World Journal of Pharmaceutical and Life Sciences
WJPLS
www.wjpls.org SJIF Impact Factor: 4.223

DIAGNOSTIC APPROACH TOWARDS SPINAL DISORDERS

Kadam Krishna Namdeo* **and Jadhav Viraj Vilas[1]**

*Ph.D. Scholar, Asst. Professor, Department of Roganidan and Vikriti Vigyan, Government Ayurved College, Nanded, Maharashtra, India.

Article Received on 22/12/2016 Article Revised on 12/01/2017 Article Accepted on 02/02/2017

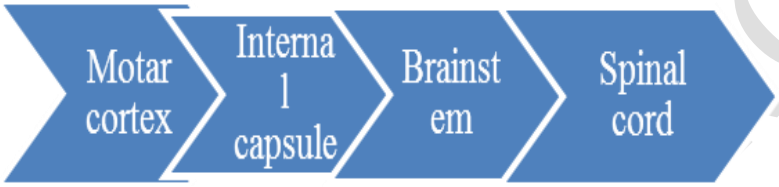
***Corresponding Author**
Dr. Kadam Krishna Namdeo
Ph.D. Scholar, Asst. Professor, Department of Roganidan and Vikriti Vigyan, Government Ayurved College, Nanded, Maharashtra, India.

ABSTRACT

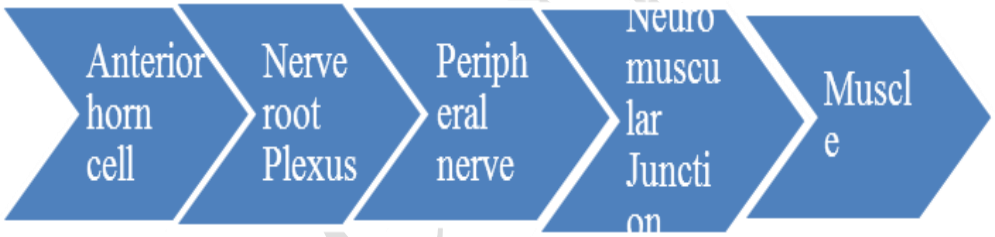
Diseases of CNS can be confined to the spinal cord, producing a number of distinctive syndromes. Disorders of the spinal cord can be caused by hereditary, traumatic, vascular, inflammatory, neoplastic, demyelinating and nutritional factors. The spinal cord and spinal roots may be affected by intrinsic diseases or by disorders of the surrounding meninges or bones. It is important to recognize when emergency surgical intervention is necessary and plan the investigations to identify such patients. Patients with a short history of a progressive spinal cord syndrome should be investigated urgently. **Pirxyakair Naao ih kuSalaa Bavaint È** Acharya Charak stated that prior going for a plan of treatment, the diagnosis, and examination of disease should be carried out. Because proper diagnosis and examination of a disease is the foremost stool or is the first step of successful treatment of disease. **Aim:** To evaluate the diagnostic approach in diseases of spinal cord. **Methodology:** Literature in the form of diagnostic methods regarding different disorders of spinal cord like spondiolithiasis, sciatica, lumbar spondylitis etc. will be collected from variety of modern and Ayurveda Granthas, various text books, journals, articles and internet etc. The diagnostic tools and methods mentioned in literature of modern science will be high lightened. **Result:** It will be drawn in the form of important modern and Ayurvedic diagnostic tools which will be most useful for the physician prior going to treatment.

INTRODUCTION

Upper Motar Neuron Lesion



Lower Motar Neuron Lesion



Basic features of Spinal Cord disease

1. UMN findings below the lesion- Hyperflexia and Babansiki
2. Sensory and Motar involvement that localises spinal cord level
3. Bowel and bladder dysfunction common

History

1. Onset – Acute, Subacute, Chronic.
2. Symptoms- Pain, Weakness, Sensory, Autonomic.
3. Past history.
4. Family history.

