

MULTIPLE SCLEROSIS

**Presented by : Abhishek Yadav
M Sc Nursing 1st year.**

OUTLINES

- Introduction.
- Definition.
- Incidence.
- Etiology and Risk factors.
- Pathophysiology.
- Clinical Manifestations.
- Diagnostic Evaluation.
- Management.

INTRODUCTION

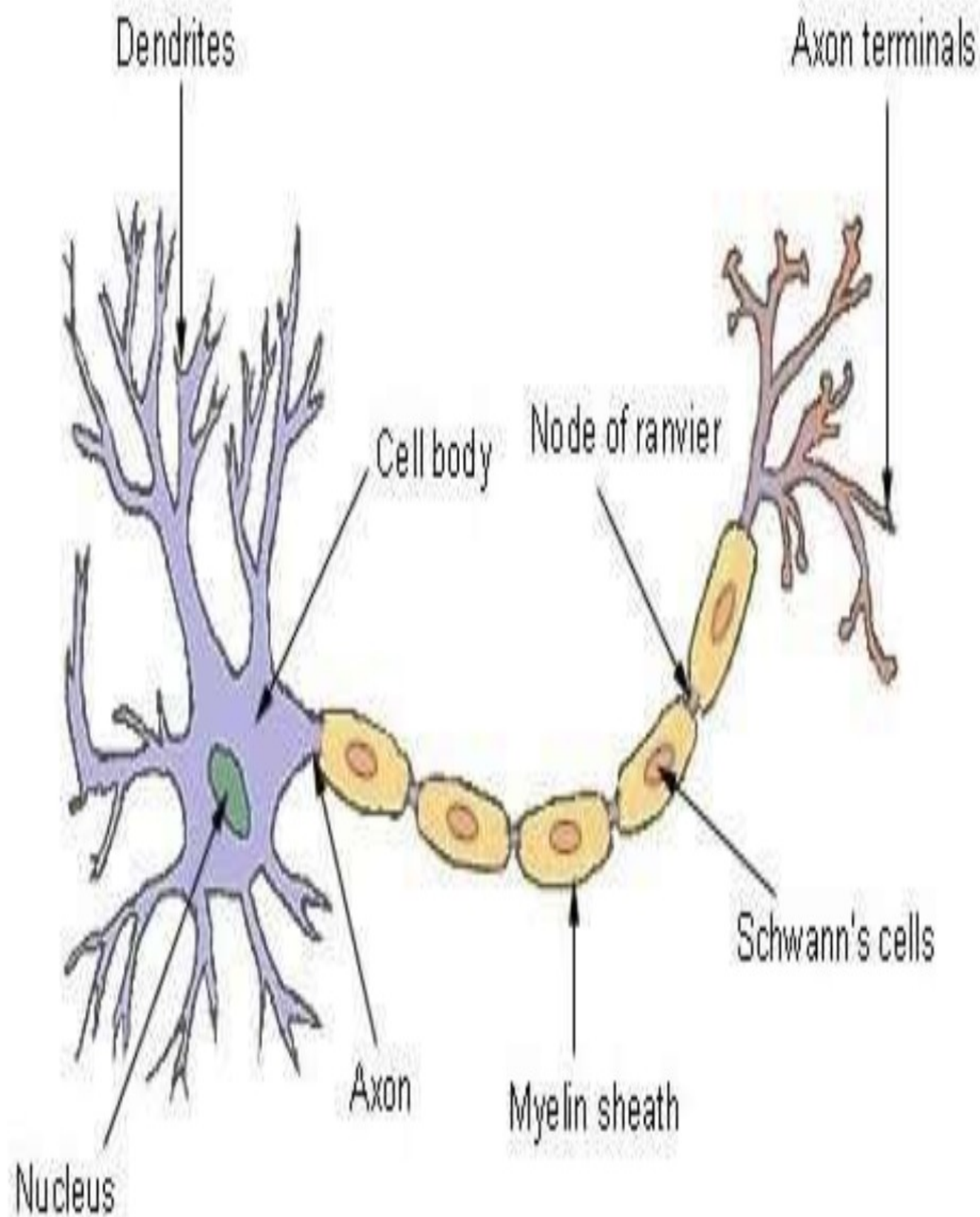
The autoimmune disorders of nervous system can attack the CNS which include brain and spinal cord ,or PNS consisting of nerves that connect the CNS.

