

# **Nursing Management of CNS Disorders**

# *Objectives*

To know the seizure disorders. •

To know the **Meningitis** •

**To know the** Encephalitis •

**To know Cerebral Palsy (CP)** •

# Seizure Disorders

Convulsive phenomena are among the most • frequently observed neurological dysfunctions in children and can occur with a wide variety of conditions involving the C.N.S. Generally seizure is a paroxysmal events thought to represent abnormal electrical activity in cerebral neurons.

# Etiology of Seizures in Children

- 1- Most seizures are idiopathic due to •  
unknown cause
- 2- Hereditary . •
- 3- Acquired as a result of brain injury during •  
prenatal, perinatal, or postnatal periods.

# General Assessment Criteria of Seizures

There are several features that is observed during seizures. •

**Aura:** It is the peculiar sensation experienced by some persons just before the onset of a seizure. It takes different forms such as sensation of dizziness, abdominal discomfort, visual hallucinations, verbal phenomena, unusual taste, odors or dreaming feelings.

**Eyes Movement:** Discharges in the cortex of one hemisphere tend to cause the eyes to deviate to the opposite side.

**Muscle Contractions:** Muscle contraction during the seizure can be one of the three types: clonic, tonic, or Jacksonian . •

# Muscle Contractions during Seizures

## **A. Clonic Contractions:**

opposing muscles contract and relax alternately producing rhythmic movements.

## **B. Tonic Contractions:**

all the muscles are maintained in a contraction for a time causing the person to become rigid.

## **C. Jacksonian Contractions:**

muscular twitching begin in one area and spread to another.

# Types of Seizures

## **I. Partial Seizures: (Focal Seizures)**

They arise from any area of the cerebral cortex, but the frontal, temporal, and parietal lobes are most often affected and characterized by localized motor symptoms, sensory psychic, or autonomic symptoms.

## **II. Generalized Seizures •**

## **III. Unclassified seizures:(Infantile spasms)**

It's onset within the first 6 to 8 months of life. The attack consists of a series of sudden, brief, symmetric muscular contractions.

# Symptoms of seizures

Symptoms of seizures come on suddenly, over just seconds to a minute, and may include :

- Change in consciousness, so that you can't remember some period of time

- Change in emotion, like unexplainable fear, panic, joy, or laughter ,
- Change in sensation of the skin, usually spreading over the arm, leg, or trunk ,
- Changes in vision .



- Loss of muscle control and falling, often suddenly
- Muscle movement such as twitching that might spread up or down an arm or leg
- Muscle tension/tightening that causes twisting of the body, head, arms, or legs
- Tasting a bitter or metallic flavor
- Symptoms may stop after a few minutes, or continue for 15 minutes .
- Shaking of the entire body when it occurs should last a few minutes and stop within 5 minutes

# Nursing Diagnosis

## Nursing Goal:

1-Support parents.

## Nursing Intervention:

Allow expression of feelings regarding the child's disorder and its implications.

Refer to medical center to seek advice.

Be available to families for help.

## Expected outcome:

Family expresses feelings and concerns.

Family contacts agencies for help.

2- understand the disease:

**Nursing Intervention:**

Assist family in understanding the disorder, its therapies, and possible complications.

Help family to achieve realistic view the child and his capabilities.

**Expected outcome:**

Family demonstrates an understanding the disorder, its therapy and implications.

**3- Prevent complications from medication:**

**Nursing Intervention:**

Be aware of and teach family recognizes unfavorable reactions to medications.

Encourage periodic physical and laboratory assessment to determine deviations from normal findings.

**Expected outcome:**

Child and family demonstrate an understanding of possible unfavorable responses to medication and the appropriate intervention.

4- Prepare family for home care.

**Nursing Intervention:**

Teach administration of medications.

Teach seizure prevention and management.

Educate parents and child about appropriate activities for the child:

Avoid contact sports.

Avoid situations that pose a danger during a seizure  
climbing trees.

Provide companionship during permissible activities such as swimming, bicycling.

## **Expected outcome:**

Family complies with instructions.

Family demonstrates proper management of the child during a seizure.

Child exhibits no evidence of physical injury

Type	first-line	second-line
Primary	phenobarbitone	Depakene
Partial & second	Carbamazepin	phenytoin
Absence	ethosuximide	sod. Valp.
Myoclonic	sod. Valp.	clonazepam

# Meningitis

- It is an inflammation of the meninges, it is an acute illness, caused by a variety of bacterial agents or aseptic, usually caused by a virus, as it is frequently associated with measles or mumps.
- **Incidence and Etiology:**
- In a child younger than 2 months, group B streptococci account for about 70% of all cases of meningitis. After 2 months, Haemophilus Influenza type B, meningococci, pneumococci account for most cases. It is one of the communicable diseases, more common in preschool and school age periods.



- **Assessment:**
- The typical symptoms of meningitis are rarely seen in the child under 2 years of age. So, the nurse must be alert to report by parents. Children over 3 years are more likely to have the typical meningeal signs.
- **Clinical Picture:**
- **Manifestation of Infection:** as high fever, anorexia, nausea, convulsions if fever is high (more common in infants).
- **Manifestation of Meningeal Irritation:**
- **Neck Stiffness:** grading from simple neck rigidity to opisthotonos (head drawn into severe over extension with the back arching).

