Multiple Sclerois

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Topic outlines

- Incidence
- Definition of MS
- Etiology
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- Classification of MS
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- Diagnosis
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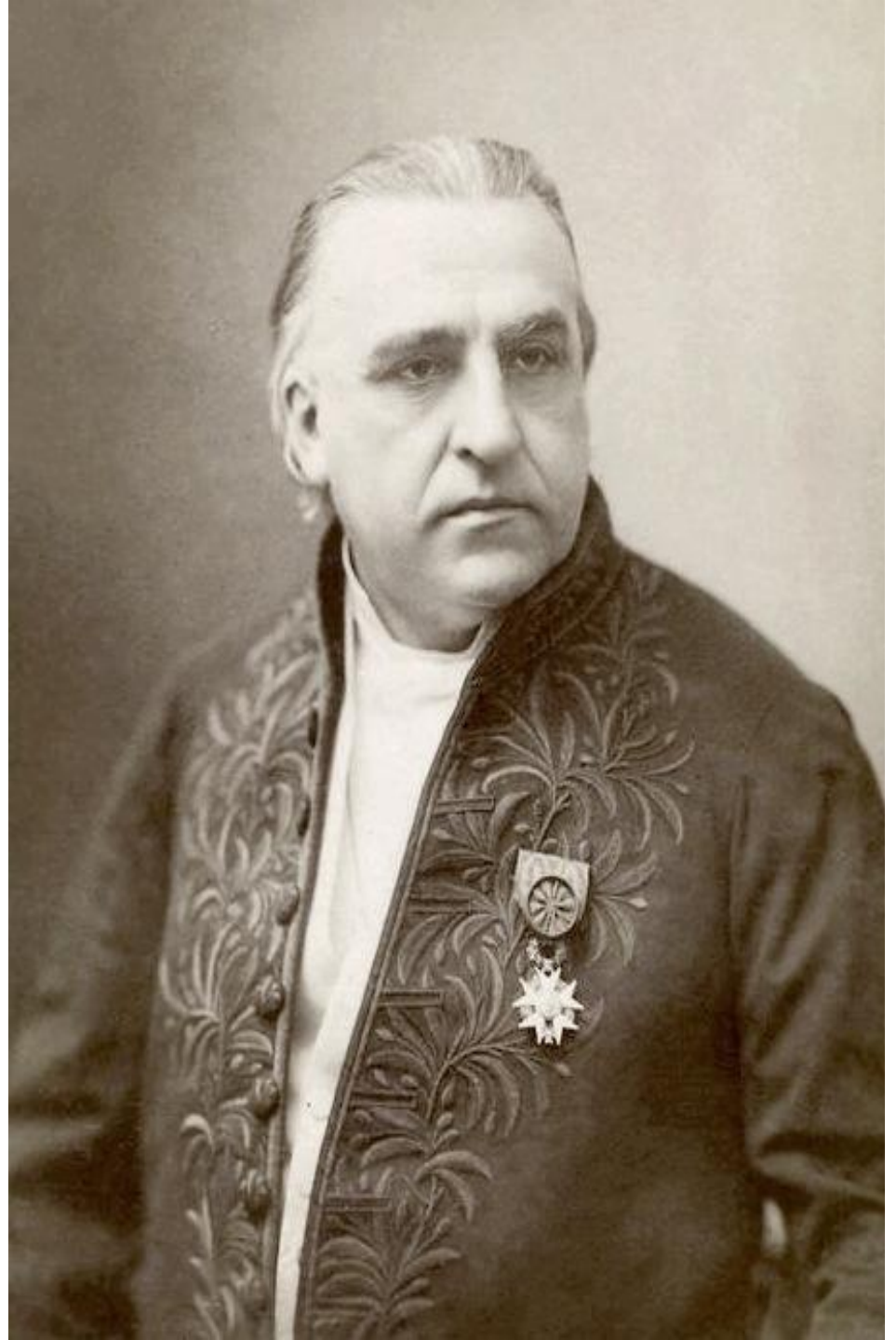
- Patient teaching
- Summary
- Reference

-MS was first describe in 1868 Jean-Martin Charcot.

-The name multiple sclerosis refer to the numerous scars(sclerae-better known as plaques or lesion) that develop on the white matter of the brain and spinal cord.



Incidence

- 2.5 million people are affected with MS worldwide .
- High prevalence rates (over 30 per 100,000) occur in northern Europe, northern United States, southern Canada, and southern Australia and New Zealand.
- Low prevalence rates (<5 per 100,000) occur in southern Europe, Japan, China, and South America.
- MS is five times more prevalent in temperate climates (between 45 and 65 degrees of latitude), such as those found in the northern United States, Canada, and Europe, as compared with tropical regions. African American individuals have a prevalence rate that is 40% that of European Americans.
- Africans are thought to have a prevalence rate of approximately 1% that of European Americans, This suggests that the genetic susceptibility to MS may be related to ethnicity
- Whites are more affected than Hispanics , blacks or Asians.

