Pediatric Sensory Problems NCLEX Review

The head and neck regions of the body are the centers for most of the major senses of the body: vision, hearing, smell, and taste. In addition, conditions that affect the throat may impact eating and cause a decrease in the child's nutritional intake. The eyes, ears, nose, and throat present entry points for bacteria and foreign bodies. The airway of the young pediatric client is smaller in diameter than that of an adult; therefore obstruction from swelling or foreign bodies is a threat to oxygenation. Children exchange infectious organisms through play and sharing of food, drink, and clothing. Failure to treat a condition of the head and neck could lead to severe structural injury, such as possible loss of hearing or sight.

EYES

Conditions of the eye may involve the conjunctiva (infection), pupils (structural abnormality), cornea (opacity or scarring) or lens (spots/cataract), among other structural changes. Inflammations of the eyelids can be the result of invasion by organisms or foreign bodies or from blockage of the lacrimal (tear) duct. Examination of the external and internal eye can reveal many overt and covert problems. Refractive errors (disorders in which the shape of the eye causes light rays to bend before reaching the retina, result in the ability to clearly see close objects only (myopia) or distant objects only (hyperopia). Early identification of these conditions usually leads to corrective lenses (glasses or contact lens). Malalignment (such as strabismus) of the eyes may be noted in infants, but after 4 months of age binocularity(ability to focus on one visual field with both eyes) should be present; thus malalignment noted at the age of ?5 months should be further explored.

II. STRABISMUS

Malalignment of the eyes (cross-eye) with an inward deviation (esotropia) or an outward deviation (exotropia) of the eyes can result from muscle paralysis or congenital defect. Visual perspectives are not parallel so the brain receives two different images.

Assessment:

Squinting of eyelids or frowning noted Difficulty judging distance when picking up objects Unable to see print or moving objects clearly Difficulty fixating on objects from one distance to another Closes one eye to see Tilts head to one side In combination with refractive error: headache, dizziness, diplopia(double vision), photophobia (light sensitivity) If untreated, may progress to blindness from disuse due to amblyopia (blindness in one eye because of the brain ignoring the extra signal coming from that eye)

Diagnosis:

Corneal light reflex test (Hirschberg test) shows the light falls off center in one eye and not symmetrically within each pupil. Cover test: When the strong eye is covered, the uncovered eye moves to attempt to adjust, revealing malalignment. Vision testing to determine accompanying

refractive error.

Treatment:

Based on the cause of strabismus

- Occlusion therapy (patching of stronger eye to exercise weak eye)
- Surgery to increase visual stimulation to weaker eye

Nursing Interventions:
Monitor vision and eye movement to determine effectiveness of treatment. Instruct family to apply occlusion patching as ordered. Teach family to care for eye after surgery.

NCLEX!!! Early diagnosis and treatment is critical to prevent blindness in one eye secondary to amblyopia with brain suppressing image from that eye.

II. ACUTE CONJUNCTIVITIS

- The cause of the inflammation of the conjunctiva often varies depending on the age of the child.
- Newborns may be infected during birth with Chlamydia or Neisseria gonorrhoeae, or herpes simplex virus with a resulting conjunctivitis.
- Infants may experience conjunctiva secondary to a nasolacrimal (tear) duct obstruction.
- Children may experience bacterial (most common), viral, allergic, or foreign body invasions resulting in conjunctivitis.

Assessment:

- Inflamed conjunctiva is noted with most forms of conjunctivitis in addition to
- Bacterial: Purulent drainage, early morning crusting of eyelids, and swollen lids.
- Viral: With general conjunctivitis, a report of upper respiratory tract infections may be reported, watery serous drainage, and swollen lids; with hemorrhagic conjunctivitis, the presence of enterovirus is noted, and severe inflammation, subconjunctival hemorrhage, and photophobia (sensitivity to light) may be noted.
- Allergic conjunctivitis may reveal itching, watery to viscous stringy discharge, and swollen lids.
- Conjunctivitis due to a foreign body may reveal tearing and pain in addition to inflammation.

Diagnosis:

Culture of the purulent drainage is often needed to identify the cause of the conjunctivitis.

Treatment:

Viral conjunctivitis is self-limiting and treatment is cleaning away of secretions.

Bacterial conjunctivitis is treated with antibacterial agents:

- Polymyxin (Polytrim) and bacitracin (Polysporin)
- Sodium sulfacetamide (Sulamyd) or trimethoprim and polymyxin (Polytrim)
- Supportive care of removal of dried secretions

Nursing Interventions:

Keep eye clean of secretions and crust, being careful not to contaminate.

- Warm moist compress is effective for crust removal.
- Older children can remove crust in warm flowing water from shower.

Administer ophthalmic medication after cleansing of eye to reduce eye contamination.

Client and parent teaching

- Instruct parent and client to keep washcloth and towel separate to prevent use by other people.
- Instruct the child and parents in good hand hygiene to minimize spread of infection.
- Tissues should be discarded properly after use to avoid transfer of infection.
- Never use the same tissue or area of washcloth on both eyes in order to avoid transfer of organisms to uninfected eye.