METHODOLOGY

Common Investigations

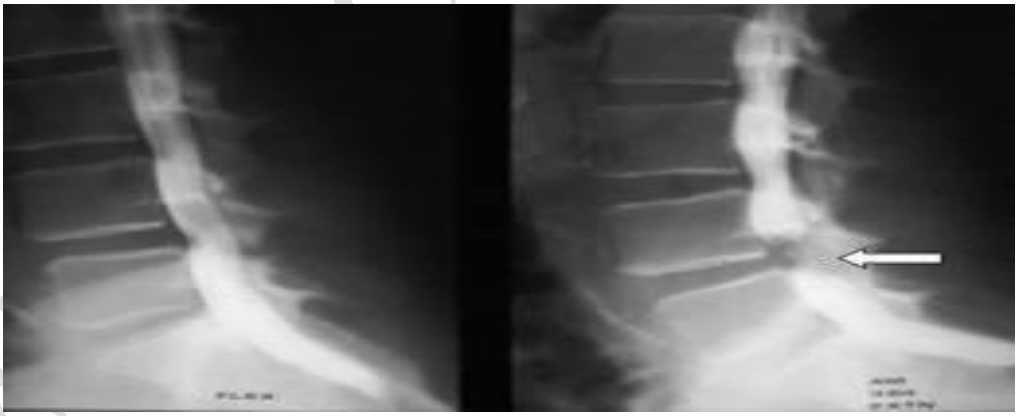
- ❑ Neuroimaging
- ❑ Examination of CSF
- ❑ Electrophysiological Studies

1. Neuroimaging

a. Plain radiograph

Plain Radiographs of appropriate areas has less important advent

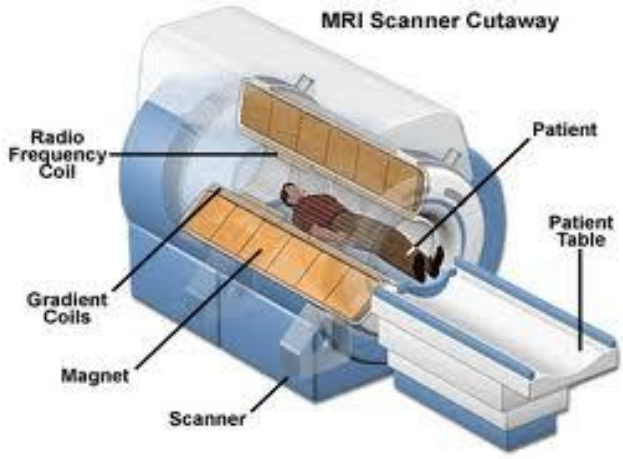
b. Conventional Myelography



Deciding line between Compressive and Non compressive causes of myelopathy

CT Myelography or

c. CT Scan may demonstrate structural lesions responsible for compression of cord.

