

Topical infection in newborns



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Ophthalmia neonatorum

- Ophthalmia neonatorum is conjunctivitis occurring in the first month of life.
- CAUSATIVE organisms:
 - S.aureus
 - non typeable H.F
 - S .pneumoniae enteric -Gram-negative bacilli ,GBS, .gonorrhoeae-chlamydia trachomatis- VIRAL(Herpes simplex)
- Non infectious (Chemical conjunctivitis).


CLINICAL PRESENTATION OF BACTERIAL CONJUNCTIVITIS:

- Purulent ocular discharge -erythema -edema of eyelids, and injection of the conjunctiva.

GONOCOCCAL INFECTION IN THE NEWBORNS:

- Is typically acquired during delivery with perinatal transmission occurring in 30% -40% of cases of maternal cervical INFECTION



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- Signs of infection 2-5 days after birth with profuse purulent ocular discharge , swelling of eyelids.
 - Untreated infection can spread in to the subconjunctival connective tissue and cornea, leading to ulceration , scarring and visual loss.
 - Disseminated infection can lead to septic Arthritis or less commonly , bacteremia or meningitis.

CLAMYDIA trachomatis:

- (Is also known inclusion conjunctivitis) is usually transmitted to the neonate during vaginal delivery ,and approximately 20% of infants born to mothers with cervical infections.
- The onset of conjunctivitis is often 5-14 days after birth.




FINDINGS:

- Mild eyelid swelling with minimal discharge to mucopurulent discharge, significant swelling and red thickened conjunctiva,.
- Bloody discharge may also be noted with intense inflammation.
- Without treatment infection may lead to corneal and conjunctival scarring or progression toward pneumonia 2-8 weeks after birth.



DIAGNOSIS :

- ▶ Laboratory testing should have performed in conjunctivitis after the first days of life.
- ▶ CSF And blood culture are obtained to determine if dissemination occurred.
- ▶ Purulent ocular discharge is sent for Gram stain and culture.
- ▶ Culture on selective media (Thyer-Martin) for gonococcal infection



Chlamydia trachomatis is an obligate intracellular organism, so specimens must contain conjunctival epithelial cell. Ocular exudate are not adequate specimen for diagnosis.

- Culture of the organism is the gold standard for diagnosis.
- In infants with signs of pneumonia, testing for C. Trachomatis can be sent from the nasopharyngeal specimens. Any infant with signs of systemic illness should have blood and CSF Culture.

PROPHYLAXIS:

- Prophylactic Administration of ophthalmic antibiotic agent shortly after birth greatly reduce the risk of GONOCOCCAL Conjunctivitis but not chlamydial disease.

Regime with equal efficacy include :

- 0/5% erythromycin ointment, 1% tetracycline ointment and silver nitrate solution. The later is not commonly available in the USA.
- CHEMICAL CONJUNCTIVITIS: is usually seen soon after birth and improves over 48 hours.



TREATMENT:

- Infants with GONOCOCCAL eye disease should be hospitalized and monitored for response to treatment as well as for signs of Disseminated disease.
- Treatment for conjunctivitis is a single dose of intramuscular or intravenous Ceftriaxon (not that especially Preterm Infants with hyperbilirubinemia) .
- Irrigation of eye with sterli saline until the discharge has resolved.



TREATMENT for either Chlamydial conjunctivitis or pneumonia:

- oral erythromycin for 14 days or with azithromycin for 3 days.

TREATMENT for Other bacterial conjunctivitis :

- Topical antibiotic ointment or solution given for 7-10 days



Omphalitis:

- Omphalitis is an infection of umbilicus or surrounding tissues.
- Newborns are predisposed to umbilicus infections following colonisation of the umbilicus by a wide array of microorganisms.
- Bacteria can reach the bloodstream through patent vessels and lead to systemic infection and severe complications.
- The incidence in developed countries is low and is estimated to be less than 1%.



RISK FACTORS:

- The risk maybe six times for Infants delivered at home than for hospital birth.
- OTHER RISK FACTORS INCLUDE :
- LBW -PROM
- Umbilical Catheterization
- Improper cord care. (Applied unhygienic substance).



COMMON PATHOGENS:

- *S. aureus* ,group A Streptococcus , GBS ,Gram negative bacillus , including Ecoli, Klebsiella, and Pseudomonas.
- Polymicrobial infection may occur.
- Anaerobic bacteria, especially in Infants born to mothers with chorioamnionitis.

CLINICAL PRESENTATION:

- ▶ Purulent discharge from the umbilical stump with surroundings erythema, induration , tenderness.
- ▶ foul smelling drainage is suggestive of anaerobic bacteria.