Autoimmune nervous system disorders include Multiple sclerosis, Myasthenia gravis, and Guillain- barre syndrome.



DEFINITION

Multiple sclerosis (MS) is a chronic demyelinating disease that affects the myelin sheath of neurons in the CNS.



INCIDENCE

- Onset occurs between 20-40 years of age.
- Women are more affected than men.
(AANN,2011).
- Whites are more affected than Hispanics , blacks ,
or Asians .
- Most prevalent in colder climates of North America
& Europe.
- Migration.

ETIOLOGY & RISK FACTORS

- Exact cause is not known yet.
- Most theories suggest that MS is an immunogenetic viral disease (with Epstein Barr virus).
- Risk factors are:
 - Age (most of the time between 20-40 yrs).
 - Sex (women have more chance).
 - Family history (genetic susceptibility).
 - Certain infections (like Epsteinbarr virus).

Continued risk factors...

- Climate (more in cold climate areas).
- Certain auto-immune diseases (higher risks with thyroid disease, type-1 DM or IBD).
- Smoking.
- Stress, fatigue.
- Physical injury.
- Pregnancy (may relating to stress to labour, or puerperium).

PATHOPHYSIOLOGY

Due to etiological factors



Activated T-cells (which recognise self Ag) expressed in CNS, & Macrophages (B-cells) enters the brain from peripherral circulation



Production of inflammatory cytokines & reactive O₂ species



Inflammation



Then activated T-cells & B-cells cause



demyelination and destruction of oligodendrocytes



Formation of plaque



Causes scarring & destruction of sheath



Compensatory system starts causing subsidation of edema & inflammation



After that some remyelination process occurs which is often incomplete



Multiple sclerosis.