Definition

-MS : Is a chronic , progressive , degenerative disorder of the CNS, characterized by disseminated demyelination of the nerve fiber of the brain and spinal cord

-The myelin is produced by oligodendrocytes which are group of cell that support neuron

-It usually develop between the ages of 20 and 40 years .

-Women are effected more often than men

MS-Etiology

- The cause of MS unknown although research findings suggest that MS is related to infectious (viral),, genetic, environmental factors, Vitamin D deficiency.

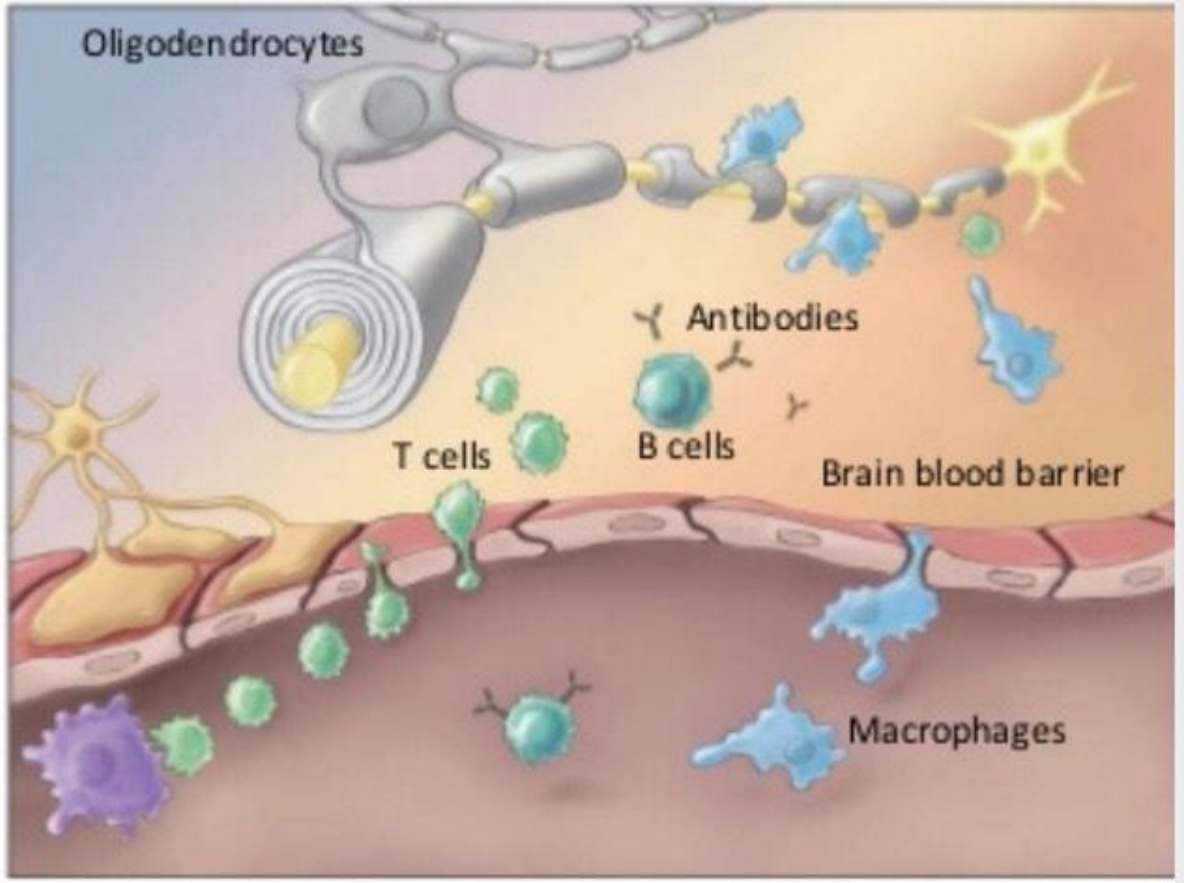
MS-Pathophysiology

* T-cells gain entry into the brain via disruption in the BBB

* T-cells recognize myelin as foreign and attack it

* attack of Myelin start inflammatory processes which release Cytokines and antibodies which interact macrophages

