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NURSING

Solved Question Papers for BSc Nursing

3rd Year 2019–2014

4th Edition

I Clement



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Child Health Nursing

LONG ESSAYS

1. Explain the impact of hospitalization on the child.
2. Explain the physical, physiological and psychosocial development of an infant.
3. a. Define hydrocephalus.
   b. Explains the types of hydrocephalus.
   c. Explain the nursing management of child with hydrocephalus.

SHORT ESSAYS

4. First-aid management of fracture.
5. Patent ductus arteriosus.
6. Factors influencing growth and development.
7. Explain the nursing management of child with leukemia.
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SHORT ANSWERS

13. Define status epilepticus.
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18. Mention any four congenital anomalies of newborn.
19. Ortolani sign.
20. Exclusive breastfeeding.
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22. Types of play in children.

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LONG ESSAYS

Q1. Explain the impact of hospitalization on the child.

Children who cannot be cared at home or in the health center or in the outpatient department, may be admitted to the hospital for treatment. Hospitalization is the disruption of the lifestyle of children and their families. The children's reactions to the hospitalization and coping strength depend on the age, developmental stage, body image, fear, reason for hospitalization, and the previous experience about hospitalization. The change from home to hospital environment creates stress. The difference in hospital and home disturbs the child and adds to the stress, e.g. environment, mealtime, toileting, feeding, bath time, and recreation. By understanding these factors, the nurse can explore the child's reaction, describe nursing care to provide safety, promote sleep and rest, manage sensory deprivation, relieve pain, give medications, and assist in other procedures.

It is important to be aware of the variability associated with the lifespan, in relation to each aspect in the children's daily practices. This will help in accurate assessment, planning of management by modifications during nursing care techniques, for health advice, and to give emotional support through appropriate environment. One should understand the needs of the child at a particular age. The child must establish trust in caregiver and he/she must be encouraged for positive behavior. Developing rapport with the help of warm and loving words and allowing parental participation in child care is important. Necessary information should be given to the parents about the rules, policies, care of the child and preventive.

Management of Hospitalized Children

a. Help the children feel safe in the strange environment of the hospital:
   - Children should be accepted as they are
   - The nurse should be pleasant in an approach
   - The nurse must create a warm environment
   - The consistent nursing care should be provided
   - Appropriate limits should be set.

b. Alleviate fear of the unknown:
   - Parents and children should be explained about elective hospitalization
   - Children and their parents should be reassured
   - Children and parents should be allowed to participate in the care, where possible.

c. Allow expression feelings:
   - Children should be encouraging aged for verbal expression
   - Children's feelings should be observed through play.

d. Maintain identity as a person:
   - Children should feel that they are cared for as persons
   - Love and affection should be provided
   - It is necessary to establish the rapport and develop a trust in them.

Role of a Pediatric Nurse

Wherever pediatric nurses practice, their main function is the welfare of the child and his/her family. In this country, due to a dearth of pediatric nurses, even fully trained nurses, the home care of the child is dealt with by community health worker or auxiliary nurses. Nursing of the children is aimed at the highest possible state of health to each child. It includes preventing diseases or injuries, helping children to meet their health needs, to achieve and maintain

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adequate health and development, and rehabilitating them who have deviated from normal routine. The role of the pediatric nurse depends on education, experience, job structure and professional demands.

Preventive Care

Preventive care should be considered in relation to all aspects of the children's health. The nurse must plan care for even aspect of growth and development of the child. Problems related to development, nutrition, immunization, dental care, safety, socialization and education should be assessed. Any required guidance should be provided.

Health Education

The nurse should give appropriate health teaching with general feedback from the parents. He/she should give health instructions, as planned talks or incidental teaching as required. The nurse can act as a model for the parents and children by his/her manners and behaviors.

Restoration of Health

The nurses' role in the restoration of health is accomplished through care giving activities. While nursing the sick children, the nurse is involved in meeting their needs, such as feeding, bathing, security, comfort and other care. The patient must do continual assessment and evaluation, to modify the care plan and meet the developmental needs which influence children's health. The rehabilitation of physically or mentally disabled children is also an important aspect of restoration.

Coordination

The nurse plays an important role in the health team by coordinating activities related to patient care which are interdependent on various health team workers and departments. The communication and coordination may be direct or indirect depending on healthcare system.

In brief, the pediatric nurse can provide comprehensive care to the infants and children including guidance to the parents about their role in the child care.

Modern Concepts of Pediatric Nursing

The increasing complexity of medical and nursing techniques has created a need for special area for child care. The child care has prime importance, as the mortality and morbidity are higher in this group. Many diseases are preventable, such as nutritional deficiency.

