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Living With Multiple Sclerosis

By Piet Mesmer

THE COMPLETE GUIDE TO TREATMENT AND
MANAGEMENT OF MULTIPLE SCLEROSIS (MS)

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About the Author

Piet Mesmer has friends and a close relative that are living with Multiple Sclerosis.

He wanted to learn about the condition because he heard so many conflicting theories and rumors. Few people were willing to discuss it and Piet felt that a guide to the subject could be helpful to others like him that dealt with people who had the disease and their families.

He hopes that many people will be able to use this layman’s guide as a starting point in their own search for knowledge, and to counter some of the “old wives’ tales” that circulate, discourage or frighten people whose lives are touched by Multiple Sclerosis.

Piet emphasizes that on-going research is bringing new information and hope into this area. People should always consult their own Doctors and other medical professionals about their condition and the best ways to manage and treat it.

Part-I: Introduction

1. Multiple Sclerosis – An Overview

Multiple sclerosis is a persistent and debilitating disease affecting the central nervous system (your brain, nerve cells and spinal cord). This inflammatory disease affects the patient’s mobility and can cause severe disability.

Some doctors and researchers believe that this is an autoimmune disease. That is where your immune system tries to defend against the normal activities of other parts of your body - your immune system attacks you.

The nervous system consists of neurons, brain, nerve cells and the spinal cord. They work together to carry information between the brain and other parts of your body.

Multiple sclerosis destroys the Myelin layer (a protective fatty layer around the neurons that carry those electrical signals). This disrupts the vital transfer of electrical signals across the spinal cord and brain. This scars the myelin sheaths. These scars prevent easy transmission of the signals. The intensity of the disease relates to the extent of the scarring and the resultant impact on the rate and quality of the transfer of the signals.

Incidence

There are around two and half million people in the world with multiple sclerosis. Around 350,000 people in the U.S.A. suffer from this disease. The disease most often starts between the ages of twenty and forty. Sometimes, it occurs a bit later.

It affects more women than men.

Another striking fact is that people living in the northern latitudes such as parts of Northern Europe and the Northern United States report higher incidence of the disease.

There are possibly genetic factors at work, too. Children whose parents or siblings have multiple sclerosis, have a greater chance of getting the disease.

The cause might be a virus that triggers a destructive reaction from your immune system.

Types and Symptoms of Multiple Sclerosis

The effects of Multiple Sclerosis vary and are grouped according to;

- the severity of the symptoms,
- the frequency of attacks,
- the level of damage, and
- the ability of your central nervous system to recover.

Accordingly, multiple sclerosis (MS) could be:

- Relapsing-remitting MS,
- Relapsing progressive MS,
- Secondary progressive MS, or
- Primary progressive MS.

Common symptoms of the disease may include;

- partial loss of vision or total loss of vision in one eye,

- double vision,
- general weakness,
- change in sensation of hands, legs, and face,
- unsteady walking with acute balance problems.

These symptoms may not show to a great degree in some cases. Also, they may come and go.

Many people only notice mild effects in the early stages which they either ignore or do not ask their doctor about.

Sometimes, trauma, infection, or severe physical exhaustion could trigger the symptoms of MS.

Some patients are affected by the symptoms of multiple sclerosis from time to time, but are perfectly normal between attacks, with perhaps a few neurological problems that persist permanently.

The exact cause of multiple sclerosis is still unknown. Treatments can slow down the appearance of new symptoms but there is no permanent cure for the disease right now.

Part-II: Understanding Multiple Sclerosis

2. What is Multiple Sclerosis?

Multiple Sclerosis is a complex, chronic, inflammatory disease of the central nervous system. It is a degenerative disease that gradually destroys the myelin sheath and thus causes weakness to the muscles, loss of speech and visual coordination.

The myelin sheath is a fatty layer that surrounds and protects the neurons which carry messages (electronic signals) between the brain and other parts of the body. The role of the myelin is important.

The damage to the myelin causes symptoms of different intensity in sufferers. Multiple sclerosis is divided into two groups according to this intensity and frequency. They are the relapsing-remitting type and the chronic-progressive type.

Chronic-progressive Multiple sclerosis is again divided into primary-progressive, secondary-progressive and progressive-relapsing types.

Repeated attacks may occur along the brain and the spinal cord area, with symptoms lasting from a few days to months. It makes the body work erratically.

Your natural antibodies, white blood cells, work against the myelin sheath. There is inflammation and injury to the sheath, which ultimately causes injury to the nerves it protects. This results in the scarring of multiple areas, which gives multiple sclerosis its name.

This scarring slows and blocks the nerve signals, which are essential to control muscle coordination, strength, vision, and sensation.

Multiple sclerosis is likely to affect the young adult between the ages of 20 to 40. It affects twice as many women as men.

The cause of the disease may be a defect in the immune system, either of genetic or viral origin. Geographical studies indicate a greater prevalence of this disease in northern Europe, northern United States, southern Australia, and New Zealand.

At present, the actual cause, or the trigger for this disease is unknown. This makes effective treatment very difficult. However, the fact that it is not a life threatening disease brings some relief. With the help of current treatments, a patient's multiple sclerosis can be controlled to a fair degree so that many of them can lead an active and normal life.

3. The Immune System and Multiple Sclerosis

Immune System

There are about 60 trillion cells in the human body. This is an excellent environment for microbes to grow in and live happily. Most microbes do not cause any trouble for us. In fact, some are very beneficial and help us digest our food.

However, some microbes (known as the pathogens) can cause our body much trouble and even prove fatal. The immune system fights these harmful microbes.

Our immune system has two parts: the innate, or the natural system, and the acquired, or the specific, immune system. The cells from both these groups are equally involved in the damage caused by multiple sclerosis.

Relation between the Immune System and Multiple Sclerosis

When a person suffers from multiple sclerosis, the body cells invade their own tissues, treating them like their enemy in a war.

There is some evidence that indicates multiple sclerosis is an autoimmune disease. These are disorders of the immune system. The immune system is responsible for identifying the harmful invaders of the body and destroying them. A recent study focused on how the immune system reacts in the people with multiple sclerosis.

The study indicated that multiple sclerosis causes abnormalities in the immune system. The first evidence is the presence of white blood cells that react with the protein found in the myelin sheath.

Multiple sclerosis develops in individuals through viral or bacterial infection.

The second indicator is the presence of T-cells in the spinal fluid of people that have multiple sclerosis. When spinal fluids were further analyzed, IgG – protein was found in high quantity. Then electrophoresis showed oligoclonal banding, further supporting the autoimmune theory.

There are still are more questions than answers. At present there are three factors that different researchers believe are responsible for the disease; environmental factors, hereditary factors and a virus. Each of them have found significant acceptance amongst researchers.

What causes multiple sclerosis in an individual is still debatable, but the autoimmune theory comes closest to matching the results of the researches made to date.

Researchers believe that a pathogen that triggers the T-cells response is still not identified despite all the searches made.

No particular multiple sclerosis antigen has been found.

The other existing theory is nothing but a compilation of all the other facts about multiple sclerosis.

4. How Serious Is Multiple Sclerosis?

Multiple sclerosis is a disease that may shorten a person's life span by six to seven years. Half the people that suffer from multiple sclerosis die because of its effects. Suicidal tendencies are also very high among people suffering from multiple sclerosis.

The severity is very unpredictable and the symptoms vary from person to person. This disease affects the central nervous system and the damage done to the nerves is extensive.

The major problems of multiple sclerosis are -

Fatigue: Fatigue is one of the most common symptoms of multiple sclerosis, affecting 75% to 90% of the patients. More than half of them experience fatigue on a daily basis. Poor control over the condition and the resultant acute sensitivity to physical sensation may be the main cause of stress with multiple sclerosis.

Loss of mobility and spasticity (stiffened muscles): Each person with multiple sclerosis loses control over their muscles and suffer spasticity where their muscles resist stretching. Spasticity is one of the main symptoms of multiple sclerosis. Mild spasticity may improve muscle toning in the legs, which supports the patients' leg while walking.

Pain: About two-thirds of people suffering from multiple sclerosis experience pain at some point of time. Multiple sclerosis may cause acute or chronic pain syndromes; cramps, spasms, optic neuritis pain, pain on the joints and the feeling of itching and burning.

Bowel, urinary and sexual dysfunction: Bowel dysfunction, like constipation, occurs in people with multiple sclerosis. This dysfunction may be due to medications. Two-thirds of the people suffering from multiple sclerosis also complain of urinary problems due to bladder dysfunction.

Another problem that occurs is sexual dysfunction. Both male and female patients may have problems in achieving sexual satisfaction.

Cognitive impairment: Most people with multiple sclerosis have trouble concentrating and focusing. The severity increases as the degree of damage done to brain tissue increases.

Depression: Around 40% to 60% of people suffering from multiple sclerosis suffer from depression. They sometimes commit suicide while depressed.

Osteoporosis: Osteoporosis (loss of bone density) occurs due to immobility and some medications. Fractures caused by falls in people with multiple sclerosis tend to be more serious than with people suffering from many other diseases.

Lung Problems: With the weakening of the muscles, there comes difficulty in coughing. The result of this may be a higher chance of getting pneumonia and other lung complications.

The Effects at a Glance:

1. Multiple sclerosis destroys the myelin sheath, the layer that protects the nerve cells.
2. It affects many body functions, including speech, memory, vision and body movements.

3. This disease mostly affects women.
4. Multiple sclerosis currently affects 400,000 people in the US and as many as 2.5 million worldwide.
5. It brings about dysfunction of body functions, like urinary, sexual and bowel problems.
6. Many patients become seriously depressed with this disease and some develop suicidal tendencies.

5. Who Gets Multiple Sclerosis?

Age: Multiple sclerosis occurs mostly in people between the ages of 20 and 40. The average age for this disease is 30 and the most patients symptoms appear in their mid-twenties. However, this disease can also occur, rarely, in children and older people over 60 years.

Gender: Women are twice as likely to be affected by this disease as men are. Statistics also show a continuing rise among women. But, men are often more seriously affected by this disease than women.