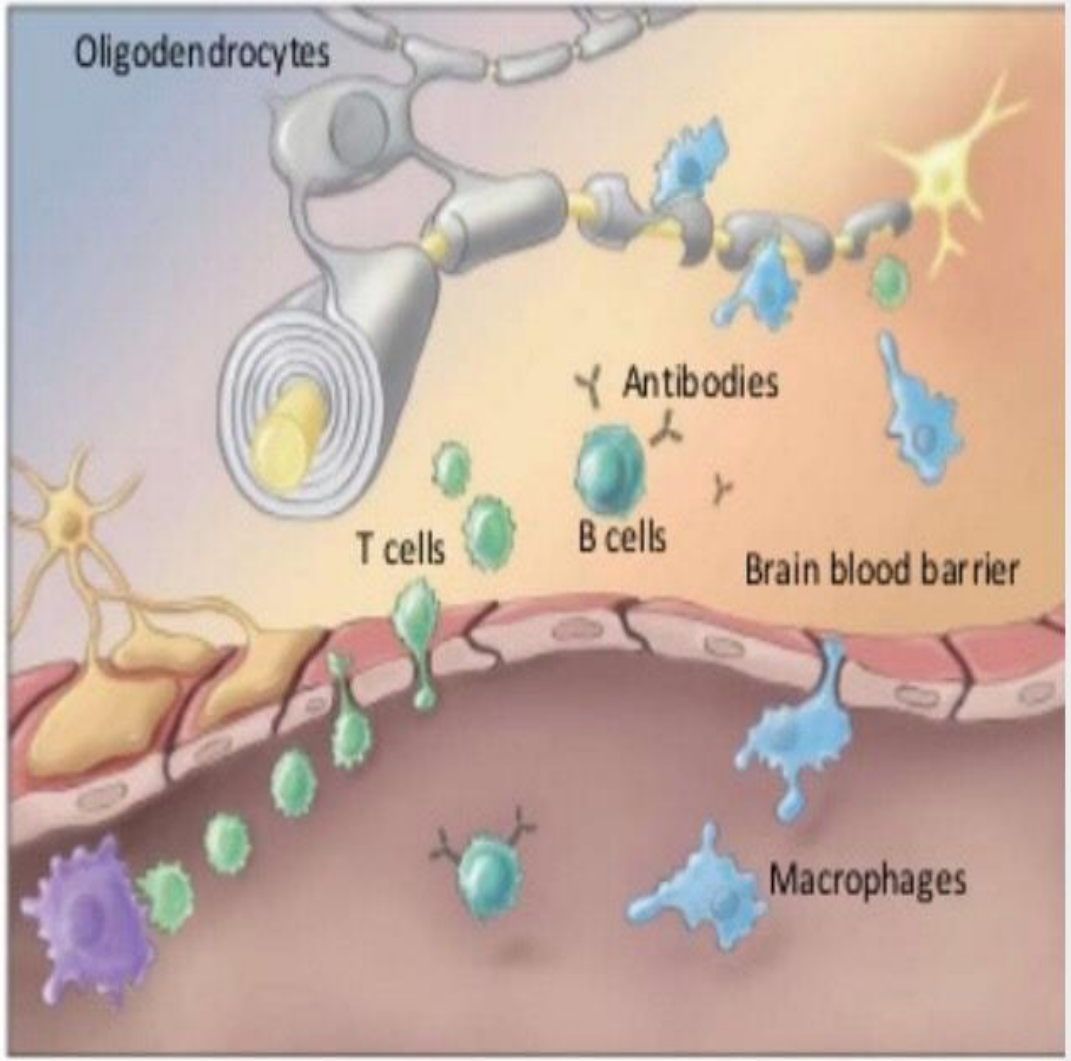
* B cells make antibodies that mark the myelin .& macrophages will use these antibodies to engulf the oligodendrocytes and the myelin.



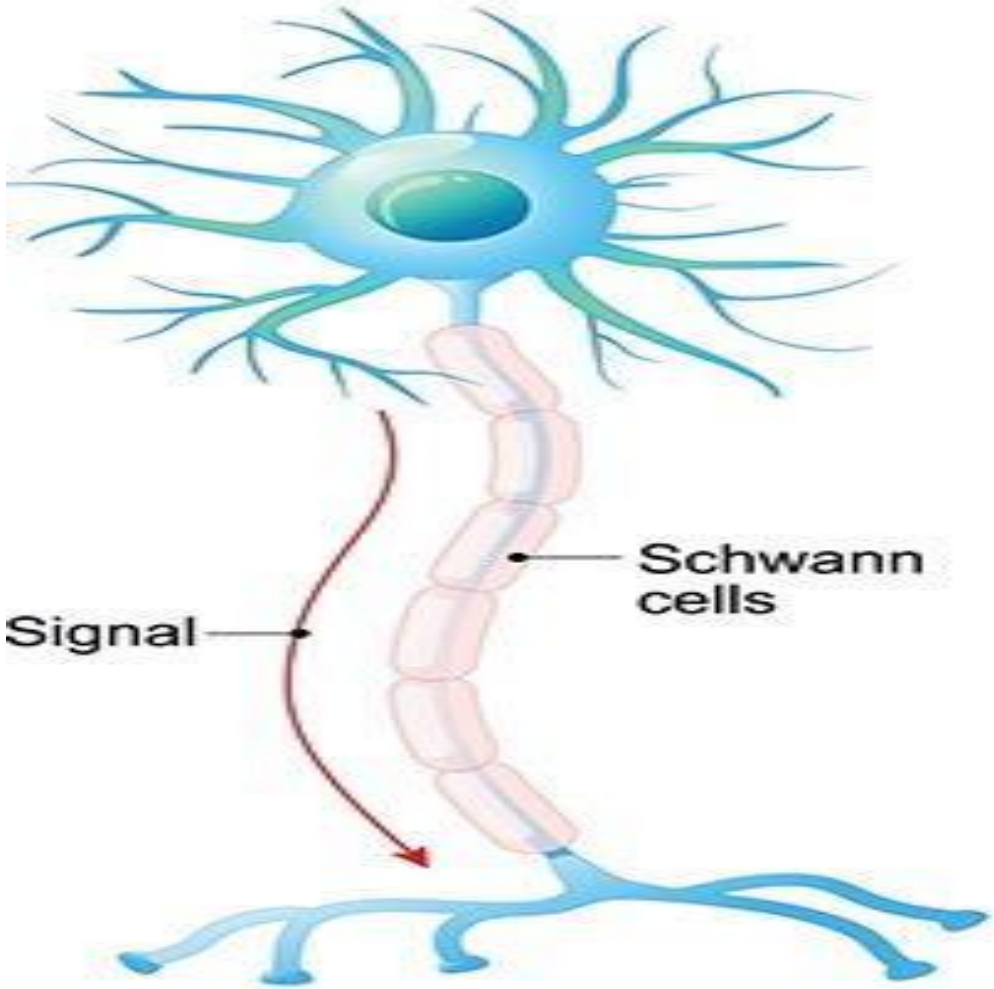
* Without Oligodendrocytes there's no more remyelination to the axon.