NCLEX!!! Use separate tissue for each eye or different cloth to avoid contamination of uninfected eye with organisms from infected eye

EARS

Conditions of the ear primarily occur in the middle and inner ear. The eustachian tube generally functions to protect the middle ear from nasopharyngeal secretions, to drain middle ear secretions into the nasopharynx, and to equalize pressure within the middle ear. Because the eustachian tube is shorter, straighter and wider, and more horizontal in the child than in the adult, organisms travel quickly from the pharynx to the middle ear. Persistent ear infection can result in partial or full hearing loss.

III. OTITIS MEDIA

Otitis media (OM), inflammation of the middle ear, is one of the most common diseases of early childhood.

The primary cause of OM is a dysfunctioning eustachian tube:

- Secretions accumulate in the middle ear due to obstruction secondary to infection or allergy (intrinsic) or to enlarged adenoids or tumor (extrinsic).
- Ear infection is commonly caused by Streptococcus pneumoniae, Haemophilus influenzae, and Moraxella catarrhalis.
- Exposure to tobacco smoke (increases respiratory infection, decreases mucociliary function leading to eustachian tube blockage) and reflux of milk into the eustachian tube can

contribute to development of OM.

Assessment:

- Symptoms commonly result from increased pressure in the ear or primary infection.
- Pain due to the pressure on surrounding structures

1. Infants may pull at ear or move head around.
2. Child may complain of earache.
3. Fever may spike as high as 40°C (104°F).

- Eardrum perforation due to excess pressure buildup is a common complication in OM, particularly in chronic disease.
- Cervical or preauricular lymph gland enlargement.
- Rhinorrhea(nasal drainage), vomiting, diarrhea if respiratory infection also present.
- Purulent drainage accumulation in the middle ear chamber; can drain to outer ear with rupture.
- Loss of appetite might be noted due to pain with chewing or sucking.
- Tympanosclerosis(eardrum scarring) is the deposition of hyaline material into the fibrous layer of the tympanic membrane.
- Labyrinthitis(infection of the inner ear) or mastoiditis(inflection of the mastoid sinus) could occur but are rare with the use of antibiotic therapy.
- Prolonged OM can result in complications including hearing loss.

Diagnosis:

- Otoscopy reveals an intact membrane that appears bright red and bulging, with no visible landmarks or light reflex.
- Tympanometry may detect lack of movement of the tympanic membrane due to pressure buildup.
- Culture of drainage is used to determine involved organism.
- Acoustic reflectometry will reveal the presence of effusion in the middle ear

Treatment:

- Cautious use of antibiotics to treat infections to avoid penicillin resistance.
- Recurrent OM is treated with long-term antibiotic therapy and immunotherapy.
- Surgery such as a myringotomy with placement of tubes to facilitate drainage may be performed for severe pain.
- An adenoidectomy may be performed if blockage of the eustachian tube by adenoids is the cause of the OM.

Nursing Interventions:

- Parent teaching about prophylactic care

1. Position infants as upright as possible during feeding to avoid reflux of formula into eustachian tube.
2. Avoid smoking around infants and children.

- Administer analgesics as ordered to provide pain relief.
- Heat pack application over the ear may relieve pain for some children.
- Position child on the affected side to promote drainage (if draining, or postoperatively after myringotomy).
- Assist in removal of drainage, when possible

1. Postoperative support may include wicks inserted loosely in the ear to promote drainage but prevent infection transfer to middle ear.
2. Frequent cleansing of outer ear and moisture barrier on ear to protect from purulent drainage. Family-centered care

- Educating the family in care of child

1. Analgesia for pain management
2. Postoperative care to prevent spread of infection and promote healing

- Providing emotional support to the child and family

1. Explain the process for management of drainage.
2. Encourage follow-up evaluation of hearing to detect any loss of hearing.

NCLEX!!! Instruct parents to position infant as upright as possible and not to lie an infant down and prop bottle in infant's mouth during feeding to avoid formula reflux into eustachian tube.

NOSE

Most pediatric conditions of the nose are discussed in Chapter 5 on respiratory conditions. Nose bleeds (epistaxis) can occur in many conditions and may require different treatment depending on the cause.

Epistaxis can occur from trauma to the nasal mucosa or secondary to bleeding disorders involving a decrease in clotting factors, such as hemophilia.

Assessment:

Bleeding from nasal passage (commonly the anterior septum)

Diagnostics:

- Clotting factors: Prolonged values for prothrombin (PT), partial thromboplastin (PTT), and thrombin time (TT) may be noted in some conditions that cause epistaxis.
- Decreased platelets and fibrinogen levels may be noted, increasing risk for bleeding.

Treatment:

- Apply pressure to the nose for a minimum of 10 minutes (thumb and forefinger to the bridge of the nose).

- Clotting factor, platelets, and fresh-frozen plasma may be administered.
- Nasal packing with cotton or wadded tissue may be applied to involved nostril(s).
- Ice or cold pack may be applied to the bridge of the nose for persistent bleeding.

