Anesthetic Considerations for Neuraxial Anesthesia in Pregnant Patients With Pityriasis Rosea With Skin Lesions Covering the Lumbar Spine

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Pityriasis rosea (PR) is an acute exanthematous skin disease that is likely due to reactivation of human herpesviruses (HHVs) 6b and 7. In contrast to herpes simplex and zoster (alphaherpesviruses), HHV-6b and -7 (betaherpesviruses) are not found predominantly in skin lesions. This difference in virion location may decrease the possibility of causing central nervous system infection through skin contamination, but the risk for hematogenous spread likely remains the same. This article uses the first-known epidural placement through active PR to illustrate risk–benefit considerations when deciding between neuraxial and general anesthesia for obstetric patients with PR. (A&A Case Reports. 2016;7:165–8.)

Pityriasis rosea (PR) is an acute, self-healing, disease of the skin that commonly covers the trunk and proximal extremities. The prevalence of PR for persons aged 10 to 29 years is 0.6%,[1] with higher rates suspected during pregnancy.[2] A search of the Cochrane Central Register of Controlled Trials, PubMed, and Google Scholar yielded 2 studies evaluating neuraxial anesthesia in the setting of local skin infection. These 2 studies were specific to tinea versicolor[3,4]; therefore, there is a paucity of literature to guide the anesthesiologist on how to manage parturients with active PR. The following case describes the difference in virion location between alpha- (herpes simplex and herpes zoster) and betaherpesviruses (HHV-6b and -7-probable agents responsible for PR) with potential implications on patient informed consent and risk–benefit analysis between neuraxial and general anesthesia in the obstetric population.

Written informed consent for the publication of this case report was obtained from the patient.

CASE DESCRIPTION

A 35-year-old (G3P2002) parturient at 39 weeks and 2 days gestation and a history of 2 previous cesarean deliveries presented with painful contractions and a 2-week-old dermatology confirmed diagnosis of PR. She was a practicing internal medicine doctor and otherwise healthy. The patient was afebrile with a normal leukocyte count and asymptomatic other than pruritus—for which she was liberally applying a steroid cream. Physical examination revealed numerous scattered, scaly, lightly erythematous thin papules distributed along skin relaxation lines over the abdomen and thorax with sparing of the distal extremities (Figure 1). Significantly, the entire lumbar spine was covered with lesions necessitating that any attempt at neuraxial anesthesia would require needle puncture through an area of erythema and either through or very close to a papule.

On the day of the patient's scheduled cesarean delivery, she was determined to be contracting regularly, albeit without cervical change. Because of her history of cesarean deliveries, the obstetric team indicated that she would require a semiurgent cesarean delivery and that waiting for her PR to wane was not an option. At our institution, the standard of practice for scheduled cesarean deliveries is neuraxial anesthesia, typically spinal anesthesia. Significantly, the patient's L2–L3 and L3–L4 interspaces were covered in a rash

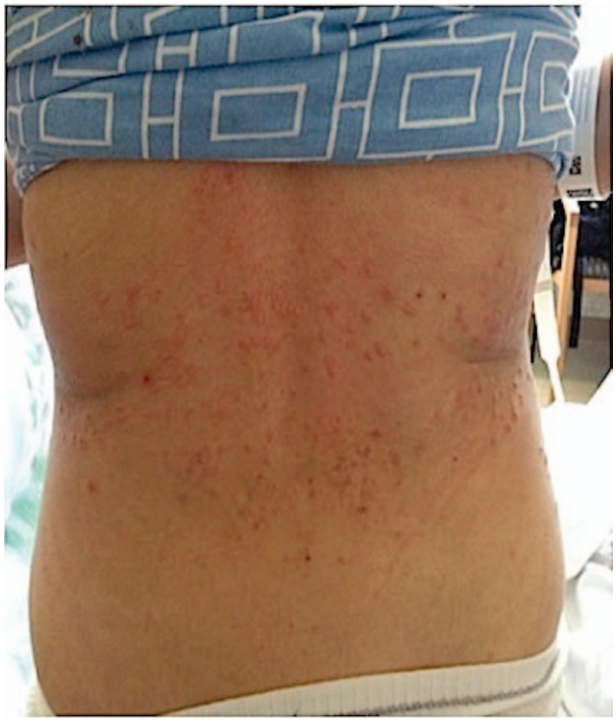

Figure 1. Photograph showing numerous scattered, scaly, lightly erythematous papules distributed symmetrically over the relaxation lines on the patient's back.