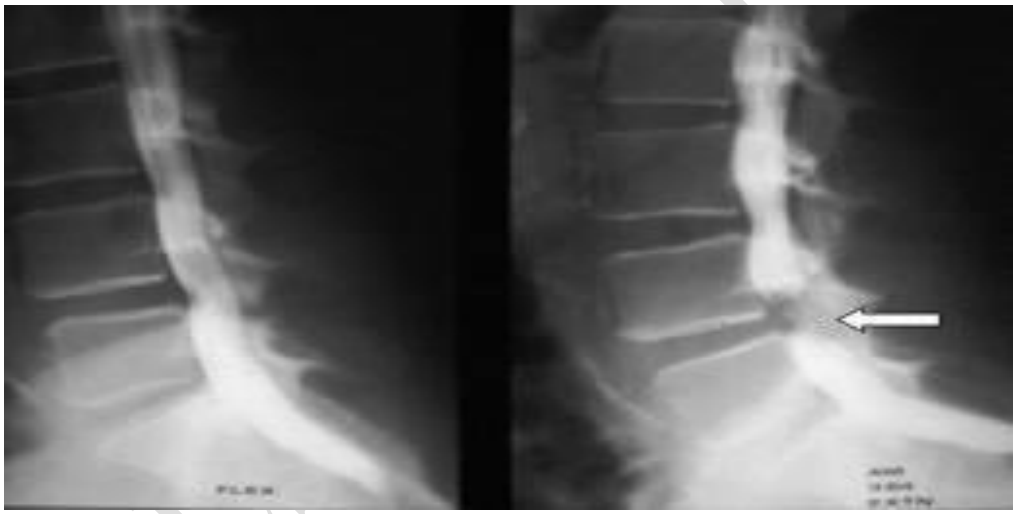


MRI has advantage of being non

- invasive mode of neuroimaging.

MRI- For diagnosis of---

- Structural lesions of spinal cord.
- Sagittal and axial views can use to confirm compression of cord.
- Intramedullary lesions of spinal cord like tumours, arteriovenous malformations and syringomyelia can be visualised.



2. Examination of CSF

Important role in---

a. Inflammatory
b. Infective
c. Demyelinating lesions of Spinal cord

3. Electrophysiological Studies

Like---

SSEP (Somato-Sensory-Evoked-Potentials)

Helps in confirming cord involvement

EMG or Nerve conduction studies

Helps to diagnose Radiculopathy or Neuropathy

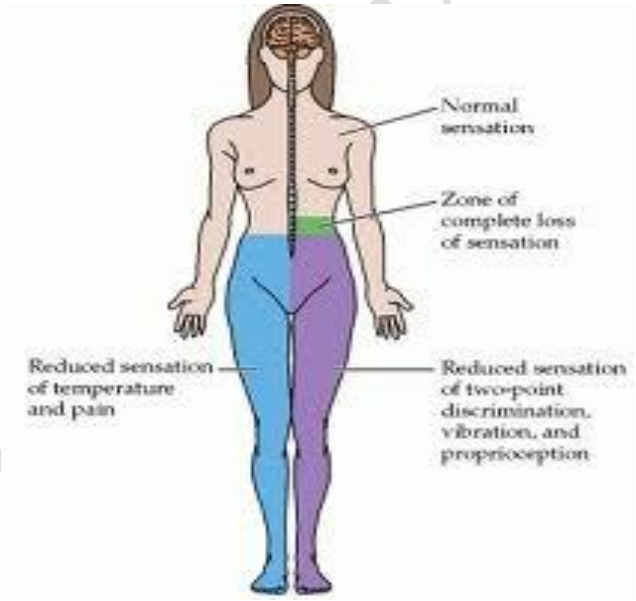
Spinal Cord Trauma

50% of Spinal Cord injuries occur due to road traffic accidents. Force of violence may result in flexion, hyperextension, rotation or vertebral compression. Resultant cord injury may be contusion, stretch, laceration or crush injury. Spinal cord trauma can cause a variety of syndromes depending on extent of cord involvement.

1. **Complete Transection –** Is an acute event most often spinal injury, with accompanying fracture of vertebrae adjoining it.
2. **Brown Sequard Syndrome**

Mainly seen following penetrating injuries to the cord.

Is a hemicord syndrome with ipsilateral paresis, corticospinal signs and impairement of vibration and joint position sense and contralateral impairement of pain and temperature sensation



3. **Central Cervical Cord Syndrome**

An incomplete lesion of the cord, involves mainly the grey matter around central canal.

Symptoms present as motor weakness, more marked in the arms than legs, urinary retention and patchy sensory loss below lesion.