Ethnicity: Multiple sclerosis is found in most countries. It is more common in Caucasian people living in Northern Europe; especially Scotland. This disease is rare in Asian and African people.

Geography: The risk of multiple sclerosis varies with different regions of the world. The disease is more common in the temperate regions than the tropics. It is more prevalent in Northern and central Europe except the Scandinavia. Low risk areas are Africa, Asia, the Caribbean, Mexico, and even Northern South America. It is not clear whether this mostly due to environmental reasons or genetic reasons.

Family History: Multiple sclerosis may also occur due to the family history of the disease. However, there is only a low chance (2 to 4%) of inheriting all the genetic factors of the disease. When siblings have this disease, the severity and occurrence of the disease are likely to be about the same for each.

Cow's Milk during early infancy: Mother's milk contains all the factors that help the baby's body to control the immune responses.

There is some possible indications found by research that children fed with cow's milk during infancy may have higher chances for developing type 1 diabetes or multiple sclerosis. There are different milk proteins in different cows' milk, all cow's milk are not same and some proteins may lead to a higher risk than others.

6. Types of Multiple Sclerosis

1. Relapsing, or Remitting, Multiple Sclerosis: The main characteristic of this type of Multiple Sclerosis is relapses; during which some new symptoms may appear while the previous ones may be less or recur to the same level as before.

Remission usually follows the period of relapse. During this phase the patient may partly recover from the deficiencies that were caused by the relapse.

Relapsing or remitting sclerosis is diagnosed when the patient is at the age of twenty or thirty. The relapse may start slowly or happen quickly. It may last for days or even months. Women are affected twice as much than men are with this type of multiple sclerosis.

After 10 years, 50% of the people with relapsing/remitting multiple sclerosis develop secondary progressive.

2. Secondary, Progressive Multiple Sclerosis: This form of sclerosis progresses steadily with gradual deterioration of the nerve function. After years of this disease, the person will gradually enter the secondary phase.

In the second stage, the disease worsens between relapses. At the beginning of the secondary progressive multiple sclerosis, the patient may suffer from few relapses. This gradually becomes a steady progression.

People with secondary progressive may experience bad and good times that last days or even weeks; but there is almost no chance of complete recovery.

3. Progressive, Relapsing Multiple Sclerosis: Progressive relapsing multiple sclerosis shows steady progression of the level of disability from the first time that the symptoms begin to appear. This form of multiple sclerosis progresses from the very beginning. There may be significant recovery after a relapse but overall the symptoms continue to worsen significantly.

4. Primary, Progressive Multiple Sclerosis: The characteristic of this type of multiple sclerosis is the gradual progression of the disease. This phase occurs in about 10% of people with multiple sclerosis. When the person had primary progressive multiple sclerosis, there are high chances of a body disability in the person.

The person does not suffer from acute attacks and this makes the initial diagnosis more difficult. Primary Progressive multiple sclerosis often passes to the brain but rarely does damage to the brain areas. There is less chance for a person with primary progressive multiple sclerosis to develop cognitive impairment.

Other Common Terms for Multiple Sclerosis:

1. Benign multiple sclerosis: This type describes the kind of multiple sclerosis that a person may have for years, but it has not caused any disability.

2. Malignant multiple sclerosis: This is the term used for the form of multiple sclerosis where the disease rapidly progresses and brings severe disability to the body. This is a rare type of multiple sclerosis.

3. Chronic Progressive multiple sclerosis: Primary Progressive and Secondary Progressive together are teamed Chronic Progressive.

4. Transitional/Progressive multiple sclerosis: This phrase refers to multiple sclerosis but it is hardly used. This type of multiple sclerosis progresses steadily course after a quiet period.

5. Devic's Disease: Devic's Disease is a condition that is related to multiple sclerosis. This disease attacks the optic nerve in both eyes and this is followed by the acute inflammation of the spinal cord.

7. Signs and Symptoms of Multiple Sclerosis

Multiple sclerosis has a variety of symptoms and its course varies from person to person. Even while there are no noticeable symptoms, some damage to the central nervous system may be occurring.

Therefore, patients must stick to the prescribed treatment unless specifically advised otherwise by their medical practitioner.

The signs and symptoms of common multiple sclerosis are:

1. Optic neuritis: This symptom of multiple sclerosis is inflammation of the optic nerve. With time, you start developing blurred vision. You may feel the pain behind your eye at times, but it may lessen when you turn your eye.

2. Loss of muscle strength in arms and legs: The nervous system controls the motor function that powers our movement. People with multiple sclerosis lose the muscular strength of their arms and legs as the disease progresses. Slowly, they lose control of their fingers.

This may lead to paralysis of the leg or arm.

3. Changes in the sense of touch: The disease damages the fibers that provide the fingers and other parts of the body with the sensation of hot or cold. Then, the body may feel a burning sensation or cold even though the environment is not causing it.

4. Pain: You may often feel a burning pain in your legs and arms. Multiple sclerosis may damage the nerves of your face and lead to a painful condition known as ‘trigeminal neuralgia.’

5. Bladder and bowel problems: People with multiple sclerosis lose the control over the urge to urinate and their bowel movements.

6. A dysfunction in sex: Multiple sclerosis may lead to many sexual dysfunctions in men and women. It may be difficult for them to satisfy their sexual needs.

7. Balance and coordination problems: Multiple Sclerosis damages the brain which may result in difficulties with balance and coordination problems.

You may have problems in grasping an object, writing and even keeping your hand steady. You may lose your balance while walking and react as though intoxicated. These problems may be temporary, only appearing during a relapse, or may be a permanent result of the disease.

8. Cognitive impairment: During the course of the illness, you may notice some loss of memory or thinking speed. You may have difficulties when focusing and concentrating. In some people, these impairments set in very early but it may come later on for other people.

9. Mood Swings: There may be phases of depression, due to the physical changes in the brain.

8. Myths and Facts about Multiple Sclerosis

Myth: There is no hope if diagnosed with Multiple Sclerosis

Fact: Though there is no cure for multiple sclerosis, there are treatments which vary in effectiveness with each individual. There are, at present, six drugs that have shown some ability to modify the disease.

Myth: Multiple Sclerosis is a deadly disease.

Fact: There are available treatments that can help the person with this disease lead a normal, active life. Deaths are only the result of untreated complications such as kidney dysfunction and when severe depression leads to suicide.

Myth: Multiple Sclerosis will ultimately land you in a wheelchair.

Fact: Early detection, proper therapy and treatment can make life much easier for a person with multiple sclerosis. Many people use a mobility aid, such as a wheelchair or powered cart, to conserve energy for other activities.

Myth: People with Multiple Sclerosis should not be parents.

Fact: Multiple Sclerosis will do no harm to pregnancy and childbirth. In many women, the symptoms are negligible during this period. However, the risk of an attack is increased in the first six months post delivery. There is a very small chance of the child inheriting the problem of multiple sclerosis from the mother.

Myth: People with Multiple Sclerosis should avoid working.

Fact: Many people still lead a very normal life despite their multiple sclerosis. There is not enough evidence to prove that normal stress and work pressures have any effect on multiple sclerosis. As many as 30% of Multiple Sclerosis patients are still working full-time without much trouble, even after years with the disease.

Other Facts about Multiple Sclerosis

- 1.** Multiple Sclerosis may be malignant in rare cases and prove fatal.
- 2.** Until the year 1993, there were no medicines, but there are currently six approved drugs that are sometimes effective in controlling the disease.
- 3.** The chances of children inheriting the disease from their parents are between 1% and 5%.
- 4.** It affects 2.5 million individuals worldwide.
- 5.** Canada has a significant risk of Multiple Sclerosis. More than 50,000 Canadians have Multiple Sclerosis.
- 6.** Twice as many women as men suffer from this disease.
- 7.** Multiple Sclerosis mostly strikes people between the ages of 20 and 40.
- 8.** The symptoms of this disease vary. They may include blurred vision, loss of balance, extreme fatigue, stiff muscles as well as bowel and bladder difficulties.

Part-III: Causes, Incidence, and Risk Factors

9. Causes of Multiple Sclerosis

The main cause(s) of multiple sclerosis in an individual are still being studied. There has no been a particular gene found that is responsible for causing this disease. But, research indicates that people with some genetic susceptibilities have more chances of developing this disease when there are environmental conditions that are favorable for a virus or toxin attack.

It may be that viral infection, environmental factors, hereditary factors, or a disorder of the immune system may be causes of multiple sclerosis. Studies also indicate that it might be an individual's unique reaction to an infection by some substance or a reaction within the nervous system that causes their body's own defenses to attack it.

Genetic Factors

Genetic factors could be responsible for making a person susceptible to multiple sclerosis. But, the risk of someone inheriting all the genetic factors responsible for multiple sclerosis is thought to be less than 5%. Research continues in this field to identify the exact genes responsible for multiple sclerosis.

Infectious Agents

Viruses top the list of suspects for causing autoimmune response in people who are genetically susceptible to multiple sclerosis. Factors that favor this conclusion include:

- 1.** The geographical distribution of the disease: The number of multiple sclerosis-infected people is more as one moves away from the equator in either direction.
- 2.** Some studies indicate that multiple sclerosis might be a sexually transmitted infection. Countries with some sexual freedom seem to have a higher degree of multiple sclerosis in their population while the disease is close to negligible in countries with traditional cultures.
- 3.** Viral similarity to myelin: Some viruses are quite similar to myelin. This similarity may cause confusion to the immune system and make the T-cells attack the body protein rather than viral antigens. There are not sufficient results from studies to confirm this as a prime trigger.

Three major suspects are:

- 1. HHv-6 or Herpes virus 6**, a form of herpes virus that causes rosella, a benign children’s disease.
- 2. Chlamydia pneumonia**, a bacterium that causes constant inflammation in small vessels.
- 3. Epstein-Barr virus**, the virus that causes mononucleosis.

What causes multiple sclerosis in an individual is still a debatable issue but the most widely accepted theory is that of an autoimmune

disorder, where the components of the immune system fail to recognize the normal body tissues and start attacking them as if they were invaders.

10. Cognitive Impairment in Multiple Sclerosis

What is cognitive impairment?

