1. “The neonate had a fever, but he was so well appearing, I couldn’t justify doing the full sepsis workup. There was little chance he had a serious infection.” The febrile neonate is at high risk for an SBI; nearly 1 in 5 febrile neonates will have an SBI. This rate of infection is too high to defer testing in this age group. The well-appearing febrile young infant aged 29 to 56 days is also at risk for an SBI, with 8.8% of these patients testing positive for an SBI in a study by Baker et al.6

2. “The baby was bundled, so we thought the rectal temperature of 38°C was probably environmental and that we didn’t need to perform the sepsis workup.” While temperatures can be falsely elevated from excessive external heat, the febrile young infant is a high-risk population, and a rectal temperature of 38°C should be assumed to be true and the full sepsis workup performed. It is unclear how to manage infants with fever by axillary or ear thermometers, which are less accurate than rectal thermometers. The guiding principle is that, due to the high incidence of SBI in this age group, strong consideration to performance of the full sepsis workup should be given.

3. “The febrile baby was 61 days old, which was beyond the upper age limit of both the Philadelphia and Rochester criteria. We didn’t have to do any testing.” The Boston criteria extend the upper age limit for performance of the full sepsis workup through 89 days. While the Philadelphia and Rochester criteria have upper age limits of 56 and 60 days, respectively, the febrile young infant does not become low risk for SBI when he becomes 61 days old. The incidence of UTI is still high, and, at minimum, a urinalysis and urine culture should be performed. Consideration should be given to performance of a CBC and blood culture, and, if the infant is ill-appearing or has a high serum WBC, CSF studies should be ordered.

4. “The CBC was normal in the ill-appearing febrile young infant, so the risk of meningitis was very low, and I didn’t perform the lumbar puncture.” In a retrospective study of 5353 febrile infants aged 3 through 89 days, 22 of whom had bacterial meningitis, the WBC was normal (between 5000 and 15,000 WBC/mm3) in 41% of patients with meningitis.65 The CBC alone is not an adequate screen for meningitis in this age group; therefore, a lumbar puncture should be performed.

5. “The urinalysis, CBC, and CSF cell count were all normal in my febrile 10-day-old patient, so he met the low-risk criteria. I felt comfortable sending him home for his pediatrician to follow up the cultures.” The low-risk criteria do not perform as well in neonates, as demonstrated by 2 retrospective studies that showed a lower NPV of the criteria in neonates, with potential to falsely classify up to 1 in 10 febrile neonates as low risk. Therefore, neonates should be admitted on empiric antibiotic therapy pending culture results.

6. “While the 40-day-old febrile baby was very fussy on my examination, the laboratory tests were normal, so he met the low-risk criteria, and I discharged him home.” All the low-risk criteria require the baby to be well appearing on physical examination. Even with normal laboratory studies, if the infant is ill appearing or has a focal infection, the baby should be hospitalized on empiric antibiotic therapy.

7. “The mother denied any history of HSV, so her 12-day-old baby who looked ill likely had a bacterial infection and did not have neonatal HSV.” The highest risk for transmission of neonatal HSV is to babies born to mothers who have a primary infection at the time of delivery. The infection may be subclinical, so the mother may not know she had HSV when the baby presents to the ED. While the incidence of neonatal HSV is low, HSV testing and empiric acyclovir therapy should be performed in the ill-appearing, hypothermic, or seizing neonate or in the presence of vesicles.
8. “Acyclovir is a toxic drug, so we waited for HSV testing to result in 24 or 48 hours before starting acyclovir therapy.” In the landmark neonatal HSV therapy study by Kimberlin et al, the only adverse effect directly attributed to acyclovir was transient neutropenia. Elevated creatinine and low hemoglobin occurred in the sickest babies with disseminated HSV infection, so the abnormalities were possibly related to the HSV and not to the acyclovir. Additionally, in a retrospective study by Shah et al, each day’s delay in acyclovir initiation was associated with increased mortality in neonates with HSV. Therefore, empiric acyclovir therapy should accompany HSV testing in the neonate.

9. “I checked a bag urine sample in my febrile 70-day-old patient. The urinalysis was negative, so I didn’t perform a catheterization for urine culture.” In infants aged = 90 days, the urinalysis is not as sensitive as in older infants and children, with a cross-sectional study by McGillivray et al reporting a sensitivity of 77% (95% CI, 54% to 100%) for urinalysis from bagged specimens in this age group. The American Academy of Pediatrics' 2011 UTI clinical practice guideline recommends that catheterized or suprapubic aspiration be utilized to obtain both urinalysis and urine culture in febrile children age 2 to 24 months in whom UTI is being evaluated.

10. “The neonate was in shock. I gave antibiotics, which should have treated the sepsis.” While bacterial sepsis is a likely diagnosis in the neonate in shock, other etiologies include neonatal HSV, ductal-dependent congenital heart disease, and inborn errors of metabolism. In addition to antibiotic therapy and hemodynamic support, consideration should be given to initiation of acyclovir therapy, prostaglandin infusion, and testing with an ammonia level.
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