue
- heat sensitivity
- Lhermitte's sign: electrical sensation down the spine when bending the neck
- bladder dysfunction
- weakness of the limbs
- abnormal pace or way of walking.

Your doctor may generally draw out the signs of multiple sclerosis, which include:

- action tremor
- decreased pain, vibration or position perception
- decreased limb strength
- hyperreflexia and spasticity
- impaired co-ordination and balance
- nystagmus (involuntary rapid movement of the eyeball)
- impaired visual acuity.

## **Causes and classification of multiple sclerosis**

### *Benign, relapsing or remitting*

Symptoms occur at irregular intervals. Periods of good quality health or remission alternate with periods of relapses characterised by sudden onset of symptoms. This form of the condition occurs in 80% of patients at the onset of multiple sclerosis.

### *Secondary progressive*

This follows relapsing/remitting multiple sclerosis. The symptoms increase and progressively worsen. There are fewer remissions at this stage. About 50% of patients with relapsing/remitting multiple sclerosis develop this form of the condition during the first 10 years of having multiple sclerosis.

### *Primary progressive*

Symptoms of the primary episode do not resolve and there is no remission phase of the condition. New symptoms gradually develop and worsen over time. This form of the condition occurs in 10-15% of people from the onset.

## **Diagnosis of multiple sclerosis**

The diagnosis of multiple sclerosis largely depends on clinical features complemented by support from specialised investigation. The clinical feature of multiple sclerosis is based on the objective evidence of two or more symptoms being present, that are limited to the brain or spinal cord and that occur in different parts of the nervous system for periods of at least three months apart.

## **Specialised investigations**

### *Magnetic resonance imaging (MRI)*

This investigation is highly sensitive for the detection of pathological changes (indicating the presence of the condition) in the brain and spinal cord of patients with multiple sclerosis and is therefore the most valuable form of confirming the diagnosis. Explicit MRI diagnostic criteria have been specifically developed for this purpose. The MRI image can be enhanced with a contrasting method, which helps to differentiate older lesions from new ones. It is also useful in excluding other conditions that may show similar symptoms to multiple sclerosis.

### *Sensory-evoked potential*

This test helps the doctor identify visual (sight), auditory (sound) and somatosensory (touch sensation) insufficiencies, or signs that may not have been experienced yet by the patients. It also helps to objectively confirm any sensory symptoms that the patient may complain about.

### *Cerebrospinal fluid (CSF) analysis*

CSF is a fluid circulated throughout the brain and spinal cord. It is obtained via a lumbar puncture (procedure whereby spinal fluid is removed from the spinal canal for the purpose of diagnostic testing). The protein, immunoglobulin G (IgG), is measured in the CSF and is usually raised. A technique called 'electrophoresis' is also done on the CSF to check for inflammation of the central nervous system due to infection or the presence of disease.

## **Treatment of multiple sclerosis**

### *Acute episode/relapse*

An acute episode of multiple sclerosis sufficient to cause distressing symptoms, or an increase in limitation of regular activities is treated with high doses of corticosteroids. It is recommended that the treatment course commence as soon as possible after the onset of the relapse. The medication may be administered through an intravenous injection (IV) or orally at a higher dose between three to five days. If the condition falls into a subgroup characterised by several severe relapses, which fail to respond to a high dosage of corticosteroids, an alternative treatment called 'plasma exchange' may be considered. Plasma exchange is a blood purification technique used to remove extra antibodies, abnormal proteins or other harmful substances from the blood.

### *Symptomatic treatment*

The following medication is used to relieve the symptoms of multiple sclerosis, either during the acute attack, or where the pattern of the condition is of a progressive nature:

- baclofen, tizanidine or gabapentin for spasticity (a form of muscle overactivity that occurs when communication between your brain and spinal cord is disrupted by an injury or an illness)
- gabapentin, carbamazepine or amitriptyline for pain and dystonic spasm (involuntary muscle contractions that cause repetitive or twisting movements)
- oxybutynin or tolterodine for bladder urgency
- fluoxetine, citalopram or bupropion SR for depression
- amantadine or modafinil for fatigue.

There is considerable benefit from physiotherapy, occupational therapy and biokinetics in treating multiple sclerosis. These therapies are part of a holistic approach to dealing with the symptoms and disability of multiple sclerosis. It has been shown that an intensive, interdisciplinary rehabilitation programme improves recovery after treatment.

### *Disease-modifying drugs*

These drugs are effective in preventing new lesions from forming and attempt to halt the progression of disease, however they are not effective in repairing damaged white matter. Disease-modifying drugs should be given early on in the condition as its use may be limited due to its cost.

Please keep the following information handy whenever you visit your treating doctor or engage with your scheme's chronic disease management programme, as it may assist in the management of your condition:

- Any emergency room visits or hospital admissions
- Frequency of chest pain per week
- Frequency of chest pain per week, not controlled with medication
- How many days per week do you take your medication?

### **References**

1. MAYO CLINIC. Website. <https://www.mayoclinic.org/>. 7 September 2021
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