Cognition means thinking and includes our ability to pay attention, learn, solve, express, and remember. These functions can be impaired by multiple sclerosis.

Research led to the fact that this illness can affect the way the mind works, particularly the cognitive power of the brain.

Almost one-half of people suffering from multiple sclerosis have some cognitive impairment. As much as 80% of the people with this disease show the signs of moderate symptoms, such as having some difficulty when remembering a list of items to buy or performing mental activities in a distracting environment.

The rest may suffer from a more severe condition and may even be unable to work or do some of their daily activities.

Causes of Cognitive Impairment in Multiple Sclerosis

Stress, anxiety and depression can lead to us being unable to remember or pay attention. The cognitive dysfunction in this illness is due to the changes in the brain. Multiple sclerosis produces lesions that affect the electrical impulses transmitted across the nerve cells. A person with just a few lesions may not experience any cognitive dysfunction but someone with many lesions could experience marked cognitive dysfunctions.

Diagnosis of Cognitive Impairment

With the help of neuropsychological examination, medical practitioners can diagnose cognitive impairment. A neuropsychological examination is a series of cognitive tests.

The results are compared to the results of a healthy individual of same age and similar physical attributes.

Is Cognitive Impairments Inevitable with Multiple Sclerosis?

Cognitive dysfunction may occur very early in many people with multiple sclerosis, but many people may have no such problems at all. But, there is little relationship between the degrees of physical disability and cognitive impairment.

Treating Cognitive Impairment in Multiple Sclerosis

At present, there are no medications for cognitive problems in Multiple Sclerosis. Research is continuing to find ways of improving memory functions.

Medications to Reduce Cognitive Impairments

At present, FDA has approved three medicines for treating patients with Multiple Sclerosis; Avonex, Betaseron, and Copaxone.

Apart from medicine, there are cognitive retaining programs that are available in most medical centers. There are exercises for the brain, like doing crossword puzzles, reading, and other brain stimulating programs. That may make a lot of difference to the patients' cognition power.

11. Effects of Multiple Sclerosis

The Invisible Symptom Factor

The effects associated with multiple sclerosis are numerous.

Fatigue is frequently a symptom that brings much distress to patients. Fatigue may occur in the person who is not showing any signs of illness. Others often judge the fatigue in multiple sclerosis as mere laziness and this can cause misunderstanding.

This disease is not fatal, but it can reduce the patient's life by six or seven years. About half the people with multiple sclerosis die from the various effects of the disease.

Depression may increase any suicidal tendencies in the patient.

If your loved one, or you, suffers depression then you must seek professional help.

Specific Effects of Multiple Sclerosis

- 1. Fatigue:** Fatigue is one of the debilitating and common symptoms of multiple sclerosis.
- 2. Loss of mobility and spasticity:** Almost all people with multiple sclerosis experience some loss of mobility in them. Spasticity is one of the main symptoms of this disease. It is more severe in the legs and torso.
- 3. Bowel and Urine dysfunction:** There are chances of constipation or fecal incontinence in a person with multiple sclerosis. Urinary dysfunction occurs in almost two-thirds of people suffering from multiple sclerosis. Many patients have difficulties controlling when they urinate.

4. Difficulty in swallowing: Many patients of this disease experience difficulty swallowing and even chewing their food.

5. Lung problems: The weakening of muscles can create breathing problems and makes coughing more difficult for the patient. The patient may develop pneumonia and other lung complications.

6. Effects of cognitive impairment: At least 50% of people with multiple sclerosis notice changes in their mental condition. This is often problems with understanding, remembering, focusing, solving problems and processing information in the mind as quickly as before.

The following effects are associated with multiple sclerosis:

1. The multiple sclerosis patient often loses some of the quality of their eyesight.
2. The patient may suffer from some paralysis.
3. The patients lifespan may be shortened by about six years.
4. Patients often complain of weakness in their muscles.
5. Some patients complain of hearing loss.
6. This disease may also cause involuntary twitching of muscle fibers in patents' limbs and rapid increase in the number of white blood cells.
7. A few people suffer from fits.
8. There may brain failure in some instances.
9. Gliosis (swelling and scarring of astrocytes – important cells in the patient's brain and spinal cord) and Pseudobulbar palsy

(difficulties with chewing and swallowing as well as emotional outbursts) are also sometimes suffered by Multiple Sclerosis patients.

10. Multiple sclerosis can affect the cerebellum, a slightly cauliflower-shaped part of the brain at the top of the spinal column and this causes loss of co-ordination in the patient's movements.
11. Damage to the nerves that help control the bladder cause urinary problems.
12. Tingling or burning sensations that are probably due to nerve damage (Paresthesia) and constipation are associated with multiple sclerosis.
13. Dizziness
14. Taste disturbance
15. Eye problems, including Optic neuritis.

12. Risk Factors for Multiple Sclerosis

These risk factors may indicate that someone has a significant chance of getting multiple sclerosis. They do not definitely lead to multiple sclerosis.

The risk factors or the conditions for multiple sclerosis are:

Environmental Susceptibility in multiple sclerosis

The US, Europe, Soviet Union and Canada had a prevalence of multiple sclerosis in the mid 20th century. The number of multiple sclerosis-infected people is more as one move away from the equator in either direction. The study made in accordance with sex, the disease has high prevalence among the women.

Genetic Susceptibility in MS

Twin studies that show a higher rate of multiple sclerosis present in primary relatives indicate that genetic factors may be responsible for up to 30 percent of multiple sclerosis.

Vitamin D and Sunlight

Vitamin D is necessary in the body; it helps cell maturation and the responses of the immune system. Vitamin D, with the help of sunlight, is converted to an active form. When the person is suffering from multiple sclerosis, the body mistakenly produces anti-inflammatory cytokines, Th2 cells and Th1 cells that reduce the vitamin's essential beneficial activity. Deficiency of vitamin D and less sun exposure may increase the chances of multiple sclerosis or change the course of the disease.

It only takes 15 minutes per day outside to get enough vitamin D from the sun. Some milk companies add Vitamin D to their milk.

Smoking and MS

There is evidence to indicate that smoking increases the risk of multiple sclerosis. Smoking seems to worsen the symptoms of multiple sclerosis. Multiple sclerosis is high amongst smokers.

Viral Triggers and MS

Viral infection may be the most important trigger of multiple sclerosis. A prevalent childhood infection may lead to multiple sclerosis in adolescence.

13. Genetic Factors for Multiple Sclerosis

Genetics may have a major role to play in determining multiple sclerosis. There is a higher chance of developing multiple sclerosis if the disease exists in family members. That chance is even higher if the person suffering is your first-degree relative; brother, sister or parents.

There has been no identification of a particular gene causing multiple sclerosis. Researches are continuing in this area.

Some populations, like Gypsies, Eskimos, and Bantus, may never develop multiple sclerosis. Similarly, Native Indians, South Americans, Japanese and other Asians have less chance of getting multiple sclerosis.

It is unclear whether this disease is mostly due to genetics or environments.

Twin studies are the classic method of determining whether the genes have any influence on a disease. The concordance rate is a measure adopted in genetics that refers to the presence of similar traits in both members of a pair of twins or set of individuals. Research indicates that, though genes play a role in multiple sclerosis, the maximum effect is possibly only up to 30%.

In the general population, the occurrence of multiple sclerosis is about 0.1%. This figure contrasts to its recurrence in families among primary relatives: Parents 3%, daughters 5% and sons 1%. The rate in the next level of relatives is aunts and uncles 2%, nieces and nephews 2%, and first cousins 1%.

14. Nutritional Factors and Multiple Sclerosis

Nutritional factors play an important role in controlling multiple sclerosis:

1. You must take nutrients that will help your body to restrain the autoimmune reactions.
2. You should not eat food that lets your body activate the immune system against yourself and creates autoimmune reactions.

Two forms of nutrients that are believed to help suppress immune system problems in the central nervous system are vitamin D and omega three essential fatty acids. However, there are a shortage of these in the environment and in many people’s diets. So, the body of the person suffering from this disease can become deficient.

If you also suffer from multiple sclerosis, you should ask your medical practitioner about increasing your intake of vitamin D and omega three oils. An increased intake of these important nutrients may help you to suppress the autoimmune reactions of your body.

According to some studies, our body needs a supply of 4000-5000 IU vitamin D each day to function well. The sun is the main source for vitamin D and people living in the colder regions may not get enough directly from sunlight.

Consult your doctor and check your local supermarket or drugstore.

Always consult your own medical practitioner before changing your diet or other habits significantly.

Some people recommend the following measures:

1. Take a supplement of 4000-5000 IU vitamin D each day.
2. Eat fish three times a week if there are no medical reasons for caution (pregnancy, high mercury content etc)
3. Have a spoonful of flax oil each day. (omega 3)
4. Avoid dairy products and gluten grains like wheat, rye, barley, etc.
5. Avoid legumes and yeast.
6. Substitute olive oil as a fat supply in your diet
7. Reduce your intake of red meat and saturated fat.
8. Take supplements that might improve your health.

Part-IV: Impact of Multiple Sclerosis

15. Multiple Sclerosis and Your Emotions

Common Emotional Reactions

A person suffering from multiple sclerosis is likely to undergo some emotional turmoil regardless of the form of multiple sclerosis. There is a sense of disbelief, fear, anger, depression, and guilt among almost all the people that are diagnosed with multiple sclerosis.

Fear or Apprehension: Fear is very common amongst the people suffering from multiple sclerosis. The fear of adjustment and dealing with their unpredictable condition through all their life makes this a fearful disease. Besides the illness, the fear of losing control over oneself seriously affects many.

Denial: Denial is the normal initial reaction by many people who have multiple sclerosis. Denial can cause a person to not take necessary action that is imperative to start dealing with this disease.

Grieving: People with multiple sclerosis should grieve if they feel the need to. This grieving may help them adjust to their situation and their grieving should be accepted by family and friends.

