

MULTIPLE SCLEROSIS

Multiple Sclerosis (MS) is a chronic, nonfatal, disease that affects the central nervous system of an individual. Although it is believed to be the result of various factors, scientists are still not clear as to what causes Multiple Sclerosis. “The average risk of developing MS in the United States is one in 1,000, or one tenth of one percent” (Multiple Sclerosis Association of America, 2004). Additionally, there is no known cure for MS. Although an individual can have a long life expectancy after diagnosis, early diagnosis, treatment, and intervention can help diminish what can range from mild to severely debilitating symptoms.

MS occurs as a result of damage to the myelin sheath that surrounds nerve fibers along the central nervous system. Myelin facilitates the transmission of signals from the brain to the various parts of the body (National Institute of Neurological Disease and Stroke (NINDS), 2006). Damage to the myelin sheath results in scarring (sclerosis) of the nerve, causing the nerve and the affected body part to malfunction (Mayo Clinic, 2004). Myelin damage is believed to be caused by a malfunction to the immune system, specifically, in the ability of T-cells to recognize and destroy foreign invaders within the human body (NINDS, 2006). With MS, scientists believe that something, perhaps a virus or another environmental agent, renders the T-cell unable to distinguish myelin from a foreign body, thus causing it to attack the myelin sheath (Mayo Clinic, 2004). However,

much research is still needed to understand why this phenomenon occurs.

Early Symptoms can be quite varied because MS can cause damage at any and several points along the central nervous system. Most commonly however, early symptoms of Multiple Sclerosis include:

- Blurred or double vision
- Dizziness
- Tingling sensations
- Tremors
- Fatigue (Mayo Clinic, 2004; NINDS, 2006).

“Complete or partial remission of symptoms, especially in the early stages of the disease, occurs in approximately 70 percent of MS patients” (NINDS, 2006). However, these patients can experience relapses, with the appearance of new symptoms, again, followed by a remission period.

Additional symptoms of MS include:

- Bowel and bladder problems
- Cognitive problems
- Sexual dysfunction
- Pain
- Depression
- Patients are also susceptible to secondary symptoms caused by complications with primary symptoms, such as urinary tract infections and muscle atrophy (Mayo Clinic, 2004; NINDS, 2006).

Factors that may influence the manifestation of Multiple Sclerosis include:

- **Genetic predisposition.** Although it is not hereditary, having someone with MS in his or her immediate family increases an individual's likelihood of developing the disease to 3 or 4 percent (Multiple Sclerosis Association of America, 2004).
- **Environmental factors** play important, if not exactly clear, roles in developing MS. For example, the incidence of MS is greater in cooler climates than warmer climates. Interestingly, the likelihood of developing the disease is even affected by an individual's migration, decreasing in likelihood if migrating during adolescence from cooler to warmer climates, and increasing if migrating from warmer to cooler climate states during adolescence (Texas Department of State Health Services, 2005). In fact, some researchers have found a correlation between a high level of sun exposure and decreased incidence of MS (National Multiple Sclerosis Society, 2003). Only 1 in 10,000 people born in a tropical climate with greater sun exposure and higher average temperatures develop Multiple Sclerosis, while 1 in 2,000 born in temperate climates where there is typically less sun exposure and lower average temperatures develop the disorder (InjuryBoard, 2006).
- **Infectious agents** such as herpes simplex virus, measles, corona vireo, canine distemper virus, and Epstein-Barr virus may be involved in initiating the disease process, although no specific agent has yet been identified (National Multiple Sclerosis Society, 2005).
- **Women** are diagnosed two to three times more often than men (National Multiple Sclerosis Society, 2005).
- **Caucasians**, in particular those of northern European descent, also tend to be at greater risk (National Multiple Sclerosis Society, 2005).

- **Age** at onset is generally between 20 – 50, but as many as 5% are diagnosed before age 21 and 9.4% are diagnosed after the age of 50 (National Multiple Sclerosis Society, 2005).