* In MS immune attack happen in and out that means after an attack regulatory T cells will inhibit other immune cells.

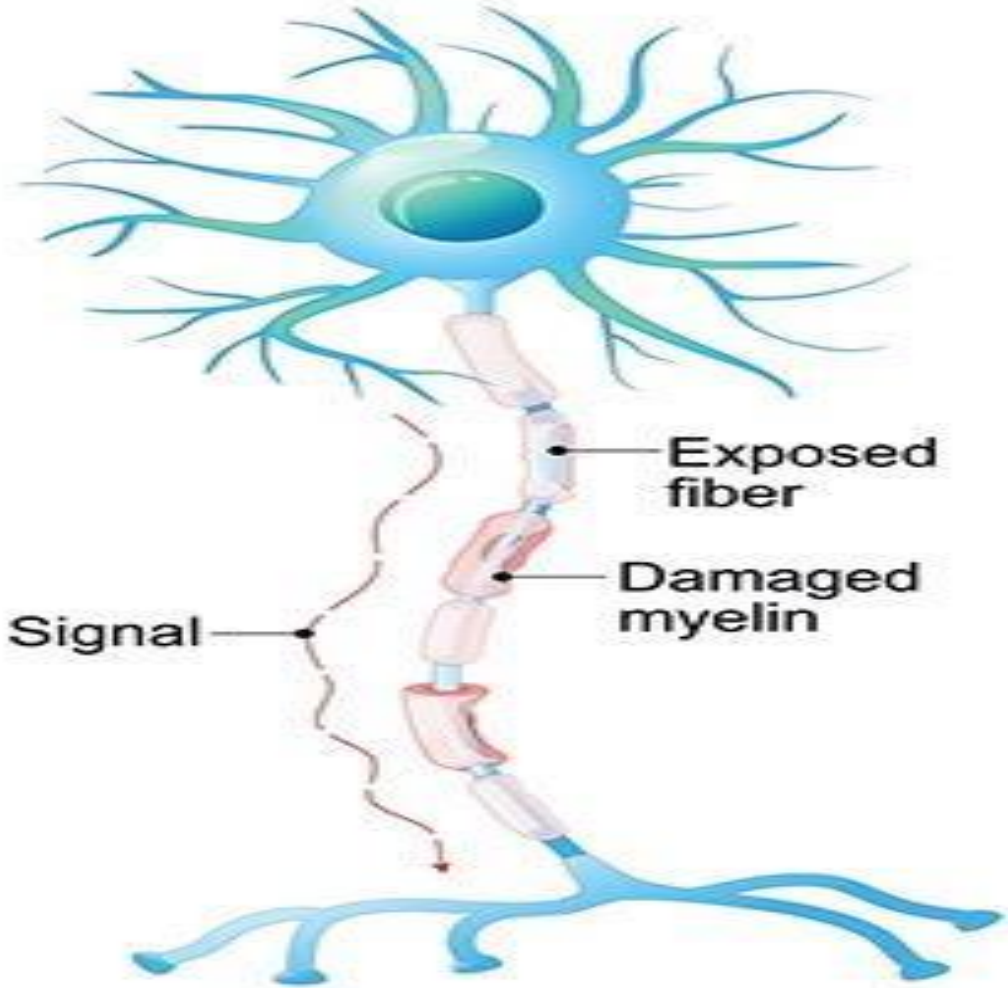
* On early stage of disease oligodendrocytes will heal and remyelinate the axons but over time remyelination will stop and the damage will become irreversible with loss of axons.