Guilt: A feeling of not being able to carry on with daily chores brings a sense of guilt in people with multiple sclerosis. Children often intensify the guilt feelings of the parent. There may be no expression of fear and anger, but the feeling is always there. So, it should be a joint effort by every member in the family to let the person cope with it. Feelings of guilt heighten when friends and relatives start reacting in a bad-tempered way.

Mood swings: People with multiple sclerosis may have severe emotional outbursts. They may easily laugh or cry; similarly, an unhealthy comment may bring their tears quickly. On the other hand, a small joke may bring an uncontrolled laughter. These reactions occur because multiple sclerosis changes the functioning of the brain.

16. Stress and Multiple Sclerosis

Suffering from a chronic illness like multiple sclerosis leads to stress. Stress often has two different aspects. The first is a trigger and the second is the response by an individual to the trigger.

The common signs of stress are alterations in breathing patterns, tightening muscles, cold and sweaty hands and clenched teeth. However, these signs are not the same for all people since people react to stress in different ways.

The main signs of stress in people suffering from multiple sclerosis are fatigue and tightness of the muscles. It is necessary to know your usual stress responses and try to differentiate them from symptoms of your multiple sclerosis.

Many do not believe that stress or stress control has any affect on multiple sclerosis. They ask, “Can damage of the nerve or the lesions increase the stress in an individual?”

Many sufferers of multiple sclerosis feel that the symptoms get worse during a stressful time. Once the stress subsides, their symptoms will calm down. When a person is under stress, more energy is required to think of solutions to questions or problems and handle day-to-day activities.

The symptoms of the disease may worsen during these times. We have the potential to fight all odds but stress can reduce our ability to do so.

How Can I Reduce Stress?

1. Always, keep a positive attitude.

- 2.** Accept the fact that some things are beyond your control.
- 3.** Try to be assertive in handling the situation.
- 4.** Learn different forms of relaxation.
- 5.** Exercise every day. Exercise is essential. The more fit you can become; the easier it is to manage the MS.
- 6.** Maintain a balanced and healthy diet.
- 7.** Get adequate sleep and rest. The body needs time to recover from stressful events.
- 8.** Do not rely on intoxicating substances like alcohol or drugs to relieve any of your stress.

17. Depression and Multiple Sclerosis

People with multiple sclerosis suffer from depression more than other people. Some assume that depression is an effect of multiple sclerosis but researchers are still not sure.

Depression is a common psychiatric problem in people with multiple sclerosis. At least 50% of MS patients develop depression.

Depression can be handled but timely treatment is necessary. Moreover, depression is treatable through antidepressants.

Depression in multiple sclerosis can be the result of various things:

1. The result of the progress of the disease. Damage to the sheath on the main areas in the central nervous system may lead to depression.
2. The stressful and difficult life events may lead to chronic illness as reactive depression.
3. Depression may also set in as a side-effect of certain medicines that are used to treat multiple sclerosis.

Depression may even lead to suicide. Some studies indicate that patients with multiple sclerosis may be more likely to attempt suicide than patients with other mental disorders.

Some reports seem to indicate that **fluoxetine** may help severely depressed patients and has a better tolerance level than some alternative treatments. In severe cases, psychotherapy may also be used.

18. Multiple Sclerosis and the Self

Multiple sclerosis is a disease that attacks the central nervous system. One of the most devastating aspects of this disease is the cognitive impairment. This impairment and accompanying paralysis may reduce the patients' sense of self and make them feel uncomfortable when they are with others.

The cognitive problems associated with this disease may also make the patient very uncomfortable. The patient is often easily distracted. When they get back to their original work, they forget where they were and start again from scratch.

This is the result of failure to store the instructions in their memory.

The patient may have problems understanding instructions. They may have speech problems or even trying to think of the right words and the order in which to use them.

They lose their sense of visual patterns too.

All these factors add up and cause the patients a lot of difficulties when doing their day-to-day activities. This can bring a real or perceived social stigma of not functioning at a standard capacity. Worrying about what others will think of them, causes the patient to struggle with mind and motor control. Such conditions are stressful for the patient.

The MS patient can actually start believing that the motor problems are actually a mental problem.

19. Multiple Sclerosis and Pregnancy

The immobilizing aspect of multiple sclerosis may give cause difficulty in carrying the pregnancy to term. Weakness in the muscles, coordination problems and fatigue may also lead to further difficulties.

Paralysis and dependence on a wheelchair may encourage complications like urinary infection during pregnancy. In addition, the women may not feel the pelvic sensation or the pain and the contractions during labor, making it very difficult for them to understand the labor pain. And they may not be able to use their muscles to push the baby during the delivery phase.

There are studies that say that women with unrecognized multiple sclerosis start showing the symptoms during pregnancy while other studies indicate that symptoms of MS sometimes hibernate during pregnancy.

Pregnant women should keep a close check of the disease and monitor the well-being of the unborn child very closely. Prenatal checkups are essential through the pregnancy.

There is no fixed treatment for multiple sclerosis, so few medications can be continued during pregnancy. Always consult your physician at each stage.

Pregnant women with multiple sclerosis should avoid certain medicines during their pregnancy and while breast-feeding. These drugs may cause birth defects to the baby and may harm the fetus by passing through the blood or through the breast milk. Some medicines that you may need to avoid are prednisone,

corticotrophin, azathioprine, cyclophosphamide, diazepam, phenytoin, carbamazepine and baclofen.

Around 20% to 40% women with multiple sclerosis experience a relapse in the first six months after delivery. However, there is not enough evidence to prove that pregnancy and childbirth have an effect on the progression of the disease. On the other hand, MS seems to pose no particular risk to the fetus.

Keep a close watch and see a doctor regularly.

20. Multiple Sclerosis Fatigue

Fatigue is one of the most frequent symptoms of multiple sclerosis. Ninety percent of people with multiple sclerosis report episodes of extreme exhaustion. The fatigue of multiple sclerosis is not just a feeling of being tired and sleepy after labor. Fatigue can occur anytime even without doing anything.

The fatigue of multiple sclerosis can also relate to the disease's effects on your muscles and bones (musculoskeletal system) .

Fatigue in multiple sclerosis comes in two forms; mental fatigue and physical fatigue.

Mental Fatigue

Mental fatigue may be mild or severely damaging in multiple sclerosis. It worsens after exercise or when the patient's body temperature increases.

Mental fatigue usually follows a daily pattern and is very different from the fatigue associated with depression. People with multiple sclerosis may feel fine at daybreak but feel completely exhausted by the end of the day.

Physical Fatigue

Physical fatigue may come on to people with multiple sclerosis through even just a short walk or any form of mild physical activity. Their efficiency level is low but the cause for this is still not understood. They can become completely exhausted even after just a few steps.

Managing Multiple Sclerosis Fatigue

You can manage your fatigue during multiple sclerosis. The more that you know about your fatigue, the better you will be able to manage it.

Talk to your health care provider about what you can do for fatigue:

Find out if the fatigue symptoms are due to something apart from multiple sclerosis.

You need to get a good night’s rest. Waking up several times to use the bathroom may keep you from getting a decent night’s rest.

Find out what is keeping you awake at night. Is it a spasm or perhaps a bladder problem?

If your fatigue has increased over, say, the past six weeks, then speak to your doctor about it.

Gradual exercise to build up your strength can help. You can do mild exercises like standing or walking. There are drugs available that may help - find out more from your doctor.

Multiple Sclerosis Fatigue and Medications

Your doctor should decide which medicine is most suitable for you. They know the complete history of your disease and symptoms.

21. Children and Multiple Sclerosis

Though multiple sclerosis is most common in adults between the ages of 20 to 50, it can also affect children and teenagers.

Children whose fathers have multiple sclerosis will, most likely, inherit the disease.

Researchers say that there is twice the chance of men with multiple sclerosis transmitting their disease to their offspring than women that have the disease. This finding surprised researchers because multiple sclerosis is more common in women than in men.

In one study, the researchers looked at 444 children that came from 206 different families and whose parents also had multiple sclerosis. It was found that where the father had multiple sclerosis, the children had a higher risk of being born with the same disease. In other words, fathers with multiple sclerosis have more chance to transmit the disease to their child rather than the mothers.

Children with multiple sclerosis experience similar symptoms as the adults. The drugs for treating the children are similar to the drugs used for adults.

Studies indicate that genes and perhaps some unknown environmental factor is responsible for causing multiple sclerosis. To understand how the disease works, research on parental inheritance in multiple sclerosis inheritance might lead to some substantial findings.

Researchers feel that, since men are less likely to develop multiple sclerosis than women, those men who have this disease tend to have a very strong multiple sclerosis-prone genes. The hypothesis is

that the men are more resistant to multiple sclerosis; therefore, their genes and the number of those genes are stronger and higher.

It is advisable for men and women with multiple sclerosis to get guidance from a genetic counselor before planning a family.

Part-V: Diagnosis and Clinical Aspects

22. When to Seek Medical Care

Multiple sclerosis does not have specific symptoms that always occur the same in each patient. Some symptoms may not manifest totally. They may occur at intervals or may not be serious enough for you to notice and decide to visit your doctor. Some symptoms could overlap with those of other ailments.

However, it is better to diagnose MS in the early stages and seek necessary measures to combat the symptoms.

MS Symptoms that Require Medical Care

- Stiffness in limbs, causing involuntary dragging of legs
- Feeling of exhaustion and weakness in legs and hands
- Vision problems - blurred, hazy or foggy vision
- Loss of vision or double vision, or eyeball pain
- Walking problems and clumsiness in moving limbs
- Dizziness
- Intermittent tingling sensation or numbness in arms, hands or legs
- ‘Electric shock’ sensations moving down your back or spine, legs and arms
- Problems when trying to retain things in your memory or lack of attention at times.

- Problems with maintaining a daily routine
- Unable to communicate effectively, searching for the right words to give voice to your feelings
- Inability to empty your bladder completely or to hold urine
- Unsteadiness
- Pain when you move your eyes
- A burning sensation while urinating
- Problems when swallowing
- Regular bouts of constipation
- Frequent attacks of cold, chills and high temperatures
- Slurred speech
- Excessive pain in forearms, fingers or neck
- Development of numerous rashes
- Vertigo or muscular spasms
- Excessive urination

If these symptoms occur with great regularity and frequency, it is advised to consult a medical professional immediately or visit your nearest health care center for a complete diagnosis.