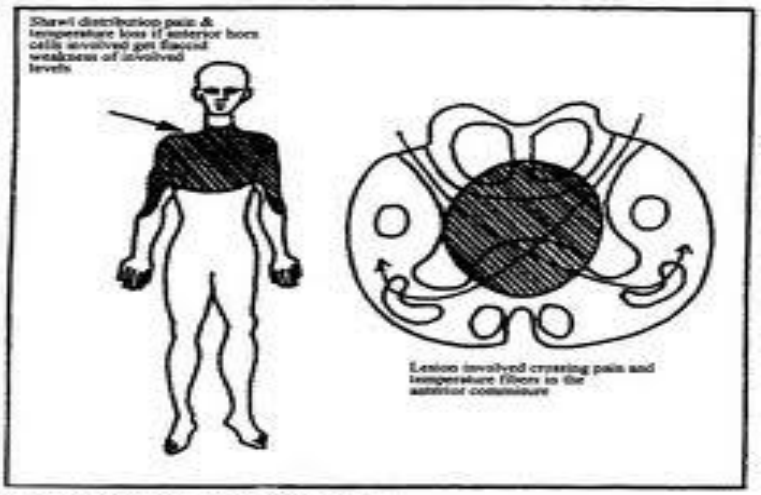
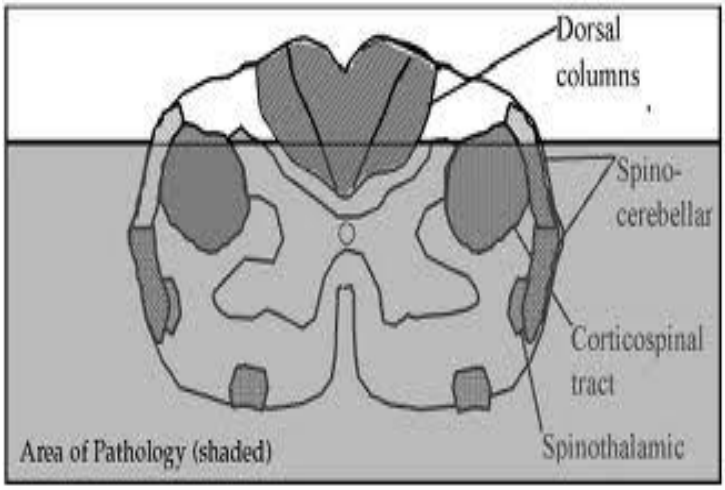


Figure 2-29: Central cord syndrome.

4. Anterior spinal artery syndrome

Involves anterior 2/3rd of the cord with total acute paralysis and impairment of temperature and pain sensations below site of lesion.



5. Posterior spinal artery syndrome

Very rare, as posterior spinal arteries are paired. Characterized by symmetrical paraesthesiae of burning nature.Revrsible.

6. Cord syndromes by level

Symptoms vary at each spinal level. Horner's syndrome points to the level of cervical lesion. Trophic changes may occur below the level of a major cord injury. Beevor's sign points to weakness of the upper abdominal muscles, suggesting a lesion at T9 level. Upper lumbar cord lesions impair ejaculation.

7. Conus Medullaris Syndromes

Lesion at S2-S4 level results in autonomous bladder and loss of erection.

Produce early signs of urinary retention, constipation, back pain, hypoesthesia or anesthesia over sacral region, impotence and lax anal sphincters

8. Cauda equina syndromes

Cauda equina lesion often start with pain over sacroperineal region, to one side at times.

Involves nerve roots and causes radicular pain, flaccid paralysis with reflexia (loss of ankle jerk), wasting of feet and leg muscles, saddle anaesthesia and sexual and sphincteric disturbances.

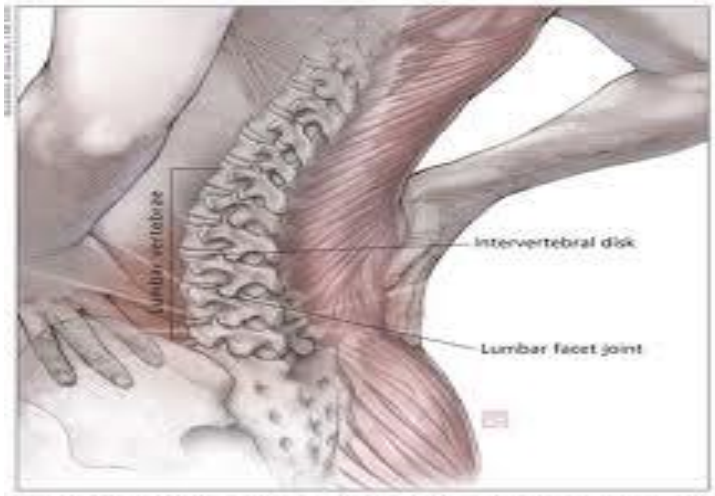


Figure – *Low back pain may originate from several sources, including lumbar facet joints and the anulus of the intervertebral disk. The various pain generators have overlapping referral patterns.*