The goal of the pediatric nursing is to foster the growth and development of the children and promote an optimum state of health physically, mentally, and socially, so that they may function at the peak of their capacity.

Since most of the responses of children are influenced by the phases of growth and development, the ages of the child are the most significant factor affecting nursing activities. For example, jaw is more traumatic to an infant who is in oral phase. The separation of the family during the will cause an anxiety in the young child and may disturb the parent-child relationship.

The nurse minimizes the psychological trauma of a hospitalization experience by helping the children to adjust to the situation rather than to repress their feelings. Play therapy has an importance in child care, by which children can play out their problems. To provide comprehensive care to children, the nurse must clearly understand the effect of illness and

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hospitalization experience upon the growth and development process of children and the effect of the developmental status of the children upon their responses to therapy.

The role of the pediatric nurse has been influenced by the research findings in other health disciplines of prevention and therapy in various areas of genetics, drugs, medical, and surgical techniques. It is also influenced by the research carried out within the nursing profession itself.

The concept of assessment of children is important for providing care to patients and their families. The function of the pediatric nurse is to promote and support children in their adaptation process. The nurse must observe the children's health and illness state, their strengths and weaknesses, and effectiveness of their coping mechanism. Nursing children require a better sense of responsibility and better judgment of children's health, responses, and planning for nursing management. The nurse must have patience and emotional balance while dealing with the children and their parents especially in critically ill cases.

Q2. Explain the physical, physiological and psychosocial development of an infant.

Physical Growth

Weight

a. As a rule, most infant double their weight at 4–6 months, they triple it by 1 year.
b. The average 1-year-old male weight 10 kg (22 lb), the average female weight 9.5 kg (2 lb).

Height

a. The infant increases in height during the 1st year by 50% or grow from the average birth length of 20–30 inches (50.8–76.2 cm).
b. Height-like weight is best assessment if it is plotted on a standard growth chart.

Head Circumference

a. Head circumference increase rapidly during the infant period, reflecting rapid brain growth.
b. By the end of the 1st year, the brain has already reached two-third of its adult size.

Body Proportion

a. Body proportion changes during the 1st year from that of a newborn to a more typical infant appearance.
b. The mandible becomes more prominent as bone grows.
c. The circumference of the chest is generally less than that of the head at birth by about 2 cm. It is even with the head circumference in some infants as early as 6 months and in most by 12 months.
d. The abdomen remains protuberant until the child has been walking well.

Body Systems

a. In the cardiovascular system, heart rate slows from 120–160 beats per minutes to 100–120 beats per minutes by the end of the 1st year.
b. Respiratory rate of the infant slows from 30–60 breaths per minutes to 20–30 breaths per minutes by the end of the 1st year.
c. At birth, the gastrointestinal tract is immature in its ability to digest food and mechanically move it along. These functions mature gradually during the infant year.
d. The immune system becomes functional by at least 2 months of age, the infant is able to produce both immunoglobulin G (IgG) and immunoglobulin M (IgM) antibodies by 1 year of age.
e. Ability to adjust to cold is mature by age 6 months.

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f. Kidney, liver and endocrine glands remain immature and not as efficient at eliminating body wastes as in the adult.

Physiological Development of an Infant

The major physiological development task place in skeleton-muscular development. Muscles begin to strengthen during the first month, most babies are able to lift their head for a short time while lying on their stomach. Other limb movements at this time may be due to newborn reflexes, such as the startle reflex where a baby throws out his or her arms and spreads fingers when confronted by a loud noise or surprise. These reflexes begin to fade away by 6 weeks.
At 3 months, infants now have better control of their head and begin to appear fascinated with their hands. They will also now knowingly hold onto the fingers of others as a way to gain attention. Around 4 months, control and balance of their head, neck and trunk will allow them to begin to roll over.

Still unsteady at 4 months, babies might sit with their hands out front to balance them in a tripod position. However, by 6–9 months, leg and trunk coordination have improved, allowing babies to sit, crawl and sometimes even pull themselves up to stand. At 7 months, your baby's eyes have developed almost to the same extent as your own.
In the few months before their first birthday, more control over their hands and fingers let babies better grab small objects with their thumbs and index fingers, rather than their palms. As they start to learn and interact with all their senses, babies have a tendency to put objects in their mouth, making baby-proofing your home extremely important.
Until they are able to walk independently, babies will use furniture and other objects to pull themselves up and "cruise" around the room. Be sure to secure any heavy objects that could topple over, such as bookcases and dressers, and move any potentially harmful objects well out of reach.