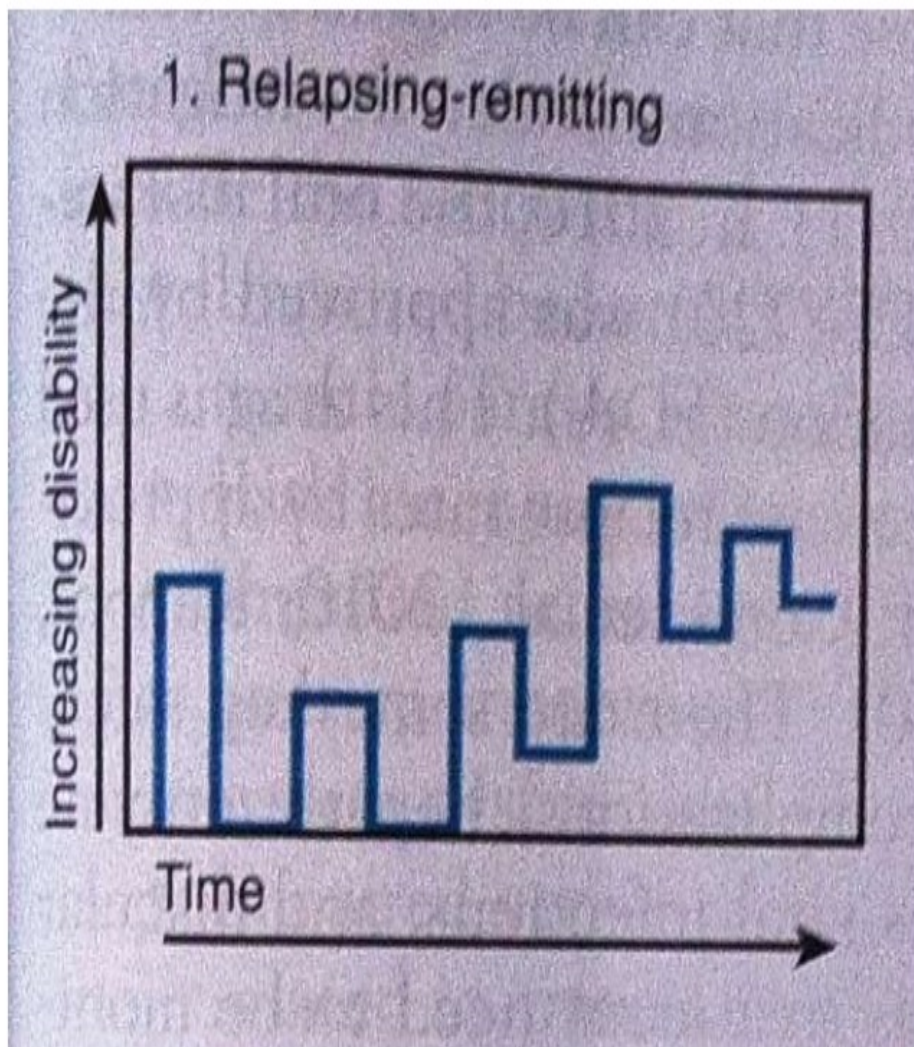
CLINICAL MANIFESTATIONS

- The course of illness varies from person to person.

The 4 clinical patterns (types) have been identified:-

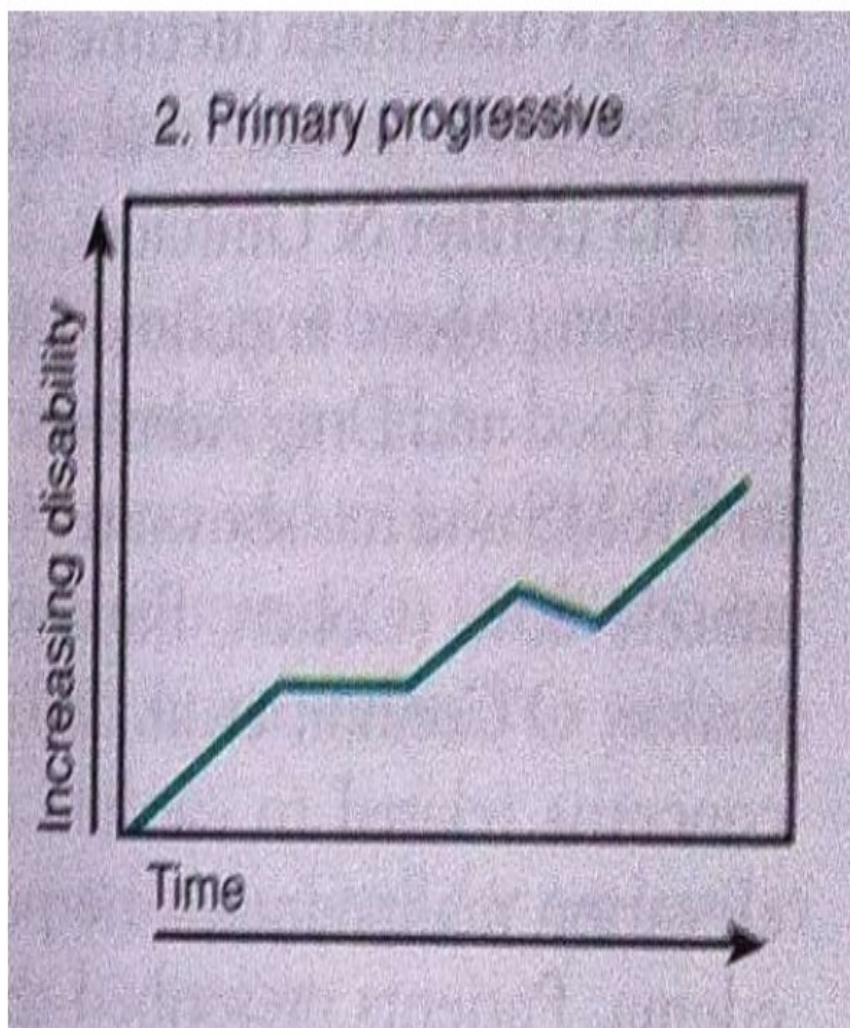
1. Relapsing – remitting MS (most common initial pattern):

Episodes of acute worsening with recovery and a stable course between relapses.