The incidence of MS is closely correlated with geography, race, gender, and age; therefore, true incidence rates for the area are not easily determinable. It is still unclear what the triggering mechanism is that causes the immune system to malfunction and why it tends to occur with more frequency under certain conditions. Because symptoms can range in severity from very mild to extremely debilitating, individuals can live many years without diagnosis, the actual number of MS sufferers is not certain. Approximately 400,000 Americans acknowledge having MS, and every week about 200 people are diagnosed. Worldwide, MS may affect 2.5 million individuals (National Multiple Sclerosis Society, 2006). Some estimate that about 1 in 700 people in the United States have Multiple Sclerosis (National Institute of Allergy and Infectious Disease, 2006). The U.S. Census Bureau (2006) in its 2005 population estimates lists the population numbers for the 4 counties as follows:

2005 Population Estimate	
County	# Persons
Bandera	19,988
Bexar	1,518,370
Comal	96,018
Kendall	28,607
Total	1,662,983

(U.S. Census Bureau, 2006)

Using the estimated rate of incidence reported by the National Institute of Allergy and Infectious Disease (2006) of 1 in 700, approximately 2,375 individuals may be afflicted with Multiple Sclerosis in these Texas counties.

Diagnosis of Multiple Sclerosis may be difficult because the symptoms can vary from person to person. Traditionally, MS was diagnosed by the presence of two or more attacks, with all other possible causes ruled out. However, Magnetic

Resonance Imaging (MRI) technology has made diagnosis more immediate and reliable. An MRI can be used to detect scarring (sclerosis) along the central nervous system and allow the physician to accurately correlate the scarring to the manifestation of symptoms (National Multiple Sclerosis Society, 2005).

Although there is **no known cure** for Multiple Sclerosis, treatment can help reduce the severity of symptoms. Medication for MS typically includes steroids, to reduce inflammation and decrease the duration of relapses, muscle relaxants, to decrease muscle cramping and spasms, and antidepressants for fatigue and depression (Mayo Clinic, 2004). Additionally, antiviral proteins, called interferons, have shown promise in treating Multiple Sclerosis. Interferons have been used to slow the progression of physical disabilities and the number of severe relapses and show signs of being able to reduce the destruction of myelin and potentially future disability (NINDS, 2006, National Multiple Sclerosis Society, 2005). In addition, physical therapy, occupational therapy, cognitive therapy, and speech therapy can help individuals who have experienced more severe incapacities as a result of Multiple Sclerosis. Together, early diagnosis and early treatment and therapy can help someone with MS overcome what could be an otherwise debilitating disease.

References:

- InjuryBoard. (2006). Multiple Sclerosis Overview. Retrieved August 16, 2006, from <http://www.injuryboard.com/view.cfm/Topic=323>
- Mayo Clinic (2004). Multiple Sclerosis. Retrieved August 16, 2006, from <http://mayoclinic.com/health/multiple-sclerosis/DS00188/DSECTION=1>
- Multiple Sclerosis Association of America. (2004). Questions and Answers about Multiple Sclerosis. Retrieved August 16, 2006, from <http://www.msaa.com/faq.html>
- National Institute of Allergy and Infectious Disease. (2006). Understanding Autoimmune Disease. Retrieved August 16, 2006, from http://www.wrongdiagnosis.com/artic/understanding_autoimmune_disease_niaid.htm
- National Institute of Neurological Disease and Stroke (NINDS). (2006). Multiple Sclerosis: Hope through Research. Retrieved August 16, 2006, from http://www.ninds.nih.gov/disorders/multiple_sclerosis/detail_multiple_sclerosis.htm
- National Multiple Sclerosis Society. (2005). National MS Society information sourcebook. Retrieved August 16, 2006 from: <http://www.nationalmssociety.org/Sourcebook.asp>
- National Multiple Sclerosis Society. (2006). Just the Facts. Retrieved August 16, 2006, from <http://www.nationalmssociety.org/Brochures-Just%20the.asp>
- Texas Department of State Health Services. (2005). Questions and Answers about Multiple Sclerosis. Retrieved August 16, 2006 from <http://www.dshs.state.tx.us/epitox/msqanda.shtml> (new name and web address)
- United States Census Bureau. (2006). Texas QuickFacts. Retrieved August 22, 2006 from: <http://quickfacts.census.gov/qfd/states/48/48259.html>