Psychosocial Development

Psychosocial stage 1: Trust versus mistrust

- The first stage of Erikson's theory of psychosocial development occurs between birth and 1 year of age and is the most fundamental stage in life.
- Because an infant is utterly dependent, the development of trust is based on the dependability and quality of the child's caregivers.
- If a child successfully develops trust, he/she will feel safe and secure in the world. Caregivers who are inconsistent, emotionally unavailable, or rejecting contribute to feelings of mistrust in the children they care for. Failure to develop trust will result in fear and a belief that the world is inconsistent and unpredictable.

Q3. a. Define hydrocephalus.
b. Explains the types of hydrocephalus.
c. Explain the nursing management of child with hydrocephalus.

a. Define hydrocephalus.

Hydrocephalus is a condition of imbalance between the production of cerebrospinal fluid and its absorption over the surface of the brain into the circulatory system. Cerebrospinal fluid (CSF) is formed in the choroid plexuses of the ventricles of the brain, 50–100 mL/day. The large portion of the CSF is reabsorbed through the arachnoid villi but the sinuses vein, brain substance and dura mater also participates in the absorption. Hydrocephalus is characterized by an abnormal increase in CSF volume within the intracranial cavity and by the

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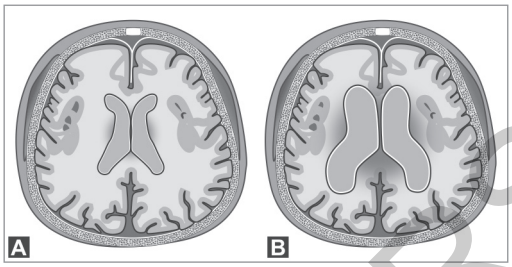
enlargement of the young child's head. Due to increased amount of CSF and intracranial pressure, ventricles become dilated and brain substance is compressed against the bony cranium **(Figs. 1A and B)**. It is common in the age groups from birth to 2 years.



Figs. 1A and B: Normal and hydrocephalic condition.

Causes

i. Excessive secretion of CSF due to chronic plexuses papillon class or tumor.
ii. Noncommunication of the CSF due to blockage of the circulation in the ventricle which prevents the escape of CSF into subarachnoid space.
iii. There may be a blocked circulation of CSF in the extra ventricular space.

Manifestations

i. Anterior fontanel is tense, bulging, enlarged and nonpulsatile. Scalp veins may be prominent and dilated on day.
ii. A large skull with separated skull sutures may be seen up to 3 years of age.
iii. Eyes have setting sun sign, eyes cannot gaze upward due to increase of thin orbital roof.
iv. Difficulty in sucking and feeding.
v. Shrill, high pitch cry, restlessness and irritability.
vi. Alteration of vital signs, such as increased blood pressure, decreased pulse and respiration.
vii. Vomiting, seizures, squint, mental deficiency and spastic paralysis may develop.
viii. If hydrocephalus is allowed to progress, development of lower brain functions are disrupted.

Investigation

i. X-ray shows widening of the fontanel and sutures.
ii. Transillumination of infant's head allows visualization of fluid collection. Percussion of the human skull may produce a typical 'cracked pot' sound (Macewen's sign).
iii. In ventriculography, abnormalities are visualized in the ventricular system of the subarachnoid space.
iv. Pneumoencephalography may show the dilated ventricles and the extent of the brain damage and the location of the obstruction.
v. Opthalmoscopy may show papilloedema.
vi. Computerized axial tomography (CAT) provides computerized analysis of X-ray transmission data.

Treatment: Installation of shunting device is the surgical treatment. Surgically, ventriculo-peritoneal and ventriculoatrial drainage shunt can be made. This shunt contains a one-way valve mechanism that directs flow on one direction and prevents reflux. This helps to reduce the volume, thus, the pressure of the CSF within the ventricles is reduced.

Ventriculoperitoneal shunt (VP shunt): It directs the CSF from lateral ventricles or the spinal subarachnoid space to the peritoneal cavity. In VP shunt, the tube is passed from lateral ventricles through an occipital burr hole subcutaneously through the posterior aspect of the neck and paraspinal region to the peritoneal cavity through a small incision in the right lower quadrant **(Fig. 2)**.

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Ventriculoatrial shunts (VA shunt): It is passed from the dilated ventricle through a burr hole in the partial region of the skull. It is then passed under the skull behind the ear into a vein down to a point, where it discharges into the right atrium and superior vena cava. The tube is passed at the point through a one-way pressure sensitive system. The valve or valves close to prevent reflux of blood into the ventricles and open as ventricular pressure rises, allowing the fluid pass from the ventricles into bloodstream **(Fig. 2)**.

