

# **Children with Neurological Dysfunction**

**Dr . Reda Elfeshawy**

**Assistant professor  
of pediatric nursing**

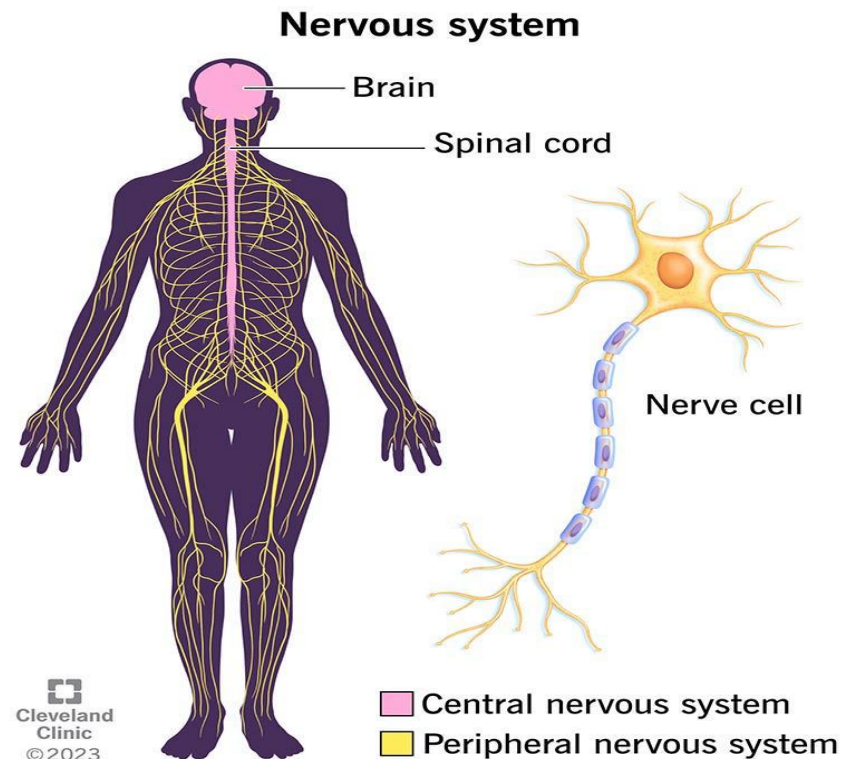
# Introduction

The nervous system plays a role in everything you do. The three main parts of your nervous system are brain, spinal cord and nerves.

It helps you move, think and feel.

It even regulates the things you do but don't think about like digestion.

It contains the central nervous system and the peripheral nervous system.



# Meningitis

# Definition

**Meningitis—a disease characterized by inflammation of the meninges.**

**The meninges are three layers of connective tissue that surround and protect the soft brain and spinal cord.**

**Cerebrospinal fluid (CSF) passes between two of the layers of the meninges and, thus, slowly circulates over the entire perimeter of the central nervous system (CNS).**

# Etiology

Meningitis can be caused by a variety of organisms, but the three main types are -:

(1) bacterial

(2) viral

(3) tuberculous, caused by the tuberculin bacillus.

# **BACTERIAL MENINGITIS**

Bacterial meningitis is an acute inflammation of the meninges and CSF.

# Clinical Manifestations

## Children and Adolescents

Fever

Chills

Headache

Vomiting

Seizures (often the initial sign)

Irritability

Agitation

May develop the following:

- Photophobia , Hallucinations

Aggressive behavior

- Drowsiness

- Coma

Positive Kernig and Brudzinski signs

- **Kernig's sign:** Position the patients supine with their hips flexed to 90°. This test is positive if there is pain on passive extension of the knee.

- **Brudzinski's sign:** Position the patients supine and passively flex their neck. This test is positive if this manoeuvre causes reflex flexion of the hip and knee.



A



Kernig's Sign

B



Brudzinski's Sign

## Infants and Young Children

Fever

Poor feeding

Vomiting

Marked irritability

Frequent seizures (often accompanied by a high-pitched cry)

Bulging fontanel

Brudzinski and Kernig signs not helpful in diagnosis

# Complication

Extension of the inflammation to cranial nerves or compression and destruction of the nerves from ICP can produce *permanent impairment of vision or hearing*

Other long-term complications include *cerebral palsy, cognitive impairments, learning disorders, and seizures.*

Meningitis in the neonatal period is more likely to cause lifelong impairments, including *moderate to severe developmental delay, blindness, deafness, and epilepsy*

# Diagnostic Evaluation

*A lumbar puncture is the definitive diagnostic test.*

Sedation can alleviate the child's pain and fear associated with this procedure.

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# Therapeutic Management

Acute bacterial meningitis is a medical emergency that requires early recognition and immediate therapy to prevent death and avoid disabilities. The initial therapeutic management includes the following:

- Isolation precautions
- Initiation of antimicrobial therapy
- Maintenance of hydration
- Maintenance of ventilation
- Reduction of increased ICP
- Management of systemic shock
- Control of seizures (antiepileptic drugs)
- Control of temperature
- Treatment of complications

# Nursing Care Management

- ❑ Nurses should take the necessary precautions to protect themselves and others from possible infection. Teach parents proper hand washing technique and remind them as needed.
- ❑ Keep the room as quiet as possible and environmental stimuli at a minimum as most children with meningitis are sensitive to noise, bright lights, and other external stimuli.

- ❑ Help the family limit the number and frequency of visitors until the child is and feels better.
- ❑ Avoid actions that cause pain or increase discomfort
- ❑ Measures are used to ensure safety because the child is often restless, disoriented, and subject to seizures.
- ❑ Prevention of falls is essential.

# **NONBACTERIAL (ASEPTIC) MENINGITIS**

Aseptic meningitis is caused by many different viruses, including arbovirus, enterovirus, herpes simplex virus, cytomegalovirus, and human immunodeficiency virus.

Enterovirus is the most common cause of aseptic meningitis .

The onset may be abrupt or gradual, and many of the presenting signs and symptoms are the same as bacterial meningitis, including headache, fever, photophobia, and nuchal rigidity.



# Treatment

- ❑ Treatment is primarily symptomatic, such as acetaminophen for headache and muscle pain, maintenance of hydration, and positioning for comfort. Until a definitive diagnosis is made, antimicrobial agents may be administered and isolation enforced as a precaution against the possibility that the disease might be of bacterial origin.

# Nursing care

- ❑ Nursing care is similar to the care of the child with bacterial meningitis. The course of aseptic meningitis is usually much shorter and typically without significant complications.

Thank you