Some symptoms, like excessive weakness, personality changes or respiratory problems may signal the presence of other ailments like strokes, severe infections or chemical imbalances. These symptoms are also typical of MS.

So, a medical analysis can help you arrive at the correct diagnosis and make it easier for you to get appropriate treatment.

Painful eye movements may signal the presence of optic neuritis, which is one of the earliest signs of MS. Early diagnosis and appropriate treatment with corticosteroid medication may avert development of more serious symptoms.

If, after starting with your treatment for MS, you develop complications (like side effects of any medicines or injections) or if you do not find any relief from your symptoms, consult your doctor immediately.

Normally, injections require a minimum of two weeks to give you any substantial relief. Sometimes, you do not feel your symptoms while taking your medicine regularly. However, all symptoms come back as soon as you stop your medications or after the effect of the medication weans off. It makes sense to keep watch on your symptoms and seek medical advice whenever appropriate.

23. Diagnosis of Multiple Sclerosis

There is no single or simple test to diagnose MS.

Doctors examine you and study all the symptoms carefully.

There are international efforts to standardize and establish specific criteria for diagnosis of MS by using clinical, radiologic, and laboratory data. However, most symptoms and signs of MS are similar to those of other nervous ailments like brain inflammation, strokes, and Lyme disease.

They try to exclude symptoms that are connected to other conditions.

They look for two episodes of damage to the myelin sheath on the structures of the nervous system (termed demyelinating) that occur at least thirty days apart.

If you have had two separate episodes of MS with characteristic neurological symptoms and you display specific physical symptoms or abnormalities, doctors may diagnose MS without further testing.

The first attack produces many possible causes - different neurological disorders and symptoms according to where the damage occurs. MS causes many lesions on your brain and spinal cord. This attack could last for many hours or even days.

Some people have additional attacks while some others get medical advice and treatment soon after the occurrence of the first attack.

Some people with mild MS could suffer from optic neuritis, which is inflammation of their optic nerve. In such cases, if a brain scan is

normal, you probably have a very low risk of developing MS. A percentage of just 10%.

If your MRI discloses multiple lesions at the time of the single episode, you have more than an 80% chance of developing MS.

Sometimes, the tests do not provide evidence for definitely diagnosing MS. The case becomes more definite only if your age is within the range for MS. You should show strong signs of recurring symptoms too.

Neurologists often suggest a few more tests to confirm MS. Such tests include:

Lumbar Puncture: This is a spinal tap test. Doctors take a sample of your cerebrospinal fluid by inserting a needle between two vertebrae of the spine. If you have MS, this fluid will contain high protein levels, white blood cells and certain antibodies. This test confirms the presence of immunoglobulin, which is normally present as oligoclonal bands in the spinal fluid of people with definite MS.

MRI: MRI is Magnetic Resonance Imaging. Doctors conduct a scan of the spinal cord and brain by using magnetic waves to create pictures. Scanning can reveal damage to the spinal cord. Additionally, such a scan can rule out any other symptoms too, like abnormal pressure on the spinal cord. Chronic presence of symptoms is essential to establish MS. This test can reveal previous lesions, which may not have produced any clinical symptoms.

Neuropsychological tests: Doctors give you specific tasks to check your abilities in arithmetic, judgment, memory, attention and reasoning. These tests can show the functioning of your brain and other sensory activities.

Potential testing: Doctors stimulate brain functioning by passing mild electric current through your legs or arms. Wires on your scalp and legs or arms pass this current. It is then possible to measure electrical activity in response to such stimulation. They can test your hearing and sight abilities too. If you have MS, your brain will respond less actively to such stimulations. This test helps locate the widespread involvement of nerves needed to make a definite diagnosis.

24. Factors for Progression of Multiple Sclerosis

Multiple sclerosis causes severe impairment to your nervous system as it disrupts functioning of your immune system. Most treatments can slow down the progression of the disease. With longer remission periods, you should experience fewer flare-ups and complications.

Normally, your immune system produces many antibodies to fight against the antigens. In MS, your immune system loses its normal functioning abilities and turns against the healthy cells of your body.

Normally, MS patients progress into the chronic stages of the disease. In the early stages of destruction of the myelin sheath by your immune system, you suffer from various bouts of minor illnesses like dizziness, vision problems and some others. Although you are able to recover from these bouts quickly, you are progressing into the chronic stages at the same time. There may not be any specific treatment plan for these later stages.

In the early stages of MS, most symptoms are not prominent. They come and go. They do not cause much impairment or disability. Such random occurrences of symptoms could last for many years. However, over time, all the symptoms of MS occur with increased frequency and severity because many small attacks on your spinal cord and brain have caused them to deteriorate.

Your nervous system is unable to bear the assault any more, so it steadily loses its abilities to work properly for you.

Some studies suggest that a particular substance, **macrophage migration inhibitory factor**, that is made by your immune cells might be responsible for the progression of MS.

Studies on mice indicate that the absence of this substance caused occurrence of MS in initial stages. However, it apparently did not develop into a serious form of the disease in those tests.

25. Prognosis of Multiple Sclerosis

The cause(s) of Multiple Sclerosis is still being studied. The factors affecting its progression vary in their effects too. Sometimes, patients with MS continue to live full lives for more than 35 years after their first attack.

In very rare cases, MS patients succumb to the disease within weeks. In some cases, MS patients develop severe symptoms and die due to numerous complications within five years.

The outcome of your multiple sclerosis may be serious if:

- You are a female
- You had the first symptoms at a young age of around twenty
- Your first symptoms were vision problems or decreased sensation, and not of coordination or weakness
- You had long gaps of remission between relapses
- Your MS was the relapsing-remitting form

After diagnosis of MS, progress of the disease could be slow if:

- There are long intervals between episodes
- You recover completely after an episode
- You suffer fewer attacks after your first diagnosis
- Your episodes are mainly sensory in nature and cause tingling or numbness

Your MS could progress very fast if:

- You have many frequent attacks
- You do not recover completely from your episodes
- You suffer more attacks after your initial diagnosis
- Initial symptoms disrupt your motor functions and disturb your coordination
- Early MRI scans reveal many lesions

According to NINDS Multiple Sclerosis Information, the majority of MS patients do not suffer extreme symptoms and have a normal life expectancy. Usually, symptoms become a constant feature without any great regression or progression.

MS may only make you unable to write, read, walk, or speak in very severe cases. In extremely rare cases, it causes paralysis, blindness and sometimes premature death.

However, most outcomes are unpredictable and therefore are not authoritative. There are no clinically established and laboratory-tested investigations to predict the outcome of most cases of MS accurately.

Part-VI : Treatment and Medications

26. Treatment and Medications for Multiple Sclerosis

There is no conclusive evidence of the actual cause of multiple sclerosis and no specific treatment available for an effective cure. You need medical supervision and medications to provide some relief for your symptoms.

Sometimes, MS patients recover completely and do not suffer any relapse. Another extreme is that MS could cause severe damage to your nervous system very early in the disease itself or even before the MS symptoms show up.

Sometimes, the symptoms prove to be very mild and the patient may not even notice them.

Medications for MS reduce the severity of the disease by:

- Reducing further damage to lesions
- Preventing accumulation of lesions
- Reducing the number of days you suffer from MS symptoms
- Slowing down all disabilities due to MS
- Preventing development of new symptoms
- Preventing relapses

Current medications can sometimes slow down the progress of the disease and prevent its natural course.

Available Medications and Treatments for MS

The most common drugs for treating MS symptoms are popular as ABC drugs. They are **Avonex, Betaseron and Copaxone**. These medications quieten the immune system through different biological mechanisms. They reduce the intensity and frequency of your attacks and the numbness, disability and severe fatigue. Each drug needs a separate type of administration and provides different effects.

Avonex: (Beta-interferon-1a): Administration of this drug is through intramuscular injection. This drug effectively reduces further inflammations of MS lesions by about a third. It also reduces disabilities associated with MS like gait disturbance, weakness, visual problems and cognitive impairments. It is best to use ibuprofen (Motrin) or acetaminophen (Tylenol) before taking the injection to reduce the severity of side effects.

Common side effects of Avonex are:

- Fever
- Muscle aches
- Chills

Betaseron (Beta-interferon-1b): This drug is slightly stronger than Avonex. It is more effective in cases of secondary progressive MS. This type of MS registers steady progression of the disease rather than recurrent remissions and exacerbations. It can help reduce the appearance of new lesions on your nerves.

Common side effects of this drug are:

- Chills
- Fever
- Muscle aches
- Injection site reactions

Copaxone (Glatiramer acetate or Copolymer-1): Administration of this drug is as a daily subcutaneous injection. This drug also produces extensive reduction in the frequency of MS attacks. It does not cause any flu-like symptoms or side effects.

Common side effects are:

- Tenderness, swelling, redness, or pain at the place of injection
- Anxiousness for around twenty minutes after the injection

Steroids

Steroids prove effective at speeding the recovery process from an episode. Steroids are not a permanent cure for MS. Steroids are anti-inflammatory drugs that arrest further inflammation. These drugs are only for very severe cases of MS. In such cases, MS could affect your daily functioning like walking and vision.

Steroids do cause severe side effects and therefore, you should discuss the situation in detail with your doctor before using any steroid treatment for your MS symptoms.

Doctors prescribe administration of these drugs by mouth or through intravenous injections, depending on the severity of MS attack. You can either administer injections at the nursing home or at your home with the help of any nurse. Normally, doctors prescribe steroid treatments for a few days to a week only.

Common side effects of steroidal treatments are:

- Insomnia
- Mood swings
- Weight gain
- Increasing glucose levels

All these side effects disappear once you stop your steroidal treatment.

Medications to Reduce Stiffness

Muscular stiffness is a very common feature of Multiple Sclerosis. Some doctors prescribe **Baclofen (Lioresal)** for treating such stiffness. Although doctors prescribe many dosages during a day, you can, with your doctor’s approval, adjust your dosages to take them during severe attacks. You should start the drug at low doses and thereafter increase in small increments to get relief from your symptoms. This medicine relaxes muscles and reduces muscular weakness. It can calm you.