Cervical Spondylosis

Is a disorder in which there is abnormal wear on the cartilage and bones of the neck (cervical vertebrae). Is common cause of chronic neck pain.

Clinical Examination- 1. Trouble moving head toward shoulder and rotating head.

2. Bend head forward and to the sides while putting slight downward pressure on the top of head. Increased pain or numbness during test is usually a sign there is pressure on a nerve in spine.

Weakness or loss of feeling can be signs of damage to certain nerve roots or to the spinal cord. Reflexes are often reduced.

Diagnostic Tests

1. A spine or neck X-ray may be done to look for arthritis or other changes in spine (characteristic feature of spondylosis)

2. MRI indication- Severe neck or arm pain that does not get better with treatment(cervical myopathy is suspeted)

EMG and nerve conduction velocity test may be done to examine nerve root function.

Spinal stenosis

Is an abnormal narrowing (stenosis)n of spinal cord that may occur in any of regions of spine. This narrowing causes a restriction to the spinal canal, resulting in a neurological deficit.

Physical examination of a patient with spinal stenosis will give information about exactly where nerve compression is occuring.

MRI – Helpful at showing exactly what is causing spinal nerve compression.

CT Myelogram – To see narrowing of Spinal canal

Ankylosing Spondilitis

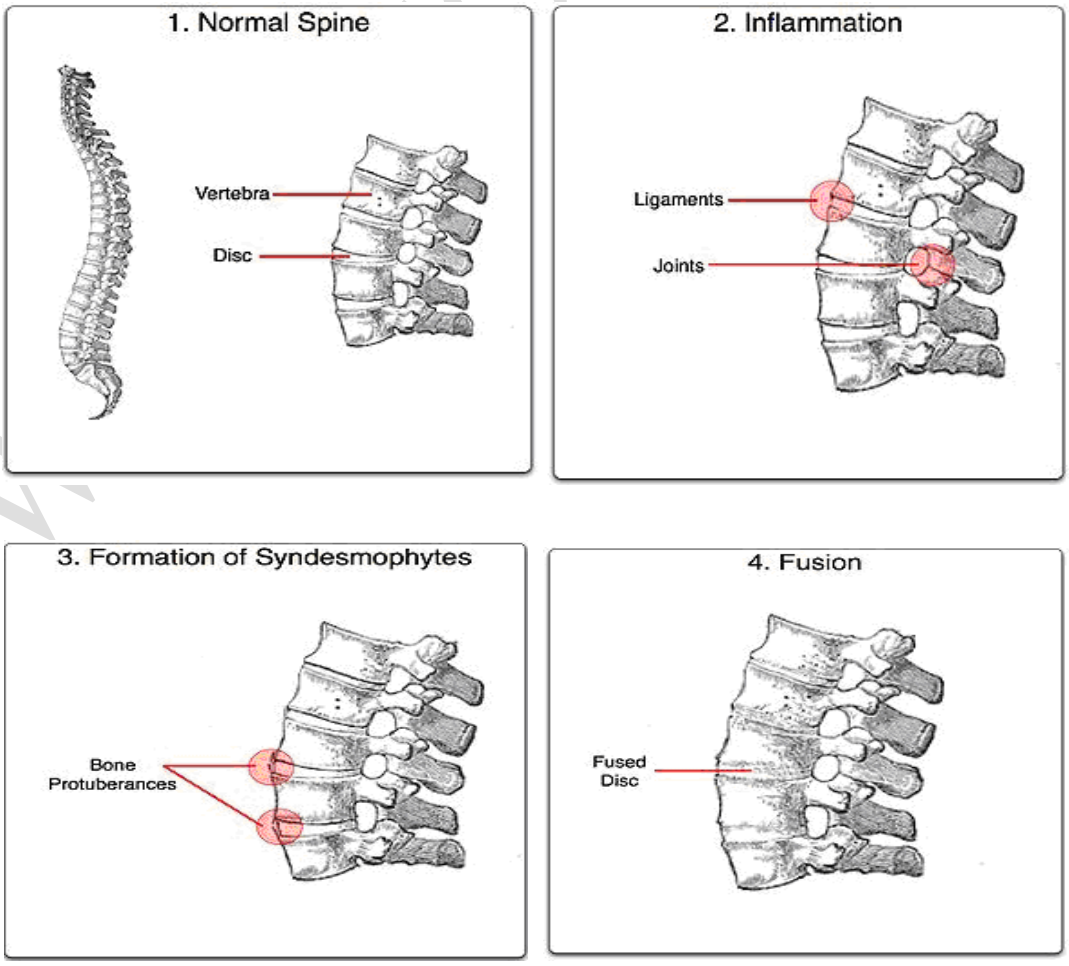
Ankylosing Spondylitis is derived

Ø Ankylos *means stiffening of a jt.*

Ø ***Spondylos*** *meaning vertebra*

Spondylitis refers inflamation of 1/more vertebrae,often results in spinalfusion between the vertebrae.

A fused spine is often called a **"bamboo spine"** because of it's appearance on radiologic exam.



Diagnosis

Blood test

for the HLA-B27 gene

X-ray

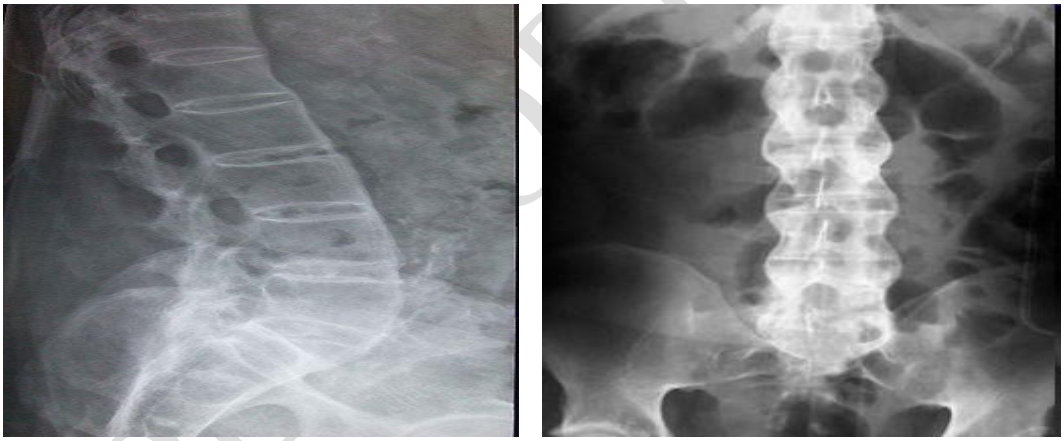
which show characteristic spinal changes and sacroiliitis.

Tomography and **magnetic resonance imaging** of the sacroiliac joints

Schober's test

a useful clinical measure of flexion of the lumbar spine performed during examination.