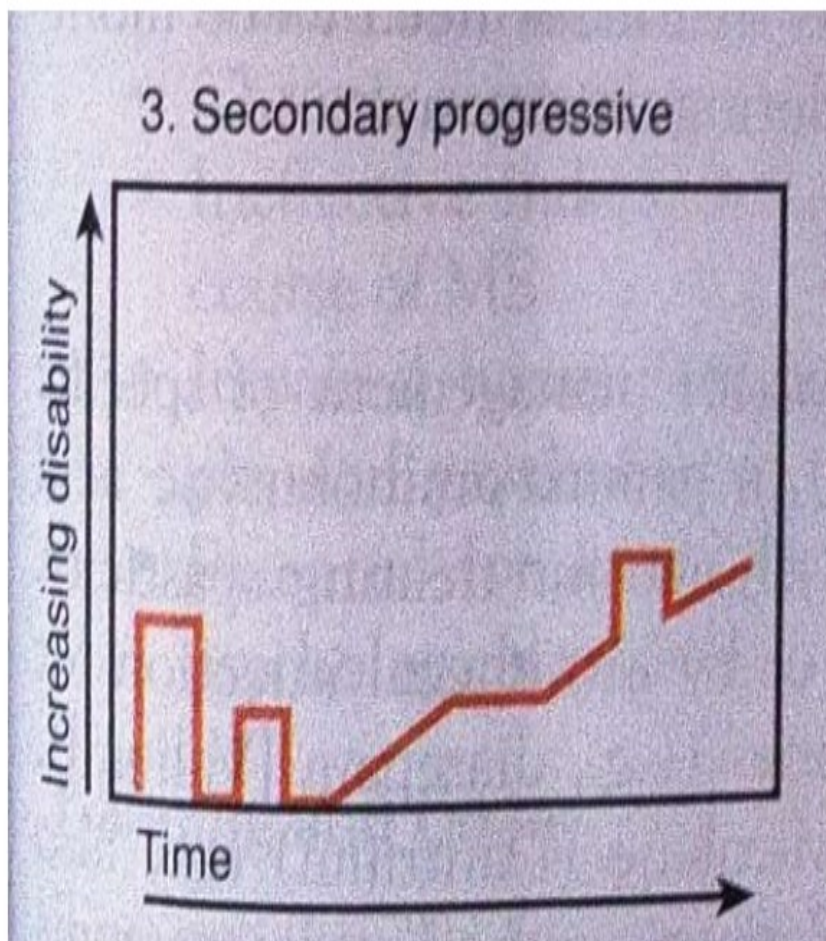
2. Primary progressive MS:

Gradual, nearly continuous neurologic deterioration from onset of manifestations.