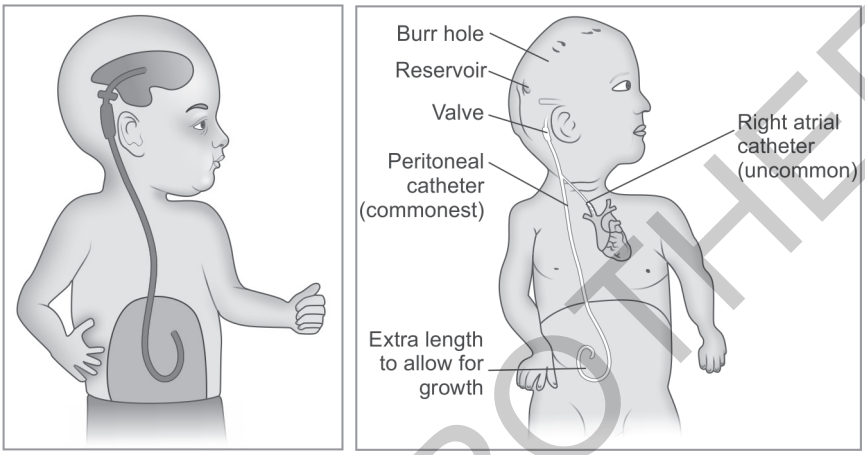

Fig. 2: Ventriculoperitoneal and ventriculoatrial shunts.

b. Explains the types of hydrocephalus.

Hydrocephalus is an excess accumulation of cerebral fluid in the ventricular system resulting in the enlargement of the intracranial cavity. This occurs from an irregularity in the production and absorption of the fluid which causes an increase in intracranial pressure as the fluid builds up.

Classification: There are two types of hydrocephalus:

1. **Noncommunicating:** In the noncommunicating type of congenital hydrocephalus, an obstruction occurs in the free circulation of CSF.
2. **Communicating:** In the communicating type of hydrocephalus, no obstruction of the free flow of the CSF exists between the ventricles and the spinal theca; rather, the condition is caused by defective absorption of CSF, thus causing increased pressure on the brain or spinal cord.

c. Explain the nursing management of child with hydrocephalus.

Managing a child with hydrocephalus warrants skill and compassion for nurses and all the members of the healthcare team.

Nursing assessment: Accurate information is essential in the assessment of the child with hydrocephalus.

1. **Head circumference:** Measurement of the newborns 's head is essential.
2. **Neurologic and vital signs:** Obtaining accurate vital and neurologic signs is necessary before and after surgery.
3. **Check the fontanelles:** If the fontanelles are not closed, carefully observe them for any signs of bulging.
4. **Monitor increase in intracranial pressure:** Observe, report, and document all signs of IICP.
5. **History taking:** If the child has returned for revision of an existing shunt, obtain a complete history before surgery from the family caregiver to provide a baseline of the child's behavior.

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Nursing Interventions

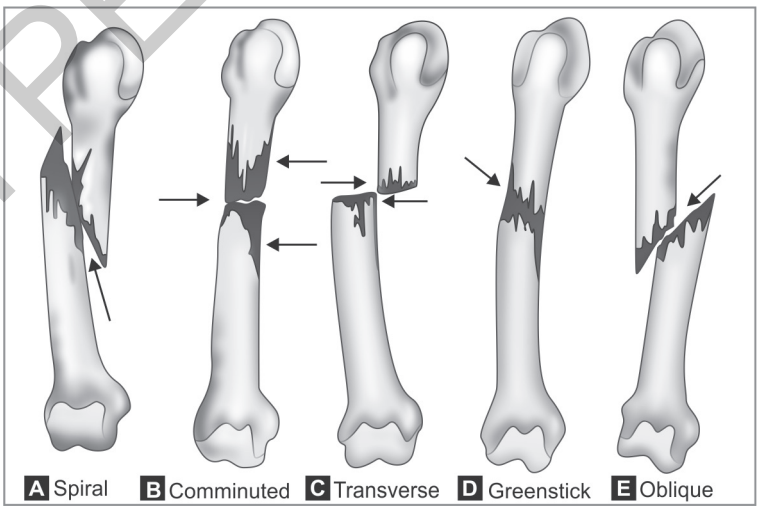
Nursing interventions for the newborn with hydrocephalus include:

1. **Preventing injury:** At least every 2 to 4 hours, monitor the newborn's level of consciousness; check the pupils for equality and reaction; monitor the neurologic status, and observe for a shrill cry, lethargy, or irritability; measure and record the head circumference daily, and keep suction and oxygen equipment convenient at the bedside.
2. **Promoting skin integrity:** After a shunting procedure, keep the newborn's head turned away from the operative site until the physician allows a change in position; reposition the newborn at least every 2 hours, as permitted; inspect the dressings over the shunt site immediately after the surgery, every hour for the first 3 to 4 hours, and then at least every 4 hours.
3. **Preventing infection:** Closely observe for and promptly report any signs of infection; perform wound care thoroughly as ordered, and administer antibiotics as prescribed.
4. **Promoting growth and development:** The newborn needs social interaction and needs to be talked to, played with, and given the opportunity for activity; and provide toys appropriate for his mental and physical capacity.
5. **Reducing family anxiety:** Explain to the family the condition and the anatomy of the surgical procedure in terms they can understand; encourage them to express their anxieties and ask questions; and give accurate, nontechnical answers that are easy to understand.
6. **Providing family teaching:** Demonstrate care of the shunt to the family caregivers and have them perform a return demonstration; provide them with a list of signs and symptoms that should be reported, and discuss appropriate growth and development expectations for the child, and stress realistic goals.

SHORT ESSAYS

Q4. First-aid management of fracture.

A fracture is a broken bone. It requires medical attention. If the broken bone is the result of major trauma or injury, call medical help or your local emergency number **(Figs.3A to E)**.



Figs. 3A to E: Types of fracture.

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Also call for emergency help if:

1. The person is unresponsive, is not breathing or is not moving. Begin CPR if there is no breathing or heartbeat.
2. There is heavy bleeding.
3. Even gentle pressure or movement causes pain.
4. The limb or joint appears deformed.
5. The bone has pierced the skin.
6. The extremity of the injured arm or leg, such as a toe or finger is numb or bluish at the tip.
7. If a bone is broken in the neck, head or back. Do not move the person except if necessary to avoid further injury. Take these actions immediately while waiting for medical help:

1. **Stop any bleeding:** Apply pressure to the wound with a sterile bandage, a clean cloth or a clean piece of clothing.
2. **Immobilize the injured area:** Do not try to realign the bone or push a bone that is sticking out back in. If you have been trained in how to splint and professional help is not readily available, apply a splint to the area above and below the fracture sites. Padding the splints can help reduce discomfort.
3. **Apply ice packs to limit swelling and help relieve pain:** Don't apply ice directly to the skin. Wrap the ice in a towel, piece of cloth or some other material.
4. **Treat for shock:** If the person feels faint or is breathing in short, rapid breaths, lay the person down with the head slightly lower than the trunk and, if possible, elevate the legs.

Q5. Patent ductus arteriosus.

Patent ductus arteriosus (PDA) is one of the most common acyanotic congenital cardiac anomalies. It is twice frequent in females as in male infants. It is a vascular connection during fetal life, shunts blood from the pulmonary artery to the aorta. Functional closure of the ductus normally occurs soon after birth. If the ductus remains patent after birth, the direction of blood flow in the ductus is reversed from aorta to pulmonary circuit by the higher pressure in the aorta. Clinical manifestations depend on the size of the ductus and the amount of shunting. Mild symptoms may include dyspnea on exertion, easy fatigability and physical underdevelopment and increased respiratory infections **(Fig. 4)**.

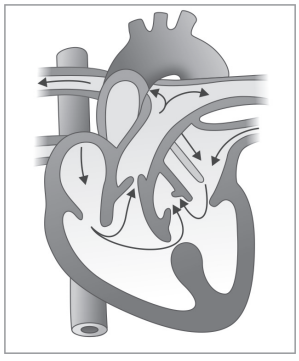

Fig. 4: Patent ductus arteriosus.

Pathophysiology

In PDA, there is left to right shunt as blood flows from aorta (higher pressure) to pulmonary artery (lower pressure) leading to pulmonary overload. Thus, oxygenated blood of systemic circulation flows back to pulmonary circulation resulting in increased vascular pressure in the pulmonary tree and volume load on left heart. In severe degree PDA, pulmonary vascular disease and pulmonary hypertension may occur.

Clinical Manifestations

The clinical presentations of PDA depend upon the size of ductus and its patency. Small and moderate size PDA is usually asymptomatic. Symptomatic cases manifested with tachypnea, bounding pulse and Corrigan's pulsation in the neck. Dyspnea and frequent respiratory infections usually found. There is increased systolic pressure and low diastolic pressure with wide pulse pressure. Precordial pain, hoarseness of voice, feeding difficulties, slow weight gain or growth failure and congestive cardiac failure (CCF) are common features of a child with PDA.