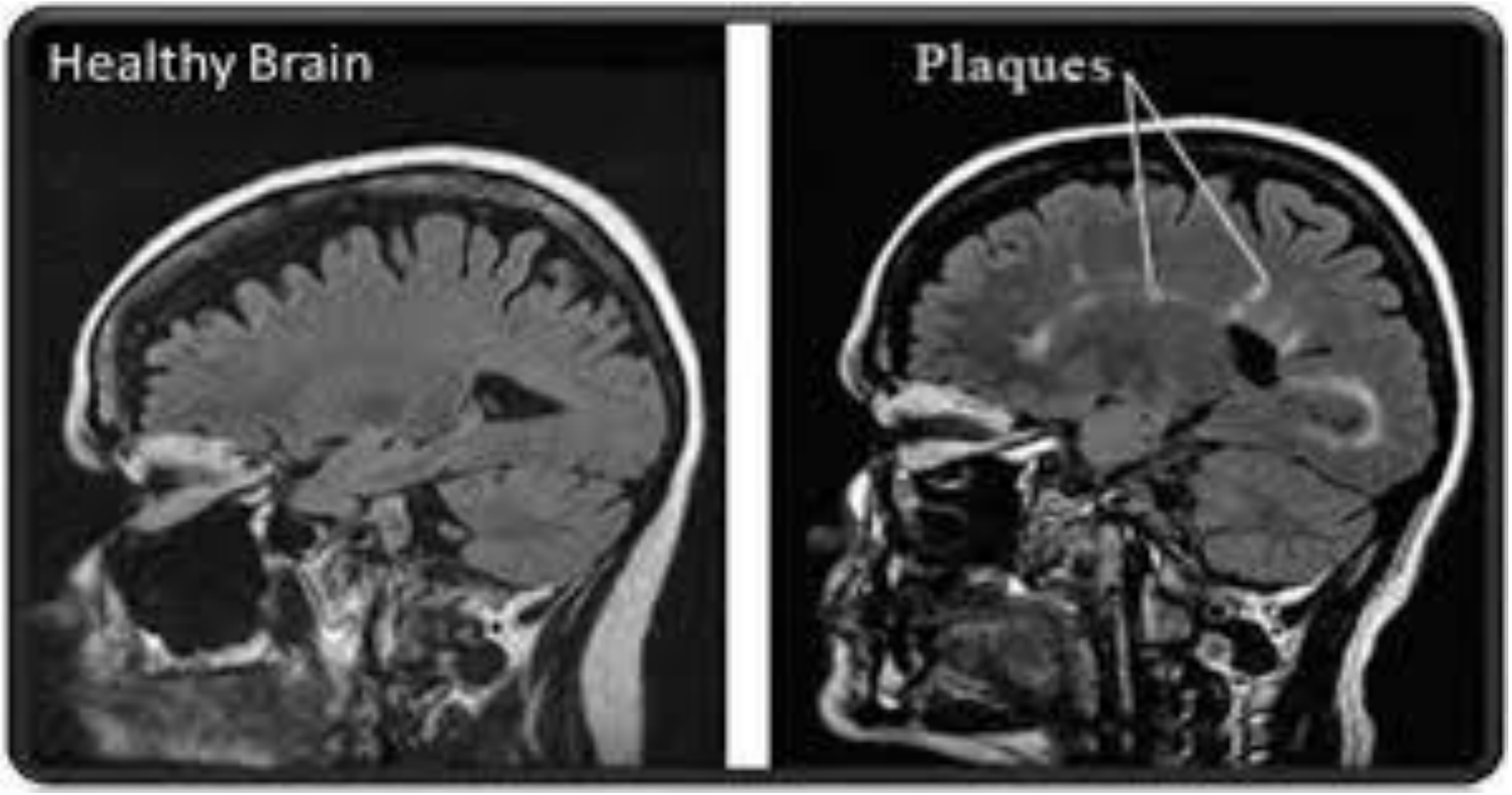
Multiple Sclerosis



Healthy neuron

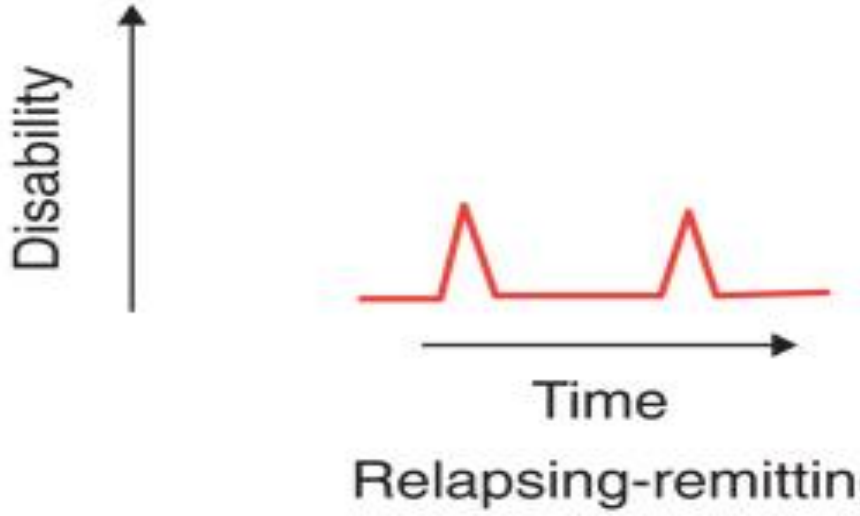


Nerve affected by MS

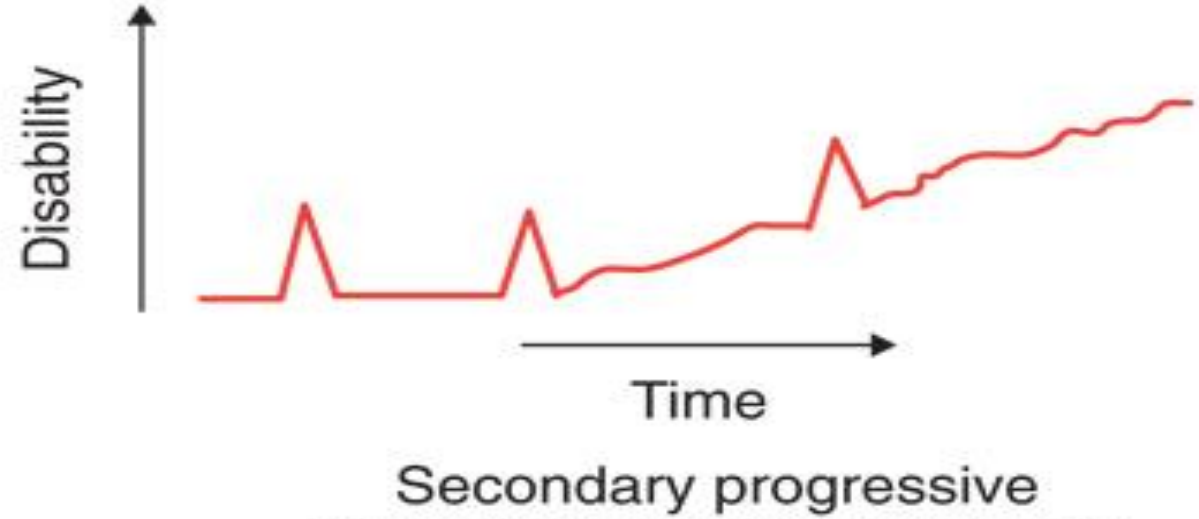

Healthy Brain
Plaques

Classification Of MS

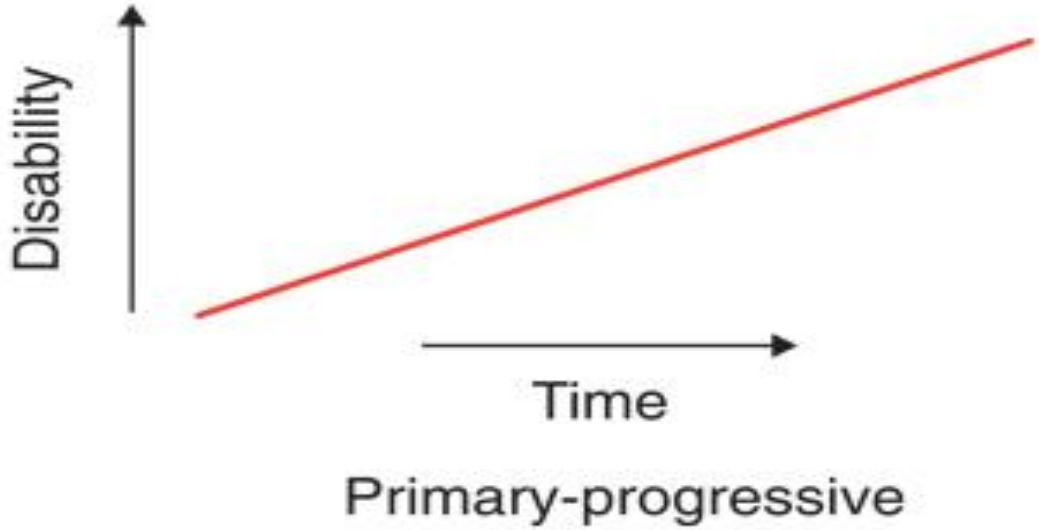
- **Relapsing-Remitting MS (RRMS).** This is the most common form of multiple sclerosis. About 85% of people with MS are initially diagnosed with RRMS. Is characterized by clearly defined relapses with full recovery or with sequelae and residual deficit on recovery.
- **Secondary-Progressive MS (SPMS).** Is characterized by a replacing-remitting initial course, followed by progression with or without full occasional relapses, minor remission , and plateaus
- **Primary-Progressive MS (PPMS).** (10-20%) ,This type of MS is not very common, occurring in about 10% of people with MS. PPMS is characterized by slowly worsening symptoms from the beginning, with no relapses or remissions
- **Progressive-Relapsing MS (PRMS).** A rare form of MS (5%), PRMS is characterized by progressive disease from onset , with clear acute relapses. with or without full recovery ,periods between relapses are characterized by continuing progression