However, if Baclofen is unable to provide the necessary relief from your muscular spasms, you can take **tizanidine (Zanaflex)** in combination with it. This drug is very potent and therefore, you have to start at low doses and increase them over time. This is very effective at reducing spasms and does not cause much weakness. Doctors sometimes use **dantrolene (Dantrium)** if both these medications do not provide the necessary relief.

Medications to Reduce Neuropathic Pain

There are many medications to treat Neuropathic pain that occurs due to MS. Most of these medications are similar to depression medications. They include **gabapentin (Neurontin)** or antidepressants like **amitriptyline (Elavil)**, **paroxetine (Paxil)**, and **sertraline (Zoloft)**. All these medications help relieve pain.

Medications to Cure Bladder problems

Medications to cure bladder problems are **tolterodine (Detrol)** and **Oxybutynin (Ditropan)**. These reduce excessive urination and urgency in urination.

Medications to Combat Fatigue

Multiple sclerosis causes fatigue, a general feeling of weakness where you feel very sleepy. **Amantadine (Symmetrel)** and **Modafinil (Provigil)** can help improve these symptoms.

Medications for Treating More Chronic and Progressive Forms of MS

There is presently no conclusive report of effective treatments for treating chronic and progressive cases of MS. There are a few reports of beneficial effects of some medications for some chronic

cases. However, there is always a very high risk factor. Your doctors needs to weigh the risks and benefits and decide accordingly.

Such treatments and medications include **intravenous immunoglobulin, intravenous steroids** and **plasmapheresis (plasma exchange)**, use of chemotherapeutic agents like **azathioprine (Imuran)** and **methotrexate**.

You normally need to be in the hospital for administration of intravenous immunoglobulin and plasmapheresis.

All medications and treatments for MS produce different effects in different patients with MS symptoms. Although none of them offers any permanent cure, they help alleviate symptoms. Recent and continuing research will offer newer therapies and medications.

Precautions

Avonex can cause serious problems for MS patients with existing depression or any other type of psychiatric disorder. It is best not to start Avonex medications if doctors are still unsure of your MS symptoms and do not declare it a clear case of multiple sclerosis. Avonex can worsen the symptoms. FDA and Avonex manufacturers have issued a warning to this effect.

Extensive and long-term use of such medications could decrease its effectiveness as your body produces many neutralizing antibodies.

There is no information at the time of writing about the risks of long-term treatment.

There is no guarantee of any treatment. It is difficult to predict effectiveness of any treatment in a person with MS symptoms.

Treatment costs may be well above \$10,000 per year.

Part-VII: Alternative Therapies

Used for Multiple Sclerosis

27. Multiple Sclerosis: Alternative and Complementary Therapies

Multiple sclerosis is one of the most widespread chronic diseases of the central nervous system in which the brain, spinal cord, and optic nerves can be affected. Despite much research, the cause of multiple sclerosis is still unknown. Though there is no cure for multiple sclerosis, many alternative and complementary therapies are available that are claimed to ease the symptoms and modify the course of multiple sclerosis.

Alternative therapy includes a wide variety of traditional medical treatments that have not been documented scientifically. These traditional interventions range from diet and exercise to mental conditioning and changes in the attitude and lifestyle of the patient.

Alternative Therapies for MS

Positive Attitude: Living in depression and stress because of MS will increase your pain. Believe in yourself and your willpower. A positive attitude towards life will help you feel better. Keep away from people and situations that increase stress and negative thoughts.

Exercise: Exercise, like Yoga and Tai Chi, may strengthen your immune system, reduce your stress and boost your energy. Though exercise can help, you should consult your physician before starting.

Diet: With MS, you should stick to a well-balanced and healthy diet. You should eat plenty of whole grains for energy, fresh green leafy vegetables and fruits for fiber. Make sure that you maintain an appropriate fluid intake to avoid constipation, and look for unsaturated fats. Reduce the intake of saturated fats.

MS patients are advised to stop smoking and drinking alcohol immediately. They lower the energy level of body and weaken the immune system.

Complementary Therapy

Complementary therapies are recommended by some people to accompany the traditional treatments. As the name itself indicates, they complement your medical treatment. But, you should always discuss them with your own medical practitioner before you consider starting with any of them.

Some Options of Complementary Therapy for MS

Massage: Our skin has countless nerve endings that respond to touch. Massage relaxes the tense muscles of your body and soothes the skin. Regular massage may help you to manage the muscle pain in MS. However, massage is not considered safe for everybody with MS. For example, it may prove harmful to people with osteoporosis. So, be advised by your doctor first.

Acupuncture: Acupuncture is also believed by some to relieve you of pain, muscle spasms, or bladder control problems in MS. However, sterile needles should be used to avoid any kind of the infection.

Chiropractic: Terrific back pain intensified by damaged leg muscles is a common symptom of MS. Chiropractic practice is believed by its devotees and practitioners to be one of the most effective treatments for back pain and injury. The spinal manipulation done in chiropractic may help you lessen the musculoskeletal problems. Make sure you get x-rays first and consult your doctor before starting.

Meditation: Mental conditioning through meditation encourages a relaxed and calm mind with heightened awareness. Meditation is a popular stress management therapy.

Yoga: Yoga is promoted as an effective form of meditation. It is associated with concentrating on postures timed with breathing. Yoga improves the flexibility of muscles and reduces the stress. Check with your doctor first that your body is fit enough to do yoga.

Use of evening primrose oil and fish oil: Oral supplements of evening primrose oil and fish oil contain Linoleic acid, which some believe has a positive effect on MS symptoms.

Despite noticeable success of these therapies, you should evaluate them to avoid the negative results and wastage of money and time.

The following guidelines may help you to reach a decision about these therapies:

- 1.** You should never rely on the face value of a treatment. Check with trustworthy organizations, support groups, doctors and your family members to reach an educated and well-informed decision.
- 2.** Consult your doctor about the therapy and likely interactions or side-effects.

3. Instead of relying on testimonials, talk to people with MS who have used the therapy.
4. Research the background and credibility of each therapy or product provider. Go for providers who are willing to work with your doctor.
5. Get the estimated total cost of your treatment before spending any money on it.
6. Be careful to ensure that you are getting the actual product from the original manufacturer.
7. Make sure of the presence of all active ingredients.

I would like to mention few alternative therapies which have been unsuccessful.

1. Replacing mercury dental fillings.
2. Use of Hyperbaric oxygen therapy in which oxygen is inhaled under pressure.
3. Use of Vitamin supplements
4. Employing special diets

Even if there is no cure available yet for multiple sclerosis, proper use of alternative or complement therapies with medical prescription may take the edge off severe pain and MS attacks to a significant extent with some patients.

28. Acupuncture and Multiple Sclerosis

Acupuncture is one of the most common, traditional forms of alternative therapy from China. With other medical interventions, acupuncture may relieve various multiple sclerosis symptoms.

How It Works

An insulating layer called the myelin sheath protects the axons of neurons that carry communications between the brain and other parts of the body. MS damages this myelin and interferes with the communication. In Acupuncture, certain key points in the body are pierced with sterile needles. This is claimed to induce the release of certain endorphins and peptides in the central nervous system, which modulate sensory information between the body and brain. In this way, acupuncture is claimed to reconcile some MS symptoms, especially pain associated with facial neuralgias.

However, Chinese medical theory does not reflect on the concept of the nervous system. It is based on the flow of energy through 14 main pathways called meridians that are believed by its practitioners to control the functioning of body. Any disease is a consequence of disrupted flow of energy. Acupuncture deals with this disruption and relieves the body from imbalance and pain.

Studies and Surveys on MS

A small number of clinical studies and surveys have been conducted to evaluate the success of acupuncture in people with MS.

Significant positive results have been found in some patients after 10 acupuncture treatments.

A 53-year-old female had been suffering from MS for 15 years. She was confined to a wheelchair. After 10 acupuncture treatments, she was able to walk. She also improved her vision, bladder control and general health.

The Washington Acupuncture Center has been tracking treatments and the records of 10,000 patients for three years. They say that they noticed up to 85% improvement in MS symptoms.

The MS Clinic at the University of British Columbia conducted a survey on 566 patients with definite MS and declared acupuncture as the most common and effective method used for relief of some symptoms.

Two large surveys conducted on MS people in the United States and Canada, reported some improvement in pain, muscle spasms, and bowel or bladder function.

Acupuncture is not a scientifically documented treatment, but it is reported to have proven helpful for certain MS symptoms in some sufferers. Even if it is not effective, acupuncture is claimed to be a harmless treatment. However, only qualified professionals should use it.

29. Herbs for Multiple Sclerosis

Living with multiple sclerosis is difficult and confronting every day. It is not easy to deal with the MS symptoms. Recently, some herbs have been claimed to be effective for relieving some of the symptoms of this incurable disease.

Herbs are the plants that act upon the cells and produce changes in the body. These herbs contain certain chemicals that are believed to be responsible for the desired effect on different conditions.

Herbs Used to Treat MS Symptoms

Echinacea: Echinacea is an extremely popular herb. It is used by many people to treat the common cold. As acute MS attacks are associated with viral respiratory infections, Echinacea may be helpful in treating a cold. However, it may stimulate the immune system of MS people.

Cranberry: Cranberry is a herb used to treat urinary tract infections. It is claimed to inhibit bacteria from sticking to cells that line the urinary tract and may also kill bacteria. It contains two medicinal compounds - Fructose and Proanthocyanidin. Because it is claimed to have no side effects, it is widely used. It may be helpful to people with MS as urinary tract infections can have serious consequences.

Ginkgo Biloba: Ginkgo is obtained from one of the oldest tree species. It acts as an antioxidant. It is also claimed to inhibit a platelet activating factor (PAF) leading to a decrease in the activity of certain immune cells. This reduced level of activity is claimed to lessen MS attacks. Ginkgo may be effective in improving MS-related

cognitive dysfunction to a some extent. However, Ginkgo may also have some serious side effects, like inhibited blood clotting. Therefore, it should be only ever be used under qualified medical advice.