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Diagnostic Evaluation

History of illness and physical examination help in diagnostic evaluation. Auscultation of heart sound reveals continuous murmur (machinery murmur) heard at second left intercostal space or below the left clavicle or lower down, i.e. at left sternal border. There may be paradoxical splitting of P2. Chest X-ray shows cardiomegaly and increased pulmonary vascular marking. Two-dimensional echocardiogram with Doppler study and color flow mapping, and cardiac catheterization can also be done to detect the extent of problems. Electrocardiogram (ECG) reveals left arterial dilation and left ventricular hypertrophy.

Management

Medical Management

In symptomatic patient with PDA, indomethacin 0.1–0.25 mg/kg/dose IV over 30 minutes very slowly is administered, every 12–24 hours for three doses for pharmacological closure of ductus arteriosus. Antiprostaglandin agents, aspirin and mefenamic acid can also be used. Supportive care is provided with rest, adequate intake of calorie for weight gain, and promotion of normal growth and development with routine care. Emotional support to the parents is essential. Conservative management of CCF and other associated complications should be done with appropriate treatment.

Surgical Management

Transection or ligation of PDA via a lateral thoracotomy, a closed heart intervention is performed. It is done preferably between 3 and 10 years of age in asymptomatic patients; and in symptomatic patients, it should be done irrespective of age and in the presence of pulmonary hypertension. The result of surgery is excellent. Pre- and postoperative care for thoracic surgery to be provided with all precautions.

Complications

A child with PDA can have complications, such as CCF, infective endocarditis, pulmonary hypertension and pulmonary vascular occlusive disease. Rarely, calcification of ductus, thromboembolism and rheumatic heart disease and Eisenmenger's syndrome may develop.

Q6. Factors influencing growth and development.

Growth and development depend on not one, but combination of many factors, all interdependent. The relatively typical pattern of growth and development is influenced by heredity and environment. Also genetic inheritance and environmental influences are two primary factors in determining a child's pattern of growth and development.

Genetic Factors

Heredity: The heredity of a man and women determines their children. Heredity decides the size and shape of the body, hence family member bear resemblance. The characteristics are transmitted through genes which are responsible for family illness, e.g. diabetes.

Sex: It is determined at conception, after birth the male infant is both longer and heavier than female infant. Boys maintain this superiority until about 11 years of age. Girls mature earlier, reach the period of accelerated growth earlier than boys and are taller than boys on the average.

Race: Distinguishing characteristics called racial or subracial developed in prehistoric humans. Similar physical characteristics are seen in people belonging to the same race. As too height, tall

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and short examples exist among all races and subraces. Among civilized groups, intermarriage has produced mixed racial types.

Nutritional Factors

Poor nutrition: Nutrition plays a vital role in the bodies susceptibility to disease because poor nutrition limits the body ability to resist infection. Poor nutrition also plays a major role in the development of chronic illnesses. Growth and development suffering from protein-energy malnutrition, anemic and vitamin deficiency states are retarded.

Maternal nutrition: Intrauterine growth retardation and consequently small size of the fetus occur because of nutritional deficiency in mothers, infection and drugs used during pregnancy.

Environmental Factors

Physical environment: Environment forces act upon the individual. It is the exploding force of an individual potentially to different stimulating forces. The physical environment includes food, temperature, climate, resources, etc.

Mental environment: It includes the intellectual atmosphere of the school, libraries, recreation rooms, labs, etc.

Social environment: It includes social association the child gets from the beginning. It also includes cultural atmosphere of the society, e.g. religion, folklore, literature, art, music, social conversions and political organizations. The rich is the environment, better is the scope for developing an individual into a healthy human being.

Socioeconomic level: The child born into a family of low socioeconomic means may not receive adequate health supervision could leave a child without immunization against measles or other childhood illnesses and thus vulnerable to disease that could cause permanent neurological damage.

Cultural influences: Groups of human being create their own cultures, whereas each individual is influenced or shaped by the culture of which he/she is a part. The effects of a particular culture on a child begin before birth because of the manner in which culture views and treat the members of the pregnant women's family.

Internal influences: There is evidence that all the hormones in the body affect growth in some manner. Deficiency of growth hormone retards growth, while overproduction results in gigantism.

Characteristics of parents: Parents with high intelligence quotient are more likely to have children with higher level of inherent intelligence.

Prenatal environment: Prenatal environment climate in which the child's develops. The influences of the intrauterine environment on the child's future development are great, particularly since the uterus shields the fetus from the full impact of external adverse condition.

Postnatal environment: An environment that provides satisfying experiences promote growth. Since growth and development are interrelated, growth in one area influences and in turn is influenced by growth in all other areas.

Q7. Explain the nursing management of child with leukemia.