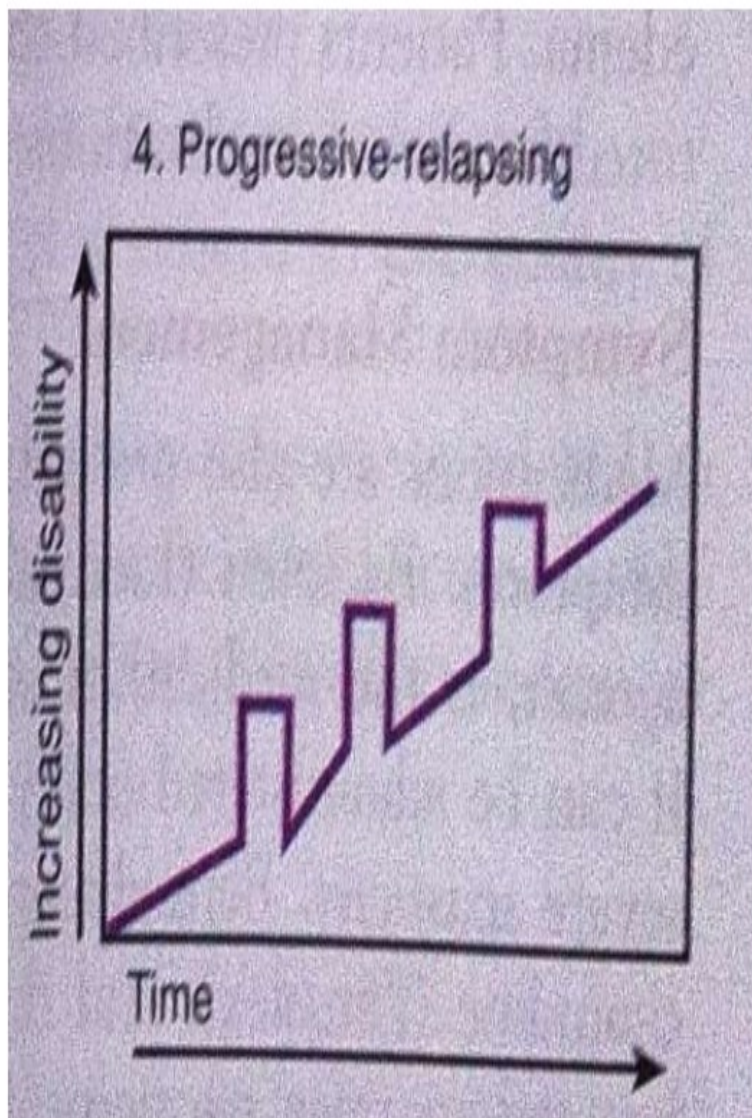
3. Secondary progressive MS:

Gradual neurologic deterioration with or without superimposed acute relapses in a client who previously had relapsing remitting MS.



4. Progressive relapsing MS:

Gradual neurologic deterioration from the onset of manifestations but with sub-sequent superimposed relapses.



The other symptoms are:-

➤ Cerebellar sign:

- Nystagmus
- Ataxia
- Dysarthria
- dysphagia

➤ Motor:

- weakness or paralysis of limbs , trunk or head
- Diplopia
- Scanning speech
- Spasticity of muscles that are chronically affected.

➤ **Sensory:**

- Numbness , tingling and other parasthesias
- Patchy blindness (scotomas)
- Blurred vision
- Vertigo, tinnitus, decreased hearing, chronic neuropathic pain
- 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.

➤ **Emotional problems:**

- Fatigue (associated with energy needs)
- Depression
- Deconditioning
- Medication side effects.

DIAGNOSTIC EVALUATION

- There is no definitive test for MS.
- Detailed history of episodes of neurologic dysfunction
- Physical examination.

Continued...

- Other tests include:-
 - CSF evaluation (for presence of IgG antibody or oligoclonal bonding)
 - Evoked potentials of optic pathways & auditory system to assess presence of slowed nerve conduction.
 - MRI of brain and spinal cord (to determine the presence of MS plaques)
 - CT scan (to detect areas of demyelination , but with less detail as by MRI).

MEDICAL MANAGEMENT

- No exact cure.
- Aim is to prevent or postpone the long term disability (often evolves slowly over many years).
- The treatment falls into 3 categories:-
 1. Treatment of acute relapses.
 2. Treatment aimed at disease management.
 3. Symptomatic treatment.

1. Treatment of acute relapse:-

- **Corticosteroid** therapy (anti-inflammatory & immunosuppressive property)

For example:

- ✓ Methyl-prednisolone , (given I.V. or orally)
- ✓ Azathioprine & cyclophosphamide (in severe cases)

2. Treat exacerbations:-

(treatment aimed at disease management)

➤ ***Interferon-Beta 1b***

- Betaseron, given subcutaneously.

