

FEBRILE INFANTS IN THE EMERGENCY ROOM

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EMERGENCY ROOM ROTATION
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CASE 1

A 6 week old boy is brought to the ER by his parents for fever (100.9 rectal) and fussiness since 8 hours prior to arrival. He has mild runny nose with clear secretions, feeds well and has no cough or diarrhea.

His birth history: Spontaneous vaginal delivery at 37 weeks, BW 2.95 kg with no perinatal complications. Maternal labs were negative. Vitals: Temp 101 HR125 RR 26 BP 75/54. He is well appearing.

A full sepsis evaluation is done and you decide that the infant is at low risk for a serious bacterial infection and he is discharged home.

Which of these parameters would best define an infant at low risk for Serious Bacterial Infection?

1. Well appearing, a focal infection, WBC: < 10,000/mm³ ,UA: < 10 WBC/ HPF , CSF: < 8 WBC/mm³
2. Well appearing, no focal infections, WBC: < 15,000/mm³ ,UA: < 10 WBC/ HPF , CSF: < 8 WBC/mm³, postnatal antibiotics
3. Well appearing, no focal infections, WBC: < 15,000/mm³ ,UA: < 10 WBC/ HPF , CSF: < 8 WBC/mm³, no postnatal antibiotics

Answer

1. Well appearing, a focal infection, WBC: < 10,000/mm³ ,UA: < 10 WBC/ HPF , CSF: < 8 WBC/mm³
2. Well appearing, no focal infections, WBC: < 15,000/mm³ ,UA: < 10 WBC/ HPF , CSF: < 8 WBC/mm³, postnatal antibiotics
3. Well appearing, no focal infections, WBC: < 15,000/mm³ ,UA: < 10 WBC/ HPF , CSF: < 8 WBC/mm³, no postnatal antibiotics

Discussion

Different low-risk criteria for Serious Bacterial Infections in febrile infants are available but the most commonly used are the Philadelphia, Rochester, and Boston criteria. The Rochester criteria include neonates, while the Philadelphia and Boston criteria do not. All criteria include the well appearing infant with no focal infection but the laboratory parameters may vary. See the following table.

Table 3. Most Common Low-Risk Criteria For Management Of Febrile Young Infants

Criterion	Rochester Criteria ⁷ (0-60 days of age)	Philadelphia Criteria ^{9,45} (29-56 days of age)	Boston Criteria ⁸ (28-89 days of age)
History and physical examination	<ul style="list-style-type: none"> • Full-term • Normal prenatal and postnatal histories • No postnatal antibiotics • Well appearing • No focal infection 	<ul style="list-style-type: none"> • Well appearing • No focal infection 	<ul style="list-style-type: none"> • No antibiotics within preceding 48 h • No immunizations within preceding 48 h • Well appearing • No focal infection
Laboratory parameters (defines low risk)	<ul style="list-style-type: none"> • WBC: 5000-15,000/mm³ • Absolute band count: < 1500/mm³ • UA: ≤ 10 WBC/ HPF • Stool: ≤ 5 WBC/ HPF on smear* 	<ul style="list-style-type: none"> • WBC: < 15,000/mm³ • Band: total neutrophil (I:T) ratio < 0.2 • UA: < 10 WBC/ HPF • Urine: Gram stain negative • CSF: < 8 WBC/mm³ • CSF: Gram stain negative • Chest x-ray: no infiltrate* • Stool: no blood, few or no WBCs on smear* 	<ul style="list-style-type: none"> • WBC: < 20,000/mm³ • UA: <10 WBC/ HPF • CSF: < 10 WBC/mm³ • Chest radiograph: no infiltrate*
Treatment for high-risk patients	Hospitalize + empiric antibiotics	Hospitalize + empiric antibiotics	Hospitalize + empiric antibiotics
Treatment for low-risk patients	<ul style="list-style-type: none"> • Home • 24-h follow-up required • No empiric antibiotics 	<ul style="list-style-type: none"> • Home, if patient lives within 30 min of the hospital • 24-h follow-up required • No empiric antibiotics 	<ul style="list-style-type: none"> • Home, if caregiver available by telephone • Empiric IM ceftriaxone 50 mg/kg • Return for 24-h follow-up for second dose of IM/IV ceftriaxone
Performance of low-risk criteria	NPV: 98.9% (97.2-99.6)	NPV: 100% (99–100)	NPV: 94.6% (92.2-96.4)

*Obtained based on symptoms

Abbreviations: CSF, cerebrospinal fluid; HPF, high-power field; IM, intramuscular; IV, intravenous; NPV, negative predictive value; UA, urinalysis; WBC, white blood cell.

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CASE 2

A 14 day old febrile girl is transferred to the ER from her primary pediatric clinic with suspected Herpes Simplex Virus (HSV) meningitis. Her mother had no prenatal care and she is the product of a precipitated vaginal delivery at 39 weeks. HSV PCR testing is done and empiric acyclovir 20mg/kg/ every 12 hours is immediately started.

When should a physician have the highest suspicion for perinatal HSV transmission?
Choose the best answer.

When should a physician have the highest suspicion for perinatal HSV transmission? Choose the best answer

1. Unknown maternal history for HSV infection, vaginal delivery, presence of skin vesicles, less than 56 days old
2. Recurrent maternal HSV infections, vaginal delivery, absence of skin vesicles, less than 21 days old
3. Unknown maternal history for HSV infection, vaginal delivery, presence of skin vesicles, less than 21 days old
4. Recurrent HSV infections, vaginal delivery, vesicles on the skin, less than 56 days old

ANSWER

1. Unknown maternal history for HSV infection, vaginal delivery, presence of skin vesicles, less than 56 days old
2. Recurrent maternal HSV infections, vaginal delivery, absence of skin vesicles, less than 21 days old
3. Unknown maternal history for HSV infection, vaginal delivery, presence of skin vesicles, less than 21 days old
4. Recurrent maternal HSV infections, vaginal delivery, vesicles on the skin, less than 56 days old

Vesicular lesions on scalp of an 11 day old



Vesicular lesions of the eye



DISCUSSION

The highest risk for perinatal acquired HSV occurs in neonates born to mothers with a first episode primary HSV infection at the time of delivery. The infection may have been subclinical, so the mother may not know she had HSV when the baby presents to the ED.

A mother with recurrent HSV may transmit the infection to her newborn, but the risk is much lower due to passage of protective Ig G antibodies across the placenta. Cesarean delivery also reduces transmission. HSV encephalitis is more common in infants less than 21 days old with the highest prevalence at 14 days.

The skin should be evaluated for vesicles, though up to 40% of neonates with the severe types of HSV will not have vesicles on their skin.

References

- ❖ Paul L. Aronson. Evaluation of the febrile infant. Pediatric Emergency Medicine Practice of February 2013 Volume 10, Number 2. 1-20 www.ebmedicine.net
- ❖ Purcell K, Fergie J. Lack of usefulness of an abnormal white blood cell count for predicting a concurrent serious bacterial infection in infants and young children hospitalized with respiratory syncytial virus lower respiratory tract infection. *Pediatr Infect Dis J.* 2007 Apr;26(4):311-5. PubMed.

References

- ❖ Paula W. Annunziato, MD and Anne Gershon, MD. Herpes Simplex Virus Infections. Pediatrics in Review 1996 Dec;17(12):415-23

THANK YOU