Definition

Leukemia is the cancer of blood-forming tissue. It is the common form of childhood cancer. It is more common between the ages of 2–5 years.

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Classification

a. Acute lymphoid leukemia: This includes lymphocytic leukemia, lymphatic leukemia, lymphoblastic leukemia and lymphoblastic leukemia.
b. Acute myeloid leukemia: This includes granulocytic leukemia, myelocytic leukemia, monoblastic leukemia, and monomyeloblastic leukemia.

Leukemia is a proliferation of immature white blood cells (WBCs) in the blood-forming tissues. The cells count of mature cells is decreased and the count of immature cells is increased. It depresses the bone marrow production. Effects of proliferating cells in leukemia are anemia due to decreased erythrocytes, infections from neutropenia and bleeding from decreased platelets.

Manifestations

- Fever
- Anemia, malaise
- Pain in joints, enlarged spleen and liver
- Repeated infections
- Bleeding may occur in the skin, GI tract or any other part of the body.

The clinical features of childhood leukemia result from bone marrow failure caused by an overgrowth of leukemia cells in the marrow and infiltration of other organs and tissues by leukemia cells that have migrated from or proliferated outside the bone marrow. Clinical manifestations include fever, anemia, pain in bone and joints, enlarged spleen and liver is seen, repeated infection, bleeding tendency in the skin, GI tract or any other part.

Investigations

- Peripheral blood examination
- Bone marrow aspiration or bone marrow biopsy.

Treatment

Chemotherapy and irradiation is done in three phases as detailed below:

1. *Remission induction:* This is started immediately and continued for 4–6 weeks. The two main drugs used in combination are corticosteroid and vincristine. The third drug is allopurinol to inhibit uric acid production.
2. *Sanctuary therapy:* This is done as a second phase of prophylactic treatment for cranial irradiation with cobalt and intrathecal administration of methotrexate, twice a week for 2½ weeks.
3. *Maintenance or continuation therapy:* This starts after completion of induction and sanctuary therapy. It helps to reduce number of leukemia cells. It is administered with the combination of drugs. Usually, it is continued for 2½ years. The blood examination is done weekly or monthly to know the response of the bone marrow:
   - Re-education therapy may be required when relapse occurs
   - Bone marrow transplant is used to treat acute myeloid leukemia
   - Transfusion may be used to correct anemia and to control hemorrhage
   - Antibiotics are used to control infection.

Management

a. Psychological support to the patients and their parents—the course of the treatment is for a long period and it increases the stress. Explanation about each diagnostic test

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and about drug therapy is necessary. As the family faces many problems, it may need continuous emotional support.

b. The signs of complication, such as infection or bleeding should be observed.
c. As the patient and protective defense is reduced, the prevention of infection is necessary. These patients need to be isolated and visitors should be restricted.
d. Skin breaks should be prevented. General hygiene should be maintained.
e. The nutritional needs should be met. Patients should be encouraged to have adequate proteins and calories. Small frequent feeding may be helpful.
f. Hemorrhage should be prevented or treated promptly. Precautions should be taken to prevent injuries. If bleeding occurs, should be controlled by local measures.
g. Side effects of the drugs should be observed and the possible care should be given to minimize the symptoms. Antiemetic drugs are prescribed before the drugs which produce nausea. The parents should be told that side effects are temporary.
h. The oral cavity should be inspected for ulcers, and the special care should be provided to the gums and oral ulcers. The food should be soft, light and bland.
i. Constipation may be due to rectal ulcers. The rectal ulcers should be treated with an ointment according to the prescription.
j. Loss of hair (alopecia) is temporary due to the treatment. Hair may regrow after 3–6 months of the treatment. The child and parents may be told about the use of the scarf or a wig.
k. The pain needs to be relieved especially in the severe painful stage.
l. The modification in the physical environment, positioning, use of analgesics and other pain control measures should be used to relieve the pain.
m. Patients should be given light clothes to wear. The pressure of the bed linen should be prevented. Dim light and minimum sound may helpful in relieving a headache.
n. Proper body alignment and comfortable position may be helpful. Waterbed may be comfortable. Position should be changed frequently to prevent pressure sores.
o. Nonsalicylic analgesics may be used to relieve the pain.
p. Diversional therapy with the use of music, relaxation techniques and cutaneous stimulation may be helpful.

Parental advice: Parents should be explained about the schedule of the treatment, effects of the drugs, care of the child to prevent complications and the need to provide emotional support.

Q8. Diaphragmatic hernia.

The diaphragm is a dome-shaped muscular barrier between the chest and abdominal cavities. It separates your heart and lungs from your abdominal organs (stomach, intestines, spleen, and liver).

