The McMaster *at night* Pediatric Curriculum

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PGY-4

Management of the infant at increased risk for sepsis. Canadian Pediatric Society. Reaffirmed February 2016

Objectives

Medical Expert: Review presentation of neonatal sepsis

Scholar : Highlight most recent recommendations for management of neonatal sepsis

Health Advocate: Recognize importance of work up in neonatal sepsis

Neonatal Sepsis

- Neonatal sepsis causes significant proportion of perinatal morbidity and mortality
- Single most important organism that causes early onset neonatal sepsis is Group B streptococcus
- The initial signs of sepsis may be subtle
- The empiric treatment for an unwell neonate should start after the septic work up is sent
- If neonate is unstable, empiric treatment should start before lumbar puncture

Background

Neonatal sepsis is a clinical syndrome in an infant 28 days of life or younger, manifested by systemic signs of infection and isolation of a bacterial pathogen from the blood stream

Classification:
Early-onset sepsis: onset of symptoms before 7 days of age
Late-onset sepsis: onset of symptoms at ≥7 days of age

The Case

Myra is 1 week old baby girl with a history of fever for 1 day

What more do you want to know?

History

What would you ask?

History

- Born at 39 weeks gestational age
- Mother 28 y/o healthy with regular antenatal visits with normal ultrasound
- No maternal gestational diabetes, hypertension, infection or fever
- Serology protective
- GBS positive, mother received penicillin more than 4 hours before delivery
- Rupture of membranes 8 hours
- Assisted vaginal delivery via forceps
- Apgar scores 8 at 1 minute and 9 at 5 minutes
- No resuscitation at birth
- No postnatal hyperbilirubinemia or hypoglycemia
- Exclusively breast feeding, voiding and stooling

History

Review of Systems:

- Irritability, fussiness, lethargy
- Nasal congestion, cough, difficulty breathing
- No pauses in breathing
- Poor feeding, refusing to feed
- No Skin rash
- No Vomiting or diarrhea
- No Abnormal color or smell of urine
- No Abnormal movements of eyes or limbs

Family/Social history:

- Contact with sick family visitor
- No Travel

Physical Exam

What would you look for?

Physical Exam

- Myra looks tired and sleepy
- T 38.5 C, HR 170, RR 50, O2 Sat 96% in room air, weight 4.3 Kg
- No jaundice
- Capillary Refill <3 seconds, mucous membranes wet
- No nasal congestion
- No subcostal or intercostal retractions, good air entry bilaterally, no crackles.
- Abdomen soft, non-distended, no hepato-splenomegaly, good bowel sounds
- Anterior fontanel flat, good tone, good sucking, grasp and moro reflex

Workup

What would you order?

Workup

- CBC with differential, calculate I/T Ratio
- CRP
- Urine R and M
- Urine culture
- Blood culture
- CSF culture and gram stain, glucose, protein, cell count and virology
- Electrolytes, urea, creatinine

Differential Diagnosis

Systemic viral, fungal, parasitic infections
Temperature instability
Respiratory distress syndrome
Congenital cardiac defects
Encephalopathy
Maltreatment
Inborn error of metabolism
Electrolyte imbalances
Prematurity

Sepsis Mimics

- **Dehydration**
- **Hypoglycemia**
- **Hypothermia**
- **Too much bundling!**

Etiologic Agents

Bacterial	Non-Bacterial
Group B Streptococcus	Herpes simplex virus
E Coli	Enterovirus
Klebsiella	Parechovirus
Listeria monocytogenes	Candida
Staph Aureus	
Coagulase- negative staphylococci	
Enterococcus	
Enterobacter	

Sepsis Mimics

- Dehydration
- Hypoglycemia
- Hypothermia
- Too much bundling!

Treatment

- Empiric Antibiotics!
- Ampicillin and gentamycin IV
- If all cultures negative and baby is well clinically may discontinue antibiotics after 48 hours.

Test Your Knowledge

- **A 4 days old term baby boy presents with documented axillary fever of 38.5 C. There were no antenatal risk factors. Mother's GBS was unknown. He has been voiding and stooling well. On examination, looks tired, afebrile in ER. Work up will include:**

A. CBC, differential
B. Blood, urine culture
C. CSF culture, cell count, protein, virology
D. All of above

The Answer

- All of above!

Summary

- Neonatal sepsis is a clinical syndrome in an infant 28 days of life or younger, manifested by systemic signs of infection and isolation of a bacterial pathogen from the blood stream
- A full septic work is required
- Empiric antibiotics should be started in all neonates with a query of sepsis
- The antibiotics may need to be modified according to the identification of the organism and the sensitivity report
- The duration of treatment depends upon the organism isolated and the whether there was accompanying meningitis


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