(antiviral & immuno-regulatory)

(for ambulatory clients with relapsing –remitting).

➤ ***Interferon Beta 1a***

- Avonex,

(for treating relapsing form of MS).

➤ ***Glatiramer acetate***

- Copaxane ,

(for relapsing re-emitting MS).

3. Symptomatic treatment:-

- For bladder dysfunction:
 - oxybutynin, propantheline.
- For constipation:
 - psyllium hydrophilic mucilloid, suppositories.
- For fatigue:
 - amantadine, modafinil .
- For spasticity:
 - baclofen, diazepam, dantrolene.

➤ For Tremor :

- propranolol, phenobarbital, clonazepam.

➤ For dysesthesias & trigeminal neuralgia:

- carbamazepine, phenytoin, amitriptyline.

➤ For dysesthesias:

- Transcutaneous electrical nerve stimulation (TENS) is also helpful.

4. Nutritional therapy:-

- megavitamin therapy (cobalamin/vit. B12 and vit. C)
- low fat diet.
- high roughage diet (to relieve constipation)

5. Other therapies:-

(to improve neurological functioning)

- ✓ Physical and speech therapies.
- ✓ Exercise.
- ✓ Water exercise.

SURGICAL MANAGEMENT

- Deep brain stimulation:-
if other options have failed then a device is implanted that stimulates an area of brain. (in case of severe tremor in limbs).
- Implantation of a drug catheter or pump:
a catheter is placed in lower spinal area to deliver a constant flow of drug like baclofen.
(in case of severe pain or spasticity).

NURSING MANAGEMENT

1. Nursing diagnosis:

Impaired urinary elimination pattern related to bladder dysfunction as evidenced by low output and acute pain.

Intervention:

- Assess the skin for incontinence associated dermatitis with each voiding.
- Maintain fluid intake of 2000ml /day.
- Toilet every 2 hour .
- Scan bladder for **post void residual** volume.
- If **PVR** is more than 100ml , then catheterize.

2. Nursing diagnosis:

Impaired elimination pattern related to immobility & demyelination as evidenced by disturbed bowel movement.

Intervention:

- Assess for normal bowel movement .
- Administer suppository as advised by physician.
- Teach client to consume high fibre diet and 2000 ml of fluid.

3. Nursing diagnosis:

Fatigue related to increased energy needs as evidenced by facial expression of client.

Intervention:

- Keep the environment cool.
- Provide mental support.
- Plan for rest periods during the day.
- Facilitate sleep by reducing night time interruption, noise, and light.

4. Nursing diagnosis:

Impaired physical mobility related to weakness, contractures, spasticity and ataxia as evidenced by pain in muscles and verbal experience.

Intervention:

- Assess the degree of muscle spasticity.
- Stretch muscles & perform ROM exercise.
- Administer anti-spasmodics as ordered.
- Position in neutral alignment.
- Consult with doctor for splints.

5. Nursing diagnosis:

Situational self esteem, related to loss of independence and fear of disability as evidenced by irritativeness and facial expressions.

Intervention:

- Assess for depression and any related treatment.
- Assess for client's problem solving strategies.
- Evaluate client's support system.
- Provide experience that increase the client's autonomy.

SUMMARY

- Introduction.
- Definition.
- Incidence.
- Etiology and Risk factors.
- Pathophysiology.
- Clinical Manifestations.
- Diagnostic Evaluation.
- Management (medical, surgical & nursing)

REFERENCES

- JOYCE M BLACK, A Textbook of Medical Surgical Nursing, 2nd volume, 8th Edition, Saunders Elsevier Publication, P.P. 1909-1914.
- BRUNNER & SUDDARTH'S , A Textbook of Medical Surgical nursing, 2nd Volume, 13th Edition, Wolters Kluwer Publication,P.P. 2033-2040.
- <http://www.emedicinehealth.com>
- <http://www.dragysmultiplesclerosis.com>
- <http://www.ncbi.nlm.nih.gov/pmc/>

THANKYOU