Valerian: Valerian is a foul-smelling root, normally used as a sleep aid. MS people may suffer from troubled sleep, which increases MS-related fatigue. Valerian may be very helpful to some people with MS. However, Valerian is also associated with an enduring, sedating effect, which limits its usefulness and safety for MS patients.

Asian Ginseng: Asian ginseng is believed to boost the energy and strength of the body. It is also claimed to help resist stress and aging. However, little, if any, evidence is available in support of its effects. Ginseng may be some help to MS people experiencing unbearable fatigue.

But, it is believed to be linked with the possibility of stimulating the immune system which may prove fatal for people with MS.

St. John’s Wort: St. John’s Wort is commonly used as an antidepressant. However, the trial conducted by the National Institute of Mental Health, National Center for Complementary and Alternative Medicine, and the federal Office of Dietary Supplements, found St. John’s Wort, ineffective in treating major depression of moderate severity. Although St. John’s Wort is claimed to be tolerated and act without side effects on the immune system of MS people, it displays a critical risk of interaction with other medications. St. John’s Wort is not fit for people with severe depression.

Check with your physician before trying St. John’s Wort.

If herbs can improve your health, they can produce some harmful effects too. Thus, herbs should only be used with appropriate caution and qualified medical supervision. You should not start with any herbal medication before consulting your doctor.

30. Vitamins and Minerals for Multiple Sclerosis

Vitamins and minerals form an integral part of your diet;

irrespective of any ailments. MS patients need to maintain the balance of vitamins and minerals necessary to combat MS symptoms. You cannot store vitamins in your body. Therefore, you should get the necessary requirements at appropriate intervals.

You can get your supply of all necessary vitamins and minerals from your daily diet except for vitamin D. The essential vitamins consist of antioxidant vitamins A, C, and E, vitamin B12, and vitamin D. Necessary minerals include calcium, zinc, and selenium.

Vegetables and fruits are rich sources of antioxidants. Such antioxidants can fight off free radicals and give you some necessary relief from MS symptoms. You can get the essential amounts of antioxidants by eating three to four servings of vegetables and two to four servings of fruits daily. Only ever use antioxidant supplements in moderation and with advice from your doctor.

MS patients often suffer from urinary tract infections. Although some intake of vitamin C can reduce these infections, there is controversy regarding its dosage and effectiveness. Vitamin E may help prevent damage to cell linings and cell membranes. You can get your supply of vitamin E from fruits, vegetable oils, nuts, vegetables and meat.

It is best to restrict consumption of vitamin E to less than 1000 IU.

Low vitamin D levels cause low bone density and could increase your chances of osteoporosis in addition to your MS symptoms. Fortified breakfast cereals, fish and dairy products can provide

vitamin D to you. Additionally, exposure to sunlight is also helpful in accumulation of vitamin D in your body.

Vitamin B12 helps in the normal functioning of the nervous system and production of red blood cells. Lack of such vitamin can cause severe neurological symptoms that are common in MS. Vitamin B12 foods include poultry, meat, eggs, dairy products, and shellfish.

MS patients can get their necessary amounts of minerals from their regular diet. Selenium rich sources include legumes, seafood, low-fat meats, whole grains, and dairy products. Drinking milk can help you maintain the necessary calcium levels in your body.

31. Dietary Therapy for Multiple Sclerosis

Diet plays an important role for MS patients. MS symptoms often cause excessive fatigue, constipation and incontinence. Your diet may help you to reduce or overcome these symptoms by providing all necessary nutrition.

Be careful about three main parts your diet:

1. Allergic reactions
2. Excess or deficiency of food
3. Toxic effects of foods

Suitable Diets for MS Patients

If you exhibit MS symptoms, you might look at trying the following:

Consume yellow, orange, and dark green vegetables. Five servings of vegetables and include more of the dark green and leafy variety. Two servings of fruits is necessary daily.

Consume a protein-rich diet consisting of seeds, nuts, and cold-water fish.

Include many fibrous foods like brown rice, whole wheat, bran flakes, oats, whole cornmeal, shredded wheat, grape-nuts and whole grain corn. These carbohydrates can help to increase the fiber content of your body.

Include more fish, poultry, lean meat, dried beans, low-fat or non-fat dairy products, tofu and other plant proteins.

Have at least six to eight glasses of water daily to flush out toxins from your body and prevent constipation problems common in MS patients.

Include polyunsaturated fats available in safflower, sunflower, Soya, corn oils and oily fish.

Eat more prunes, raisins and figs.

Foods to Avoid

Some people advise MS patients to reduce their intake of the following:

Full-fat dairy products and red meat, as they contain saturated fats.

Refined foods, caffeine, and additives like aspartame.

Often MS patients have an allergy to gluten foods and some of these food allergens could be in dairy products, wheat, soy, eggs, tomatoes, fish, chocolate, corn, or peanuts. Monitor your consumption of these foods and check for any allergic symptoms with your MS.

Stay away from alcohol and smoking. Alcohol in moderation may not be very harmful. However, smoking erodes away the vitamin C resources of your body. So, it proves very harmful in conjunction with MS symptoms.

It is essential to maintain your body weight at a healthy level. Excessive weight can strain your tense muscles, leading to further damage and risk of falls.

32. Yoga for Multiple Sclerosis

Multiple sclerosis is a chronic disorder that progresses steadily.

You may experience benefits through relaxation techniques like yoga. This ancient Indian form of exercise and relaxation is an option for those suffering from physical limitations. MS patients often suffer from muscular disabilities due to poor and inefficient coordination of their nervous system, brain and spinal cord.

Yogic postures may help to relax and relieve stiffness in the muscles. It may be of great help to MS patients suffering from balance and posture problems. The Mountain and Warrior poses done against the wall are best for regaining your balance. You can sit down and practice Eagle, Tree, and Triangle poses.

The library is a great source for books on Yoga.

Yoga can be restorative or adaptive. Restorative yoga poses prove beneficial for recovering from illness, fatigue, and stress. These help your body to gain strength and rejuvenate itself. It also calms down the brain and restores normalcy in breath. This relieves stress extensively, as you are able to breathe normally and freely.

Yoga is very useful in improving your range of motion. It boosts your energy levels and makes your muscles more flexible. Practicing yoga also improves flexibility of your joints. Yoga may not only improve your MS symptoms, it may also be a great boost to your general health. All parts of your body may benefit through better circulation of air and blood.

MS patients often suffer from cognitive disabilities, like difficulty in concentration. Yoga may bring a marked improvement in such

disabilities. You need to concentrate on any particular yogic posture while doing it. Regular practice of yoga may improve your concentration levels immensely.

Yoga does not need any elaborate gear. You can do yoga comfortably on the ground or on a thick rug.

Precautions

You should consult your medical practitioner before starting on your yoga. You should not do yoga for long periods or until your muscles ache. Overexertion can lead to destructive effects instead of benefits. You could end up over-exerting your already-stressed muscular system.

Part-VIII: Coping with Multiple Sclerosis

33. Prevention for Multiple Sclerosis

Multiple sclerosis is a debilitating disease of the nervous system. If you suffer from relapsing-remitting MS, **glatiramer acetate** or **interferon beta** may delay any disability. Similarly, **Mitoxantrone** or **Interferon beta-1b** may reduce some effects of progressive MS. However, these provide temporary relief and do not offer any long-lasting remedy.

There are many cases of people with relapsing-remitting MS progressing into secondary progressive MS within a decade.

There are various conflicting claims about the occurrence of MS. Some suggest shocks, injuries, vaccinations or even pregnancy. But there is no conclusive evidence to support any of these claims. A simple viral infection can aggravate your MS symptoms too.

Although pregnant women report fewer relapses of MS symptoms, they may suffer from many frequent relapses after delivery. There is still no conclusive evidence linking genetic causes for the occurrence of MS.

Simple Control Measures

These measures may assist in controlling some of the effects of your MS.

Excessive heat can aggravate MS symptoms, as high body temperatures cause more harm to your affected nerves and reduce their capabilities. Therefore, avoid overheating your body as much as possible. Keep your home cool. Exercise indoors and in air-

conditioned places during hot weather. Similarly, do not use really hot baths and swimming pools. Avoid venturing out in hot weather.

Eat a healthy diet including many fruits, dark green vegetables, vegetables of different colors, whole grains and other fibrous food. Lower your intake of saturated fats and eat sufficient foods that provide Omega-3 and Omega-6 fatty substances.

Maintain a regular exercise regimen. Physical exercises and mental relaxation techniques may alleviate MS symptoms. However, consult your doctor and discuss the exercise regimen in detail before starting on any particular workout.

Provide adequate rest to your body and do not rush into things. Maintain a steady rate without excessive stress.

Take regular medications as prescribed by your doctor. Do not make changes in the medications without prior approval of your doctor.

Avoid any drastic changes in your weight, as excessive weight gain and loss may be equally harmful.

Regular massage may reduce your stress due to MS.

Practice regular bladder regimen and hygiene to lower the intensity of bladder complications due to MS symptoms.

MS affects a random section of people across the world. Therefore, you cannot avoid its occurrence. You can only try to reduce MS symptoms.

34. Coping Skills for Multiple Sclerosis

If you are an MS patient, you may have to deal with many instances and situations with severe emotional and social consequences. It does not mean that you will lose your faith and feel helpless. Medical science and Psychology can provide you with some coping strategies that help you to fight the exhausting effects of MS.

Coping at an Individual Level

Maintaining Physical Health

1. If multiple sclerosis reduces your ability to do things you take pleasure in, ask your doctor about feasible ways to get around the impediments.
2. Modify your home and adjust your work situation, where possible, so that your daily routine is less stressful or tiring.
3. Eat a well-balanced diet with plenty of grains, cereals, fruits, vegetables, fish, lean meats, legumes, poultry and low-fat dairy products.
4. Do regular exercise, either on your own or with assistance.
5. Drink plenty of fluids. Plan your fluid intake and activities so that bladder problems, like retaining or releasing urine could be minimized.
6. If you having a problem in swallowing, consult your doctor.
7. Maintain your normal daily activities as best as you can.
8. Continue to practice hobbies that you enjoy and can do.

