Multiple Sclerosis

Multiple sclerosis (MS) is a chronic disease (a disease that lasts over a long time period with episodes that recur). MS is believed to be an autoimmune disease, since the body’s immune system acts in a way it is not supposed to, attacking the myelin of the Central Nervous System or CNS (which includes the brain, the spinal cord, and the optic nerves or nerves of the eye). Myelin is a substance that surrounds and protects nerve fibers of the CNS. With MS, damaged myelin forms hardened scar tissue (known as sclerosis, giving the disease its name) and damage can also occur to the nerve fibers themselves. Damage or destruction of nerve fibers and/or myelin disrupts the nerve impulses that travel to and from the brain and spinal cord. When these impulses are interrupted or altered, a variety of neurological symptoms result. The damage caused by MS is irreversible and gets worse over time, making MS a progressive disease that often leads to disability for the patient.

There are 4 main clinical categories that medical professionals use to classify different types of MS. Within each category, symptoms and disability may be mild, moderate, or severe. MS is different for each patient in the way it presents and in the symptoms a patient has, meaning that sometimes MS is hard to diagnose (especially in the early stages of the disease). The 4 categories of MS are:

- **Relapsing-Remitting MS:** About 85% of MS patients are in this category. Patients with this type of MS have periods of “attack” (also called flare-ups, exacerbations, or relapses) where there are neurological symptoms in different areas of the CNS. These symptoms improve or disappear (known as remission), often without noticeable continuation of the neurological symptoms. During the time period of remission, the patient’s disease does not progress or get worse, though damage may continue to occur due to inflammation associated with MS.

- **Primary-Progressive MS:** About 10% of patients with MS fall into this group. Patients have decline in neurological function from the onset of disease without periods of attack or remission. In this MS category, rate of progression varies between patients, with decrease in neurological function happening more quickly in some patients. Some patients may have periods of time where they show minor improvement in neurological function or where MS symptoms briefly stop getting worse.

- **Secondary-Progressive MS:** About 50% of MS patients start out with Relapsing-Remitting MS and are put in this category within 10 years of onset of MS. Once in this category, patients have disease that continually gets worse, and the patients may or may not have some times of attack, remission, or disease stability. Progression continues and often does not respond well to therapy; patients often become
increasingly disabled due to their MS. There is research still going on to determine if treatment of patients from time of diagnosis may prevent development of this stage.

- **Progressive-Relapsing MS**: Less than 5% of MS patients fall into this group. These patients have MS that gets steadily worse from the onset of the disease, but they also experience episodes of attack where neurological symptoms worsen. Patients may or may not recover function after these attacks, but they continue to progress with their MS without periods of remission.

**Symptoms of MS**

Though every MS patient is different, there are symptoms that are commonly associated with MS. Examples are:

- Sensory loss or parasthesia (tingling or prickling feeling in arms or legs), numbness
- Problems with balance, walking, and coordination
- Spasticity (contraction or spasm of muscles that patient cannot control) or tremor
- Problems with vision and the eyes
- Pain (up to half of MS patients have pain at some time during their illness)
- Depression and other emotional changes
- Cognitive difficulties and changes (in areas like attention span, memory, and concentration)
- Dizziness or vertigo

**Treatment of MS**

There is no cure for MS, but treatment is used to modify the disease (decrease progression and MS attacks/symptoms), to treat attacks and manage symptoms, and to improve patients function in day-to-day life. Emotional support is also very important, since depression and emotional issues are common with MS patients. Disease-modifying agents act on specific parts of the immune system to stop the immune system from attacking the body’s own cells, therefore reducing new attacks and possibly delaying disability. These agents are used in patients whose MS is categorized as relapsing, including some patients with Secondary-Progressive MS who continue to have attacks. Disease-modifying drugs include Interferon beta (both 1a- Avonex and Rebif- and 1b- Betaseron and Extavia), Copaxone (glatiramer acetate), Tysabri (natalizumab), Gilenya (fingolimod), and Novantrone (mitoxantrone). There are also several agents going through the FDA approval process, and new information continues to be released about new options in this class of treatment. Disease attacks (or exacerbations) are usually treated with high doses of corticosteroids to reduce inflammation, since these attacks are caused by inflammation in the CNS as myelin and nerves are damaged. Examples are
Dexamethasone (Decadron) and Solu-Medrol (methylprednisolone). Many classes of medications are used in management of MS symptoms, since symptoms are unique to each MS patient. However, there are some medications commonly used to treat symptoms frequently experienced by MS patients. Spasticity is treated with a variety of muscle relaxants, like Lioresal (baclofen) and Zanaflex (tizanidine), though these medications often cause drowsiness and may increase fatigue. CNS stimulants are used to treat fatigue and help with wakefulness (examples are Provigil- modafinil- and Ritalin or Concerta- methylphenidate). Ampyra (dalfampridine) is a potassium channel blocker used to improve walking in MS patients. Tricyclic antidepressants, such as Elavil (amitriptyline) and Pamelor (nortriptyline), are effective in treating pain caused by MS progression (often described as “shooting” or “burning” pain). There are many more agents used effectively to manage symptoms on a patient-by-patient basis. Improving and maintaining MS patients’ ability to function at work and home and perform daily activities is important for MS patients at all stages of disease. Rehabilitation includes physical therapy, occupational therapy, cognitive therapy, sometimes speech therapy, and other programs to improve quality of life for MS patients. A combination of treatment strategies that includes medication and rehabilitation is important to properly manage MS.

For more information, please visit:

http://www.nationalmssociety.org : The National Multiple Sclerosis Society

http://www.msaa.com : The Multiple Sclerosis Association of America

http://www.msfacts.org : The Multiple Sclerosis Foundation

References:


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