Multiple Sclerosis Trust

MS

Multiple sclerosis information

for health and social care professionals

Fourth Edition

Tremor

Tremor is a complex movement disorder characterised by involuntary uncontrolled movements. It consists of oscillating movements of the upper limb at a frequency of 3-8Hz and may be present when a person is voluntarily maintaining a posture against gravity (postural tremor), or during voluntary movement (kinetic tremor) especially during target directed movement (intention tremor). The tremor amplitude increases during visually guided movements towards a target and occurs at the termination of the movement[1]. This can be observed during the finger to nose test[2] when as the finger approaches the nose the tremor amplitude increases. It is uncommon in MS to experience tremor when the body is fully supported (rest tremor) although head and neck tremor can still be present when lying down. In some cases there is visual involvement, nystagmus, and severe tremor has been found to correlate with the presence of dysarthria.

Ataxia often exists alongside tremor and is a term used to describe abnormal movements occurring during voluntary activity including lack of coordination, dysmetria (inaccuracy in achieving a target), dysdiadochokinesia (inability to perform movements of constant force and rhythm) and delay in movement.

At least one third of the MS population experience tremor[1] but estimates vary. In 5-10% of those experiencing tremor it will be severe, causing a high level of disability and a loss of independence in activities of daily living. Tremor can occur gradually or can appear rapidly. It may occur in one arm only but frequently occurs in both, with one arm usually more affected than the other.

Stress, anxiety, emotional upset and fatigue can make tremor worse.

Cause of MS related tremor

The exact mechanism of tremor is unknown but is thought to be due to lesions in the cerebellum and its connections. The cerebellum is responsible for coordinating movement and smooth muscle activity. Damage to the basal ganglia is also thought to cause tremor although the mechanism is unclear[3].

Measurement of tremor

The Fahn Tremor Rating Scale[4] and the 0-10 Tremor Severity Scale[5] have both been validated for use in MS. The International Cooperative Ataxia Rating Scale (ICARS) has been shown to be a reliable and repeatable measure for ataxia[6].

Impact of tremor on people with MS?

Tremor is one of the most disabling symptoms of MS causing the person to become dependent as many daily activities such as writing, eating, dressing and personal hygiene become difficult to perform.

Tremor can be socially isolating. The person with tremor will often avoid situations that make their difficulties obvious. As tremor most commonly occurs during purposeful movement, people may avoid eating and drinking in public, attending social events, shopping etc.

Treatment for tremor

Tremor remains one of the most difficult MS symptoms to manage[7,8]. A multidisciplinary team (MDT) approach is required. Physiotherapist, occupational therapist, MS specialist nurse, speech and language therapist, psychologist, neurologist and neurosurgeon may all be involved at some point in the management of MS related tremor. Treatment can include advice on compensation strategies, physiotherapy, adaptations, drug treatments and surgery.

Compensation strategies

Movements that involve reaching away from the body, especially target-directed movements (intention tremor) make tremor amplitude increase. Strategies such as pressing the elbow firmly to the side of the trunk may reduce distal tremor although this also reduces reach.

Frequently people with tremor also have postural instability or insufficient trunk support which can make controlling movements more difficult. There are ways to compensate for the tremor to reduce its impact such as reducing forward reach, leaning against an arm rest, or using a head rest and back support to give more postural stability but this in turn can also limit function.

People with head tremor (titubation) may attempt to stabilise the head against the shoulder in an attempt to reduce the tremor. The use of a head

rest may reduce head tremor and make activities such as watching television easier.

Holding the wrist of the active hand with the other hand may help with tasks such as grooming.

The use of wrist weights has been of limited benefit in dampening tremor. They can be helpful if worn during eating in cases of mild/moderate tremor. Prolonged use should be avoided as it has been shown to increase the amplitude of tremor after the weights have been removed.

Some people find that mentally practicing or visualising a movement before attempting it can reduce tremor.

Physiotherapy

Physiotherapy treatment and advice can help manage tremor. The approach often used is aimed at stabilising the proximal limb and trunk. Maintaining joint range of movement and muscle length will allow better posture and movement.

Adaptations

Adaptation is a key element to coping with tremor.

Fatigue makes tremor worse and so planning the day's activities appropriately is important. New methods for daily activities may be found and aids adopted where useful. Aids for eating and drinking may be of benefit to people with moderate to severe tremor. Writing is often one of the first activities that may be stopped as handwriting becomes illegible. Developments in assistive technology can offer some help[9]. Voice activation, keyboard modifications and dedicated software programmes can enable independent use of a computer and charities such as AbilityNet[10] can be a useful resource.

Experimental studies have shown that cooling of the arms markedly reduced intention tremor severity in patients with MS, the benefit is transient lasting for 30 minutes and therefore may be beneficial prior to performing specific tasks[11].

Drug treatments

There are no drugs specific for tremor and therapy using drugs licensed for other conditions has limited benefits. Beta-blockers may show some functional improvement whilst clonazepam and isoniazid are of little or no benefit. These drugs have not been evaluated for tremor in MS in clinical trials. Botulinum toxin has been used with some success to treat intrusive head tremor in people with MS[1]. Cannabinoids appear ineffective[3].

Surgery

Stereotactic lesional surgery to the thalamus may be used in severe cases of tremor[12]. Deep brain stimulation or thalamic stimulation, which has been used successfully in treatment of Parkinson's, may also offer a new approach. The outcomes of these approaches are continuing to be evaluated[13,14].

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We hope you find the information in this book helpful. If you would like to speak with someone about any aspect of MS, contact the MS Trust information team and they will help find answers to your questions.

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