Coping with Emotional Trauma

Your physical health can directly influence your mental health. Anger, denial, and frustration are usual when you learn that life has handed you something painful, unexpected and incurable.

MS is always associated with an increased risk of depression. You may start feeling rejected. You may need to consult therapists or behavioral psychologists who may be able to help you put things in a clear, positive perspective.

Joining a support group where you can share your experiences and feelings with other people is another good approach.

Do not let fear overtake you. Instead, focus on problem solving and stay positive through your illness and rehabilitation.

Do not let MS deprive you of your feelings of self-worth or your confidence. The MS Society has a great slogan, "**You have MS. MS doesn't have you.**" Avoid thinking of what you cannot do. Instead, focus on what you can do today.

Remember, children with MS generally deal with life better than adults do, as most of them are hopeful about the future and keep their high expectations. This optimism encourages and protects them from being overwhelmed by anxiety about their illness.

Coping Socially

You need to find a few positive behaviors and characteristics that will be useful in the psychological management of your MS:

1. Educate your family and partner about your illness.
2. Stay connected with family members and friends.

3. Tell your partner about your MS at the right time; when you feel relaxed and the two of you have a sense of trust and mutual caring.
4. Be strong and avoid giving in to any feeling of rejection.
5. Find your faith in the higher power.
6. Participate in organized community activities.
7. Innovate, improvise and solve problems.

Your health is your wealth. Preserve it with proper diet, rest and sensible use of your energy. You can cope well with this disease with practical and emotional support from your family, friends and doctor.

You must always have a positive attitude towards life and feel that you will definitely win over this disease.

35. Self-Care for Multiple Sclerosis

Multiple sclerosis requires many changes in your normal routine to meet the physical and emotional demands of the disease. You can adopt various self-treatment measures that are simple and easy to practice at home to help you better combat the disease.

Some Self-Care Tips

Follow a regular exercise pattern, either by yourself or with the help of a physical or occupational therapist.

Eat a balanced diet that includes different types of vegetables, fruits, lean meat, poultry, legumes, cereals, grains, fish, and low-fat dairy products.

If you have swallowing problems, try drinking thicker liquids like juices in gelatin form or milk shakes.

Stay away from foods like cakes and crackers as these crumble easily and could cause choking.

Use helper devices like reachers, long-handled shoehorns and dressing sticks to help you balance yourself if you experience any balancing problems.

Use lightweight pans and dishes. Use trolleys to carry heavier dishes.

Urinary incontinence is a common symptom of MS. Plan your fluid intake to complement your daily activities. You could also take a prescription medication in consultation with your doctor.

Take sufficient rest as fatigue is a common symptom of MS. Eat many small meals in a day instead of three large ones to avoid fatigue due to heavy meals.

Extreme heat can cause severe weakness in your muscles. Be careful about having hot baths or sauna baths. If you experience any excessive signs of heat-related symptoms, let your body cool for a few minutes to bring you back to your original state.

Avoid stressful situations; specifically physical stress, as such stress can aggravate your MS symptoms.

Do not allow any bacterial infections or fever to continue. Treat them as soon as they occur.

Get professional and supportive psychological counseling where available. This can help keep you in good spirits and reduce the effects of any depression.

Schedule your working hours to suit your energy levels. If possible, reduce your working hours to ease physical or mental stress.

36. Professional Help for Multiple Sclerosis

Multiple sclerosis symptoms could make you need to get the services of many different professionals. MS causes serious symptoms that you cannot take care of by yourself.

You could need the services of some of these specialists:

MS Nurse: Your nurse teaches you self-care tips to manage your daily routine. Also, she teaches you correct administration of medications through injections etc and coordinates the services of insurance agencies and other healthcare providers.

Neurologist: Your neurologist is often the first person to confirm the MS diagnosis. Then, regular visits can help you understand how to manage your MS symptoms. The neurologist will also suggest remedial measures. They could also refer you to other specialists like a psychiatrist, urologist, gynecologist, or pain specialist.

Occupational Therapist: Your therapist helps monitor your upper body functions. They help you to use specific equipment that compensates for your disabilities. Alternatively, they may consult architects about various home adaptations or renovations to help you retain independent movement within your home.

Speech/Language Pathologist: They analyze your speech and swallowing problems. Then, they teach you to eat safely, swallow food easily and, if necessary, show you how to manage your feeding tubes. They also will help you learn how to use telephone aids, speech amplifiers and other devices to help with your cognitive problems.

Physical Therapist: They help you learn and practice effective exercise programs to reduce pain in your joints, limbs and other muscles. Such exercises could also reduce instances of osteoporosis, tremors or spastic movement problems. They also teach you how to use equipment like hoists, wheelchairs, walkers, braces and canes.

Counselor: A medical counselor helps you and your family members to understand and adapt to changes in your lifestyle that are due to your MS symptoms. You will be able to view any disability in a more productive light. This helps to you rebuild your self-esteem and develop various problem-solving skills to combat your symptoms of MS.

Home care therapists: They can come to your home and administer necessary treatments for your MS. This could be more appealing than being confined to a hospital room.

37. 20 Tips to Help Deal with Multiple Sclerosis

Multiple sclerosis could be a debilitating disease. But, this may not restrict you from living a fairly full life. You just need to take a few precautions and plan things well in advance.

Some tips that can help you deal with multiple sclerosis are:

Do not brood over your illness. Instead, set a goal in your life and work towards it. This keeps you engaged and active.

Maintain a regular exercise regimen. Physical exercises help maintain your emotional health and good moods. Exercise helps release the stiffness of muscles. In some cases, exercise could initially tire you. However, over time, your body will adapt to sustain the strain and you will see improvements in limb functions.

Remove negativity from your life. Maintain regular contact with your friends and colleagues. That interaction distracts your mind from your illness and you will feel rejuvenated.

Practice mental relaxation exercises like meditation, yoga, massage, tai chi and progressive relaxation. These reduce daily tensions and stress in your life.

Some patients find relief by attending spiritual gatherings. Strong religious beliefs could work wonders and be a pillar of support during the trying times of your illness.

Form support groups with people that have similar illnesses or other chronic illnesses. Taking active part in such support groups can help increase your knowledge about MS health care options, treatment options and other important information.

Survey your medical situation and plan chores or other activities accordingly.

Maintain strong bonds with family and friends for help or support in times of need. A general feeling of being able to love and receive love makes you happier.

Do not hesitate to ask for help.

Do not keep your feelings and symptoms or other doubts to yourself. Instead, talk about and share concerns with friends.

Go for regular checkups and analyze your progress in dealing with your MS.

Maintain close relations with your doctor so that you can more easily discuss complex issues and other problems concerning your ailment.

Take an active part in recreational activities, social activities and related events that can help to reduce your stress.

Laughing aloud and enjoying humor can alleviate your MS symptoms.

Wear an emergency call button on your ring, chain, or bracelet. This helps or someone near you to call for emergency help at any time of the day or night.

Pay attention to your diet as certain foods could aggravate your MS symptoms or assist to reduce some of them.

Avoid any kind of physical or mental stress, as excessive stress can deprive your body of essential rest and recuperative abilities.

Drink adequate water, as it helps cleanse your body of impurities and toxins.

Have a healthy diet to provide all necessary nutrients and supplements for your body.

Talk to counselors if you feel unable to cope with MS and that it may be getting the upper hand in your life.

Take adequate precautions while traveling. Carry your prescribed medications, injections and special food.

Part-IX: Multiple Sclerosis FAQ

38. Multiple Sclerosis – Frequently Asked Questions

What is multiple sclerosis?

Multiple sclerosis (MS) is a permanent disease that causes increasing disability. The outer covering of nerves in the spinal cord and brain are attacked and this reduces their functionality.

Who are the most common victims of Multiple Sclerosis?

Incidence of the disease is higher in women than in men; around three women for every two men.

Multiple sclerosis is more prevalent in the age group of 20 to 40.

People living in the temperate regions of northern Europe and North America report higher incidences of the disease.

One in every 800 fall victim to this disease.

What are the causes of multiple sclerosis?

There is no clear, definite evidence of the specific cause(s) of multiple sclerosis. Probable cause may include a combination of genetic factors, a virus-like environmental trigger and possibly some defects in patients' immune systems.

What are the symptoms of multiple sclerosis?

Symptoms of multiple sclerosis differ from person to person. It can attack any part of your nervous system.

Common symptoms include:

- Inflammation of the optic nerves, causing pain and problems with sight. Sometimes, vision becomes normal after few days or there could be a permanent deficiency in vision.
- Loss of sensation in body limbs like legs, hands, and feet.
- Paralysis
- Urination problems like excessive urination, unable to hold urine in bladder and a burning sensation while urinating.

How does diagnosis of multiple sclerosis take place?

The doctor interviews you and gathers information about your neurological episodes. This can only make it a case for possible MS, so your doctors conduct further tests to confirm whether you definitely have MS.

Such tests include:

- MRI scanning of brain and spinal cord to reveal scarred nerve tissues and their locations.
- Spinal cord examination identifies presence of antibodies.
- Neurophysiologic examinations reveal reduced rate of conduction through your nerves.

Doctors also consider your medical history before making a final diagnosis.

What are the available treatments for multiple sclerosis?

Presently, there is no specific treatment for all multiple sclerosis. Steroids, in the form of injections and tablets, can reduce the duration of the attacks and their severity. However, there is not yet a permanent cure.

But, active research indicates the possibility of development of effective treatments in the future.

Available Medications for Multiple Sclerosis

Doctors prescribe various medications to reduce the intensity and severity of the neurological attacks.

Common medications include muscle relaxants, painkillers, antidepressants and medicines for preventing or reducing urinary incontinence. **Glatiramer acetate** and **interferon-beta** help to reduce the disease's level of activity and attacks, thereby reducing further damage. These medications are delivered as intramuscular or intravenous injections. This is a long-term treatment option and it can be very expensive.

Physiotherapy can help restore functionality of nerves to a substantial level.

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