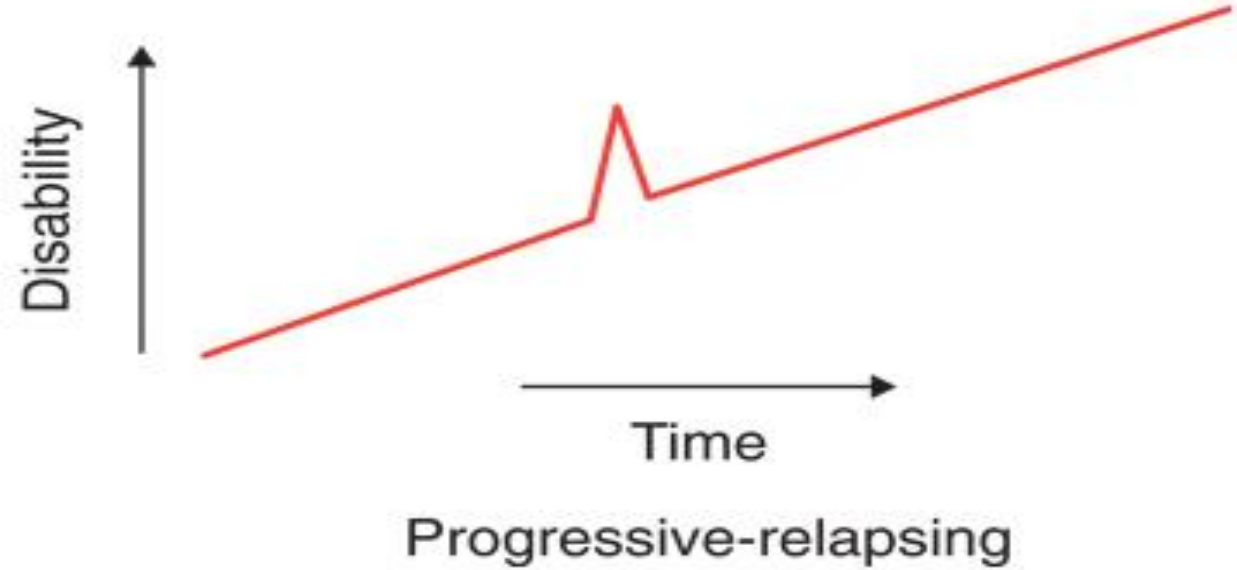
Relapsing-remitting



Secondary progressive
(following relapsing-remitting)



Primary-progressive



Progressive-relapsing

Clinical Manifestations

Multiple sclerosis signs and symptoms may differ greatly from person to person and over the course of the disease depending on the location of affected nerve fibers. Some patients have severe, long-lasting symptoms early in the course of the disease. Others may experience only occasional and mild symptoms for several years after onset.

Cerebellar sign :

-Ataxia

-tremor

Motor :

-Weakness or paralysis of limbs, trunk or head

-Hyperreflexia

- Gait disturbance

-Spasticity of muscle that are chronically affected

Sensory

-Numbness, tingling and other parasthesias

-Radicular (nerve root) pain in lower thoracic abdominal region.

-Lhermitte' s sign: is a transient sensory symptom described as an electric shock radiating down the spine or into limbs with flexion of neck.

- Dysesthesia

Emotional:

- anger

- Fatigue

-Depression

Urinary :

Incontinence, Incomplete emptying , increased frequency of urination, constipation

Visual :

-Blurred vision

-Diplopia

-Unilateral loss of vision

MS-Risk factors

These factors may increase your risk of developing multiple sclerosis:

- **Age. MS can occur at any age, but onset usually occurs around 20 and 40 years of age. However, younger and older people can be affected.**
- **Sex. Women are more than two to three times as likely as men are to have relapsing-remitting MS.**
- **Family history. If one of your parents or siblings has had MS, you are at higher risk of developing the disease.**
- **Certain infections. A variety of viruses have been linked to MS, including Epstein-Barr, the virus that causes infectious mononucleosis.**
- **Race. White people, particularly those of Northern European descent, are at highest risk of developing MS. People of Asian, African or Native American descent have the lowest risk.**
- **Climate. MS is far more common in countries with temperate climates, including Canada, the northern United States, New Zealand, southeastern Australia and Europe.**

