What is Multiple Sclerosis?

Multiple Sclerosis (MS) is a disease of the central nervous system (including the brain and spinal cord) in which the nerves degenerate.

The myelin is the covering or insulation for nerves. It improves the conduction of impulses along the nerves. Patients with MS have inflammation, which causes the myelin to disappear. Due to the inflammation and deterioration of the myelin, permanent nerve damage is caused. As the MS progresses, the patient experiences a progressive interference with functions that are controlled by the central nervous system.

Who does Multiple Sclerosis affect?

Approximately 350,000 people in the United States have MS. The norm is to be diagnosed with MS between 20 to 50 years of age, although there have been cases of children and the elderly population being diagnosed as well. Women are twice as likely to be diagnosed with MS and MS is twice as likely to occur amongst Caucasians.

Etiology or Cause of Multiple Sclerosis

The cause of MS is still unknown. Many researchers have focused in the past 20 years on disorders of the immune system and genetics for explanations.

Theories

One theory involves the immune system. The immune system is the body's defender, it is highly organized and regulated. If triggered by an aggressor or foreign object, the immune system mounts a defensive action, which identifies and attacks the invader, and then withdraws. This process depends on rapid communication among the immune (?) cells and the production of cells that can destroy the intruder. In patients with MS, researchers suspect that a foreign agent, such as a virus, alters the immune system so that it perceives the myelin as an intruder and attacks it.

Autoimmunity

When our normally protective immune system is directed against the body’s own tissues, it is called autoimmunity. Multiple Sclerosis is believed to be a disease of autoimmunity. While some of the myelin may be repaired after the assault, some of the nerves are stripped of their myelin causing demyelination

(When our normally protective immune system is directed against the body’s own tissues, it is called an autoimmune response. Multiple Sclerosis is believed to be a disease of autoimmunity. While some of the myelin may be repaired after the assault, some of the nerves are stripped of their myelin causing demyelination.)

Is Multiple Sclerosis inherited?

Although the role is unclear, genetics does play a role in MS. The chance increases in families where a first degree relative has the disease. Thus, a brother or sister, parent, or a child of a person with MS stands a one to three percent (1% - 3%) chance of developing MS. An identical twin runs nearly a thirty percent (30%) chance of acquiring MS, where as a non-identical twin has only a 4% chance of acquiring MS. The general population has less than a one percent (< 1%) chance of developing MS. These statistics suggest that there is a genetic factor

Symptoms of Multiple Sclerosis

Some symptoms of MS include, but are not limited to:

- Muscle spasms
- Visual disturbances
- Limb weakness
- Loss of sensation, speech impediment, tremors, or dizziness
- Depression
• Manic depressions
• Paranoia
• Uncontrollable urge to laugh or weep
• Vision
• Speech
• Walking
• Writing
• Memory

**Muscle Spasms**

One of the most common symptoms of Multiple Sclerosis is muscle spasms. A muscle spasm is an involuntary contraction of a muscle that usually occurs suddenly. These spasms can resolve themselves quickly but also be very painful.

Muscle spasms are different than a muscle twitch, which is an uncontrolled fine movement of a small segment of a larger muscle.

**Types of Muscles**

Muscles are complex structures that cause movement in the body. There are three types of muscles in the body:

• Cardiac muscle, which includes the heart.
• Skeletal muscle, which helps move external parts. These muscles are anchored to bone directly or by a tendon. When the muscles contract, the associated structure moves.
• Smooth muscle, which includes the stomach and intestines.

**Types of Multiple Sclerosis**

• Relapsing – Remitting (RR) MS
• Primary – Progressive (PP) MS
• Secondary – Progressive (SP) MS
• Progressive – Relapsing (PR) MS
• Malignant or Fulminant MS

**Relapsing – Remitting MS**

• Most common type
• Patients experience a series of attacks followed by complete or partial disappearance of symptoms (remission) until another attack occurs (relapse)
• The time between relapses may be weeks or decades

**Primary – Progressive MS**

• A continuous disease process
• This presents in patients with a gradual decline in a person’s physical abilities from the outset
• This type of MS does not experience any periods of remission

**Secondary – Progressive MS**
• Occurs in patients who have Relapsing – Remitting MS

• The patients enter a phase when the relapses are rare, but more disabilities accumulate

• About 50 % of RR – MS individuals will develop SP – MS within ten years

Progressive – Relapsing MS

• Characterized by a steady decline in abilities accompanied by sporadic attacks

• Usually cases that are mild and can be recognized only in retrospect after many years

Malignant or Fulminant MS

• Extremely rare

• Can sometimes be fatal

• Very fast progression

How is Multiple Sclerosis diagnosed?

Due to the broad range and subtleties of symptoms, MS may not be diagnosed for months to years after the onset of symptoms. Physicians, particularly neurologists, take detailed histories and perform complete physical and neurological examinations.

Ways to Diagnose MS

• MRI (Magnetic Resonance Imaging) scans with intravenous gadolinium and helps to identify, describe, and in some instances, date the plaques, or lesions in the brain.

• An electro-physiological test, evoked potentials, examines the impulses traveling through the nerves to determine if the impulses are moving normally or too slowly

• Finally examining the cerebro-spinal fluid that surrounds the brain and spinal cord may identify abnormal chemicals (antibodies) or cells that suggest the presence of MS.

The goals of treatment

• Improving the speed of recovery from attacks (treatment with steroid drugs)

• Reducing the number of attacks or the number of MRI lesions

• Attempting to slow the progression of the disease (treatment with disease modifying drugs or DMD’s)

• Relief from complications due to the loss of function of affected organs (treatment with drugs aimed at specific symptoms)

MS at a glance

• Multiple Sclerosis is a disease which progressively injures the nerves of the brain and spinal cord

• Injury to the nerves in multiple sclerosis may be reflected by alterations of virtually any sensory or motor (muscular) function in the body

• The cause of Multiple Sclerosis is unknown, but it has become widely accepted that genetic, immunological, and environmental factors play a role