### Risk Management Pitfalls For Herpes Simplex Virus Infections

1. “The mother of the ill-appearing 15-day-old infant did not have a history of herpes, so the infant most likely has a bacterial infection rather than neonatal herpes.”
   Almost two-thirds of women who acquire genital herpes during pregnancy are asymptomatic and have no clinical findings to suggest genital HSV infection, as they have never had an HSV outbreak, nor have their partners had an outbreak. 28,29,39,122

2. “The lumbar puncture was not bloody, so the patient probably does not have HSV.”
   While the presence of red blood cells and xanthochromia on a lumbar puncture may be seen on CSF studies in patients with HSV encephalitis or CNS involvement, 5% to 10% of patients have normal CSF studies. Red blood cells in the CSF is not a feature of neonatal infection, even with CNS involvement. 27 PCR should be completed on the CSF of all patients suspected of having HSV encephalitis or CNS involvement. 53 In most cases of herpes with CNS involvement, patients have either an elevated CSF white blood cell count or elevated CSF protein level, which may heighten the emergency clinician’s suspicion for CNS herpes infection. 74

3. “The 3-day-old infant had pustules on the skin, so he probably has neonatal herpes.”
   The presence of pustules on an infant does not necessarily mean the patient has HSV. Pustular melanosis and erythema toxicum are both benign pustular eruptions that can mimic HSV.

4. “The baby was born via cesarean delivery, so herpes does not need to be ruled out.”
   While cesarean delivery has successfully reduced the number of neonatal herpes cases, HSV may be transmitted to an infant despite cesarean delivery.

5. “I did not see any dendrites on the fluorescein examination, so the patient does not have ocular herpes.”
   All patients who are suspected of having ocular herpes should be evaluated by an ophthalmologist. Findings may be subtle, and those with expertise in the evaluation of the cornea should be involved when there is any clinical concern for ocular HSV infection.

6. “The child had swelling and pain near the fingertips, so I performed an incision and drainage.”
   Routine incision and drainage is not recommended in patients with herpetic whitlow. Herpetic whitlow is a self-limited disease. Vesicles may be unroofed to help relieve symptoms, but deep incisions should be avoided.

7. “No lesions are visible on the external genital examination, so the patient does not have a herpes outbreak.”
   Patients with herpes outbreaks may not have lesions visualized on external examination. If lesions are not noted, a pelvic examination should be performed to evaluate for the presence of cervical lesions.

8. “The Tzanck prep was negative on the skin lesion of the 15-day-old infant, so HSV was ruled out.”
   While the Tzanck prep may be a relatively reliable test for cutaneous lesions, it does not definitively rule out neonatal herpes. If suspicion is high for neonatal herpes infection, infants require the following testing: (1) CSF for indices; (2) HSV PCR and bacterial culture; (3) viral culture swabs from the base of any vesicles as well as swabs from the mouth, conjunctiva, nasopharynx, and rectum; (4) HSV PCR on whole blood; and (5) LFTs.

9. “The CT scan on the febrile teenager with altered mental status was negative, so HSV PCR does not need to be sent on the CSF.”
   CT scans are less sensitive than MRI, but they may show changes (such as edema and hemorrhage) in patients with herpes encephalitis. However, early in the illness, CT and MRI may be normal, so clinical suspicion should guide management and workup.

10. “LFTs are not part of the routine sepsis rule-out. They play no role in the evaluation of febrile infants.”
   Elevation of serum aspartate transaminase levels > 10 times normal have been associated with increased mortality in neonates with disseminated herpes. 27,32,76 Elevation of LFTs have been noted in neonates with disseminated HSV75,77 and LFT levels may serve as a screening tool for disseminated disease in those infants undergoing a sepsis rule-out.
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