- **Vitamin D. Having low levels of vitamin D and low exposure to sunlight is associated with a greater risk of MS**
- **Certain autoimmune diseases. You have a slightly higher risk of developing MS if you have other autoimmune disorders such as thyroid disease, pernicious anemia, psoriasis, type 1 diabetes or inflammatory bowel disease.**
- **Smoking. Smokers who experience an initial event of symptoms that may signal MS are more likely than nonsmokers to develop a second event that confirms relapsing-remitting MS.**

MS-Diagnosis

Because there is no definitive diagnostic test for MS, diagnosis is based primarily on history and clinical manifestations

-history and physical examinations

-CSF : for presence of IgG antibody or oligoclonal bonding

evoked response testing (also called evoked potential testing , e.g. :

SSEP. Somatosensory evoked potential , AEP. Auditory evoked potential

VEP. visual evoked potential) to asses presence of slowed nerve conduction

MRI of brain and spinal cord to determine the presence of MS plaque

CT scan to detect areas of demyelination, but with less detail as by MRI

MS-Complications

- **Epilepsy**
- **Mental changes such as forgetfulness or mood swing**
- **Problem with bladder, bowel or sexual function**
- **Paralysis, typically in the leg**
- **Muscle stiffness**

MS- Management

- **Drug therapy** : **the treatment falls in 3 categories**

1. ***Treatment of acute relapse :***

Corticosteroids therapy (anti-inflammatory& immunosuppressive property.

For example :

Methyl-prednisolone (given I.V OR orally)

Azathioprine & cyclophosphamide (in sever cases)

2. Treat exacerbation:

- **Interferon-Beta 1b**

- Betaseron:, given subcutaneously

- **Interferon Beta 1a** : Avonex

- **Glatiramer acetate** : Copaxane

- **3. Symptomatic treatment :**

For bladder dysfunction: - oxybutynin

For constipation: - suppositories.

For fatigue: - amantadine.

For spasticity: - baclofen

For Tremor : propranolol**.**

- **Surgical therapy :**

Thalamotomy (unmanageable tremor)

Neurectomy , rhizotomy,

Occupational therapy :

Can help people with MS stay active in daily life by imporving skills, teaching alternative ways to complete tasks, or introducing handy equipment

Speech therapy :

is a type of rehabilitation that focuses on improving movement of the mouth area. Speech therapy may be part of a multiple sclerosis treatment plan if weak facial muscle lesions (damaged areas in the brain) have affected your ability to talk or swallow

Physiotherapy :

A physiotherapist works with people with MS to assess physical difficulties and help improve movement and other functions of the body. Exercise is one of the key ways in which they do this.

- Nutritional therapy :

Various nutritional measures that have been advocated in the management of MS include megavitamin therapy (cobalamin [vitamin B12], vitamin C) and diets consisting of low-fat and gluten-free food and raw vegetables.. A nutritious, well-balanced diet is essential. a high-protein diet with supplementary vitamins is often advocated. A diet high in roughage may help relieve the problem of constipation. Vitamins are merely supplemental and not curative.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Nursing management

- Observe motor strength, coordination, and gait
- Perform cranial nerve assessment Evaluate elimination function
- Explore coping, effect on activity function, emotional adjustment
- Assess patient and family coping, support systems, available resources

Patient Teaching

- Review the disease process, emphasizing the need for optimizing the patient's potential and avoiding exacerbations as possible
- Inform the patient about potential adverse effects of drug therapy and the medication regimen
- Emphasize the need to avoid stress, infections, and fatigue and to maintain independence by developing new ways of performing daily activities
- Be sure to tell the patient to avoid exposure to bacterial and viral infections
- Stress the importance of eating a nutritious, well- balanced diet that contains sufficient fiber to prevent constipation
- Encourage adequate fluid intake and regular urination

Nursing Diagnosis

1. Impaired physical mobility related to muscle weakness or paralysis and muscle spasticity as manifested by inability to ambulate, intermittent muscle spasms, pain associated with muscle spasms.

- Goals :

demonstration of use of adaptive device

Maintenance of or increased strength of limbs ‘

Decreased duration of muscle spasm

- Interventions

- Use assistive devices as indicated to decrease fatigue and to enhance independence, comfort, and safety.

- Do active range-of-motion exercises at least twice per day to prevent contractures and minimize muscle atrophy.

- Encourage and assist with ambulation and transfer as indicated to maintain mobility, promote independence, and provide for safety.

- Change position of patient (if bedridden) at least q2hr to prevent pressure ulcers and circulatory problems.

- Administer medication as ordered to reduce spasticity or to treat inflammatory response.

- Perform stretching exercises every 6-8 hr to relieve spasms and contracted muscles.

summary

Reference

Medical-surgical nursing assessment and management of clinical problem :(LWEIS , Dirksen, Heitkemper)

https://mymsaa.org/

Thank You