- **Stiffness of the back:** Inability to setup normally.
- **Positive Kerning's sign:** Inability to extend the knee when the leg is flexed anteriorly at the hip.
- **Positive Brudzinski sign:** -
- Neck to leg: when the head is bent forward, flexion movement of the lower extremities are produced.
- Leg to leg: when one lower limb is flexed, the other one will also be flexed.

- **Manifestation of increased intracranial pressure:**
- Bulging of anterior fontanel in small child if still opened.
- Headache, projectile vomiting, papilledema, blurring of vision, slow pulse and irregular respiration, irritability and increased blood pressure.

- **Diagnostic Evaluation:**
- Clinical picture.
- CSF examination, in meningitis the CSF is cloudy and under increased pressure. The white cell count is elevated, increase polymorphus (pus cells), the total protein is elevated and glucose is low. **N.B:** As a rule any case of irritability, unexplained fever. Slight neck rigidity. We have to do CSF examination.
- Culture of CSF with antibiotic sensitivity test.

- **Medical Management:**

- The child should be isolated. IV antibiotic therapy should be started immediately after culture has been obtained.
- Management also is required for seizures control.
- Maintenance of ventilation and control of hypertension

# Encephalitis

Encephalitis is an inflammatory process of CNS producing altered function of various portions of the brain and spinal cord. It can be caused by a variety of organisms including :

1-bacteria

2-Spirochetes

3-fungi

4-Protozoa

5-helminthes

6-viruses

# Assessment

- **Onset:** sudden or gradual. There are malaise, fever, headache, dizziness, apathy, neck stiffness, nausea and vomiting, ataxia, tremors, hyperactivity and speech difficulties.
- In severe cases: There are high fever, stupor, seizures, disorientation, spasticity, coma, ocular palsies and paralysis may occur.

# Diagnostic Evaluation

A diagnostic evaluation of encephalitis may •  
include:

1-Brain biopsy, usually from the temporal lobe •  
area should be drawn as soon as after onset  
as possible.

2-Serologic diagnosis may be reached by means  
of a variety of antibody tests .



# Therapeutic Management

- Patient suspected of having encephalitis are:
  - A-Hospitalized promptly for skilled nursing care and observation.
  - B-Treatment is primarily supportive, including
    - 1-alert nursing care
    - 2-control of cerebral manifestations
    - 3-adequate nutrition and hydration
    - 4- observations and management for cerebral injury.
    - 5-Follow up care with periodic reevaluation and rehabilitation are important requisites to survivors with residual effects of the disease.

# Prognosis

- The prognosis for the child affected with encephalitis depend on the followings
- 1- child's age
- 2- the type of organism
- 3-Any residual neurologic damage.
- Very young children, younger than 2 years of age, may exhibit increased neurologic disability including learning difficulties and seizures disorders.

# Nursing Consideration

- Nursing care of the child with encephalitis is the same as for any unconscious child and the child with meningitis. Which include
- 1-Neurologic monitoring
- 2- administration of medication
- 3-support to the child and parent.

# Nursing Care for Meningitis and Encephalitis

- High risk of infection related to long-term IV therapy and presence of infective organism.
- **Nursing Goal:**
  - 1- Prevent spread of infection.
- **Nursing Intervention:**
  - Place child in isolation for at least 24 hours after initiation of antibiotic therapy.
  - Protect self by observing proper precautions.
  - Identify close contacts and high-risk children who might benefit from meningococci vaccination.
- **Expected Outcome:**
  - Infective organisms are contained.
  - 2- Assess neurologic status.
- **Nursing Intervention:**
  - Monitor vital signs, neurologic signs level of consciousness and behavior.

# Cerebral Palsy (CP)

CP is non-specific term applied to disorders characterized by early onset of impaired movement and posture. It is non-progressive and may be accompanied by perceptual problems, language deficits, and intellectual involvement.

The etiology, clinical features, and course are variable and are characterized by abnormal muscle tone and coordination as the primary disturbance. It is the most common permanent physical disability of childhood, and the incidence is reported as 1.9 to 2.3 in every 1000 live births.

## **Causes of Cerebral Palsy:**

### **Prenatal insult:**

Congenital infection, placental insufficiency, exposure to irradiation.

### **Perinatal insult:**

Perinatal asphyxia, birth injury.

### **Postnatal insult:**

Intracranial infection, lead encephalopathy, kernicterus, trauma, dehydration, vascular accident.

# Mental retardation

Subnormal learning and reasoning abilities in children which occur in about two thirds of individuals with cerebral palsy •

# Classification of Mental Retardation

- Mild retarded (IQ 50-55 to approximately 70-75). They can help in the community by simple manual services, educable and are able to care for themselves.
- Moderate retarded (IQ 35-40 to 50-55) trainable, talk fairly well, dress themselves, control elimination and even feed themselves without assistance.
- Severe retarded (IQ below 20-25) completely dependent on others for their care, require constant care and supervision.



# *Questions*

- What are the features that is observed during seizures? •
- What are the types of seizures? •
- What are the symptoms of seizures? •
- What are the nursing diagnosis of seizures? •
- Definition of meningitis? •
- What are the clinical features of meningitis? •
- What are the medical management for meningitis? •
- Definition of Encephalitis? •
- What are the therapeutic management of Encephalitis? •
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What are the nursing care of child with Encephalitis? •

What are the Nursing care for meningitis and Encephalitis? •

What are the causes of cerebral palsy? •

What are the classification of mental Retardation? •

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