X-ray in ankylosing spondylitis



Spondiolithiasis

It is forward displacement of a vertebra, especially the 5th Lumbar vertebra. Most commonly occur after break or fracture. Patient with spondiolithiasis may have difficulty during simple exercises. X-ray of lower spine are crucial for determining whether a vertebra is out of place, look for possible bone fractures on X-ray images

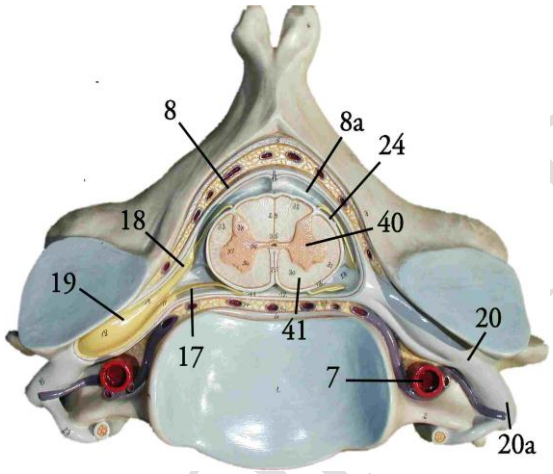
Degenerative spondilolithiasis

Particularly at the level of L4-L5 level in females. Frequently associated with Spinal stenosis. More likely to produce constriction of entire cauda equina.

Isthemic spondilolithiasis

Most common at the L5- S level and will produce nerve root impingement at the level of defect.

Spinal Cord Compression



Trauma - vertebral fracture

Inter-vertebral disc / spinal stenosis

Tumor: Lung, breast, prostate, RCC, thyroid, lymphoma, MM

Epidural abscess

Diagnosis

Laboratory tests include a complete blood cell count with differential, an erythrocyte sedimentation rate determination, urinalysis, and a chemistry profile including calcium and liver function studies.

Imaging studies include plain radiography and magnetic resonance imaging (MRI) with contrast of the spine.

Plain films of the spine frequently demonstrate associated vertebral blastic or lytic lesions.
Magnetic resonance imaging not only shows cord compression caused by extra dural masses but also shows paravertebral masses, intramedullary disease, and bone metastasis.
Magnetic resonance imaging of the entire spine ordered, because approximately 10% to 30% of patients with clinical symptoms of SCC have multiple lesions

Syringomyelia

Chronic spinal cord disorder that forms before birth or as a result of an accident, tumor or disease. Fluid flows into the spinal cord and causes a cyst that grows and damages nerve fibers.Fluid filled cavitation in the center of the cord.Most common site- cervical cord. Loss of pain and temperature related to the crossing fibers early.Weakness of muscles in arms with

atrophy and hyporeflexia. Later CST involvement with brisk reflexes in the legs, spasticity and weakness. May occur as a late sequlae to trauma.

Multiple Sclerosis

Multiple sclerosis (**MS**), also known as **disseminated sclerosis** or **encephalomyelitis disseminata**, is an inflammatory disease in which the insulating covers of nerve cells in the brain and spinal cord are damaged.

This damage disrupts the ability of parts of the nervous system to communicate, resulting in a wide range of signs and symptoms including physical, mental and sometimes psychiatric problemsDifficulties thinking and emotional problems such as depression or unstable mood are also common. Multiple sclerosis is typically diagnosed based on the presenting signs and symptoms, in combination with supporting medical imaging and laboratory testing.

Spina bifida

Occurs in babies during pregnancy when the spinal column does not close completely as it should, which can lead to fluid on the brain, motor and sensory impairments, incontinence, learning disabilities and depression.

Transverse myelitis

A group of disorders associated with spinal cord swelling, usually occurs along with a neural injury and can cause infection in less than a day. Symptoms include muscle and back pain and leg weakness

CONCLUSION

1. Evaluation of the diagnostic approach in diseases of spinal cord is important and urgency of the condition.
2. Diagnostic approach towards these disease helps in handling emergency surgical intervention wherever necessary.
3. It is an important investigation tool required for short history of progressive spinal cord syndrome.
4. It provides the specific and right path towards the treatment of these emergency conditions.

REFERANCES

1. Text book of medicine, 7th 2003 edition, published by the association of physician of India.
2. API Text book of medicine, 7th 2003 edition, published by the association of physician of India.
3. www. med.utq.edu.in
4. umm.edu.spine
5. www.ncbi.nlm.nih.gov