A diaphragmatic hernia occurs when one of your abdominal organs move upward into your chest through a defect (opening) in the diaphragm. This kind of defect can be present at birth or acquired later in life. It is always a medical emergency and requires prompt surgery to correct **(Fig. 5)**.

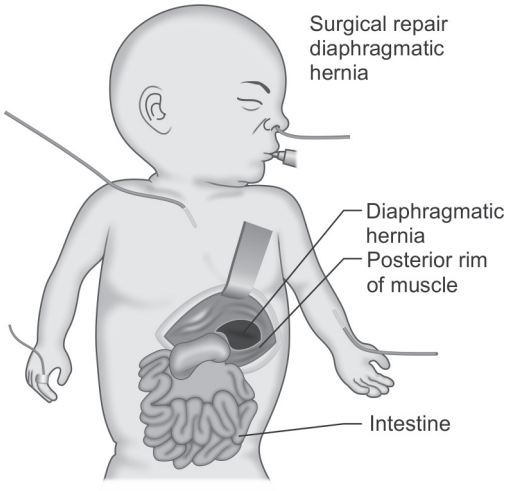

Fig. 5: Surgical repair of diaphragmatic hernia.

Causes

A congenital diaphragmatic hernia (CDH) is due to the abnormal development of the

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diaphragm while the fetus is forming. A defect in the baby's diaphragm allows one or more of their abdominal organs to move into the chest and occupy the space where their lungs should be. As a result, the baby's lungs cannot develop properly. In the majority of cases, this affects only one lung.

An acquired diaphragmatic hernia (ADH) is usually the result of a blunt or penetrating injury. Traffic accidents and falls cause the majority of blunt injuries. Penetrating injuries are usually due to stab or gunshot wounds. Surgery on the abdomen or chest may also cause accidental damage to your diaphragm **(Fig. 6)**.

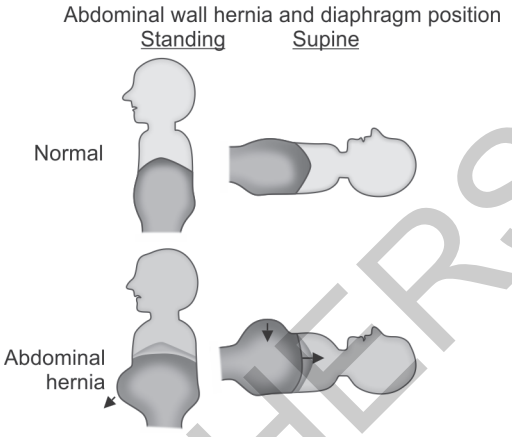

Fig. 6: Normal and abnormal position in hernia.

Clinical Manifestations

The symptoms of a diaphragmatic hernia vary depending on its cause and severity.

Difficulty breathing: This is usually very severe. In a CDH, it results from the abnormal development of the lungs. In an ADH, it occurs when the lungs cannot function properly.

Blue discoloration of the skin: When your body does not receive enough oxygen from your lungs, it can make your skin appear blue (cyanosis).

Tachypnea (rapid breathing): The lungs may try to compensate for the low levels of oxygen in your body by working at a faster rate.

Tachycardia (rapid heart rate): The heart may pump rapidly to try to supply your body with oxygenated blood.

Diminished or absent breath sounds: This symptom is normally present in the case of a CDH because one of the baby's lungs may not have formed properly. The breath sounds on the affected side will be absent or very difficult to hear.

Bowel sounds in the chest area: This occurs when your intestines move up into your chest cavity.

Less full abdomen: The abdomen may feel less full than it should upon palpation (an examination of the body by pressing on certain areas).

Management

Both congenital and acquired diaphragmatic hernias are surgical emergencies. Surgery must be performed to remove the abdominal organs from the chest and place them back into the abdomen. The surgeon will then repair the diaphragm.

In a CDH, surgeons will ideally perform surgery 24–48 hours after the baby is delivered. The first step is to stabilize the baby and increase its oxygen levels. The surgeon will perform an endotracheal intubation by inserting a tube into the mouth and down to the baby's trachea (windpipe). The other side of the tube connects to a mechanical ventilator (breathing machine). Once the baby stabilizes, then surgery can occur.

In an ADH, the patient may also need to stabilize before surgery. Because most cases of ADH are due to injury, there might be other complications, such as internal bleeding. Therefore, the surgery usually happens as soon as possible.

Q9. Common behavioral problems of school-age children.

All children have moments when they do not behave properly. They can go through different phases as they develop and become more independent. Toddlers and adolescents can have

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