Nursing Interventions:

Administer blood factors and monitor for adverse reactions:

- Watch for signs of fluid volume overload because small children may experience congestive failure if fluid infusion is too large or rapid.
- Monitor for infusion reaction including hemolysis if blood transfusion is given.

Teach the child and family to manage nosebleeds through the following actions:

- Instruct child to sit up and lean forward.
- Apply pressure to the nose for a minimum of 10 minutes.
- Help the child remain calm because anxiety can aggravate bleeding.

Instruct client to breathe through the mouth while nasal packing is in place.

MOUTH

The most common oral condition for children and adolescents is dental caries. Malocclusion is another problem noted in more than half of pediatric clients 12 to 17 years of age. Treatment involves discouraging habits such as thumb sucking and the placement of orthodontic devices. The nurse should refer the client for dental services and encourage proper brushing and flossing, particularly around orthodontic devices. Stomatitis is an inflammation of the oral mucosa that can often impact children who are receiving chemotherapy and are immunocompromised.

IV. DENTAL CARIES

Dental caries are among the most common oral problems in children and adolescents. The most vulnerable victims are children 4 to 8 years of age with primary eruption of permanent teeth and 12 to 18 years of age with secondary eruption of permanent teeth.

These are the major factors that contribute to the development of dental caries:

- The host: Improperly structured teeth with crowding prevents adequate cleaning and hereditary or health factors impacting the quality and quantity of saliva flow, and resistance or susceptibility to caries.
- Microorganisms: Microflora produces acids that digest and destroy teeth.
- Substrates: Particularly sucrose-containing substances consumed between meals and a protein matrix forming a dental plaque on the teeth demineralizes tooth enamel. Demineralization of enamel leads to tooth decay and development of dental caries.

Assessment:

Pain

Visible decay

- Surface areas
- Fissures of the molars

Diagnostics:

Radiograph: Caries between teeth and in fissures are typically noted.

Treatment:

- Prophylaxis/preventive treatment with fluoride applications, fluoride in the water, and sealants to tooth fissures and groves
- Removal of all decayed portions of a tooth and replacement of lost surfaces with durable material

Nursing Interventions:
Oral inspection

- Refer for routine dental examination and for dental caries.

Teach the client and parents

- Prevention through oral hygiene: correct tooth brushing and flossing, and regular dental exams
- Restriction of sugar treats, particularly chewy candies
- Early treatment with fluoride in water and oral rinses
- Brushing after intake of sugary liquids, including medications

V. STOMATITIS

- **Stomatitis**, inflammation of the oral mucosa, including the cheek, lip, tongue, palate, and floor of the mouth, may be infectious or noninfectious. The most common form in children is aphthous stomatitis, or canker sore, which has an unknown origin or may be associated with trauma such as injury with toothbrush, biting of the cheek, or abrasion by braces.
- **Herpetic gingivostomatitis** (HGS) is caused by the herpes simplex virus (usually type 1) and is commonly referred to as a cold sore or fever blister.
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NCLEX!!! Use caution and wear gloves when touching areas near herpetic lesions to avoid spread of the infection through broken skin on the hand.

Assessment:

Aphthous stomatitis

- Painful, small, whitish ulcerations surrounded by a red border.
- Ulcers persist for 4 to 12 days and then heal.
- Syndrome of periodic fever, aphthous stomatitis, pharyngitis, and cervical adenitis (PFAPA) may occur in some children (cause unknown).

Herpetic gingivostomatitis

- Fever.
- Pharynx becomes edematous and erythematous.
- Severe, painful vesicles erupt on the mucosa.
- Cervical lymphadenitis.
- Foul breath odor.
- Recurrent form: Single or group vesicles on lips, precipitated by stress, trauma, exposure to sunlight, or immunosuppression.

Diagnosis: Culture may be performed

Treatment:

- Symptom relief with acetaminophen in mild cases; codeine with severe pain
- Topical anesthetics: Orabase, Anbesol, Kank-a, Lidocaine (Xylocaine viscous), diphenhydramine (Benadryl) and Maalox mixed in equal parts for pain relief
- Antiviral agents for severe cases of HGS

Nursing Interventions:
Pain relief

1. Administer topical agents and analgesics for pain relief.
2. Provide medication before meals to promote adequate nutrition intake.
3. Provide straw for drinking to avoid painful lesions.
4. Perform mouth care with soft toothbrush, foam applicator, or cloth for comfort.

Teach the client and parents:

1. Prevention of spread through careful handwashing and teaching to keep fingers out of mouth and avoid touching body with contaminated hands.
2. All objects placed in the mouth of the infected child should be washed thoroughly or discarded.
3. Use restraint as needed to prevent self-contamination by younger child.
4. Keep immunocompromised persons, infants, and other young children away from infected child to avoid exposure.
5. Inform parents and older children that type 1 HSV is not the herpes commonly associated with sexual activity, to avoid assumptions that the child is sexually active.