Sever infection with systemic signs including :

- ▶ fever
- ▶ Lethargy , irritability
- ▶ poor feeding



COMPLICATIONS:

- Involvement of the abdominal wall.
- Necrotizing fasciitis.
- Peritonitis -intra abdominal abscess - suppurative thrombophlebitis of portal or Umbilical veins , Umbilical hernia with bowel ischaemia.

DIAGNOSIS:

- Gram stain from purulent discharge.
- Blood Culture-, CSF Culture in Infants with systemic illness. (Fever,-lethargy- irritability).



TREATMENT:

- broad spectrum parenteral antibiotics typically an anti staphylococcal penicillin and an aminoglycoside for gram positive and gram negative organisms.
- If the community prevalence of methiciline resistance *S.aureus* is high, vancomyc should be used.
- The addition of clindamycin or metronidazole may be considered for anaerobic involvement with foul - smelling discharge or if there is history maternal chorioamnionitis
- For uncomplicated case, duration of treatment is typically 10 days.


A switch to oral therapy for completion of course of treatment may be considered, depending on the patient's age, Culture result, and clinical response.

PREVENTION OF OMPHALITIS:

- involves both clean delivery services and hygienic cord care. The Umbilical cord should be cut with clean hands , using a sterile blade or scissors.
- Application of antiseptics may be beneficial for Infants in resource-poor countries where the risk for omphalitis and associated complications is high and some traditional unhygienic cord practice continue.

CANDIDIASIS

- ▶ candidiasis species are commensal organisms commonly found in the gastrointestinal and female genital tracts.
- ▶ Roughly, one- third of health care workers in intensive care unit test, positive for candida on routine surveillance culture.
- ▶ up to 40% women are culture positive for candida at the time of delivery.
- ▶ candidiasis in the first 4 weeks of life is usually benign and is localized most often to the oral cavity (thrush) or the diaper area.

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- oral and gastrointestinal colonization with candida occurs before the development of oral candidiasis (thrush) ,or diaper dermatitis.
 - candida can be acquired through the birth canal or through the hands or breast of the mother.
 - nasocomial transmission in the nursery setting has been documented, such as transmission from feeding bottle and pacifiers.

Trush

- The lesion of trush are detectable as creamy white patches of friable material on the buccal mucosa, gums, palate, and tongue.

Cutaneous lesion:

- Consist of erythematous papules and vesicopustules that become confluent forming a moist, erosive, scaly dermatitis surrounded by satellite pustules.





Congenital cutaneous candidiasis

- is rare, and as a result of ascending infection from vaginal or cervical focus.

RISK FACTORS:

- foreign body in the uterus or cervix.
- premature birth
- history of vaginal candidiasis.



Affected infants usually have a wide spread eruption with pustules on the palms and soles, and occasionally nail dystrophy.

- in contrast to acquired cutaneous candidiasis, congenital candidiasis has lesions at non flexural sites.
- Distinctive yellowish-white papules on the Umbilical cord and placenta represents candida granulomas.
- candida albicans maybe demonstrable on histologic examination of this tissues and maybe cultured from the amniotic fluid.





Risk factors for Disseminated candidiasis include:

- prematurity (weight less than 1500 gr).
- being on a ventilator
- broad spectrum antibiotic use
- parenteral nutrition



DIAGNOSIS:

- is usually clinically or aided by identification of budding yeast spores on Gram stain or of spores and pseudo hyphae on a potassium hydroxide preparation.
- Growth of organism is rapid on sabouraud dextrose or mycosel agar.

TREATMENT:

Oral candidiasis: in the young infant is treated with a non absorbable Oral antifungal medication.

- Nystatin Oral suspension (100000 U/ml) is standard treatment (1ml every 6 hours) for a minimum of 10-14 days .
- Ideally treatment is continued for several days after lesion resolve.
- in severe Oral candidiasis if Nystatin Oral therapy is not effective, fluconazol (6mg/kg IV or orally once followed by 3 mg/kg IV/ po each day).

oral candidiasis in the breastfed infant is often:

- associated with superficial or ductal candidiasis in the mother's breast.
- Concurrent treatment of both the mother and infant is necessary to eliminate continued



TREATMENT of Candidal diaper dermatitis:

- is effectively treated with topical agents such as:
- 2% Nystatin ointment.
- 2% miconazol ointment.
- 1% clotrimazol cream.
- concomitant treatment with oral Nystatin to eliminate intestinal colonization is often recommended.