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clinically diagnosed by dermatology to be PR. A risk–benefit analysis was performed with the patient, a dermatologist, and the infectious disease team to weigh the unknown risk of viral encephalitis or meningitis against the well-documented maternal and fetal safety benefits and early bonding benefits allotted by regional anesthesia. After a thorough discussion, the patient elected for an epidural anesthetic and a plan was made for prolonged neurologic monitoring. After sterile skin preparation, the patient had an uneventful epidural placement at the L4–L5 interspace. An Arrow FlexTip catheter (Arrow International, Inc, Reading, PA) was inserted, and a 3-mL 1.5% lidocaine with 1: 200 000 epinephrine test dose was given. The epidural catheter was then bolused to a T4 dermatome with 20 mL of 2% lidocaine with 1:200 000 epinephrine in 5-mL increments. A healthy baby was delivered in the operating room. The patient's postoperative course was uneventful and weeks later the rash resolved—a duration of infection consistent with the diagnosis of PR. No neurologic or infectious sequelae are known to have occurred with 19-month follow-up.

DISCUSSION

PR is an acute, self-healing, disease of the skin that begins with the appearance of a singular oval-shaped pink lesion (the herald patch) followed by the eruption of numerous thin papules that spread symmetrically over the trunk in a distribution often referred to as a "Christmas tree" pattern (Figure 2).[5] PR is reported to last between 2 weeks and 5 months, with a median duration of 45 days.[6] Common symptoms associated with PR include general malaise, fever, headache, nausea, pruritus, arthralgias, and loss of appetite. Potential treatments include topical steroids, oral antihistamines, acyclovir, and, when the disease is severe, phototherapy. PR most commonly occurs between the ages of 10 and 35 years with a slight female predominance; thus, it is not surprising that PR is frequently seen in the obstetric population.[7]

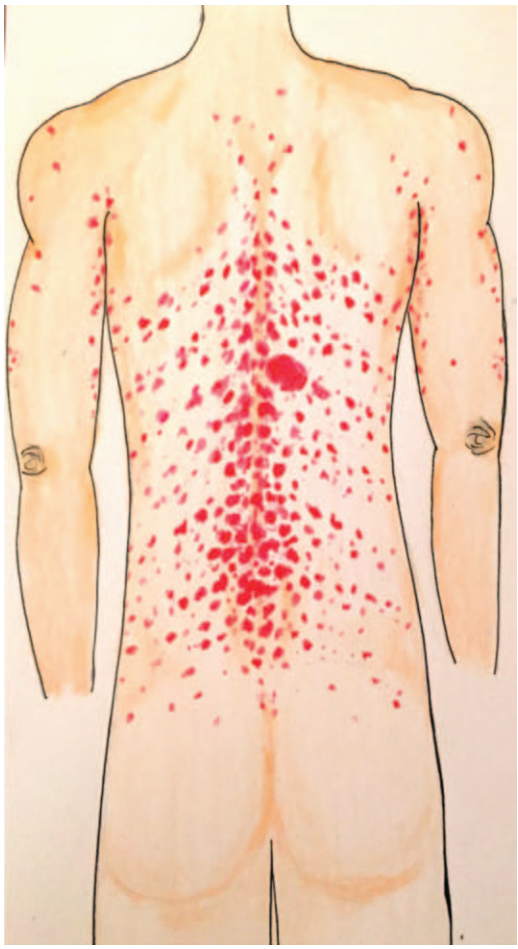

Figure 2. The characteristic "Christmas tree" distribution of PR papules with herald patch. Original illustration by Allyson Werntz, JD.

According to recent Centers for Disease Control and Prevention data, 1.2 million cesarean deliveries were performed in the United States in 2013 (32% of all deliveries).[8] Most of these patients will undergo neuraxial anesthesia including spinal, epidural, or combined spinal–epidural anesthesia. Active alphaherpesvirus infection (HHV-1 and -2 [herpes simplex] and HHV-3 [zoster]) at the potential site of needle insertion is a strong contraindication to neuraxial anesthesia because of concern that the intrathecal or epidural space could be seeded with virions. As the etiology for PR was until recently unknown, patients with PR, a β-betaherpesvirus infection, were treated the same as patients with active alphaherpesvirus infection.

Although the disease of PR is not completely understood, new science suggests that it is a viral exanthema associated with reactivation of HHV-6b or HHV-7. The seroprevalence of HHV-6b and HHV-7 in the healthy adult population is 80% to 90% as most infants are infected with roseola by the age of 2 years.[6] Several characteristics of PR seem to point to a viral origin: outbreaks commonly occur in clusters, recurrence is rare suggesting long-lasting immunity, and over half of all patients with PR report a recent upper respiratory tract infection.[9] Viral DNA particles in plasma are a well-known indicator that there is viral replication and thus active infection.[6] Multiple studies have shown that HHV-6b and HHV-7 DNA can be isolated from the plasma of patients with active PR but not from healthy controls or patients with other inflammatory skin conditions.[6,10–12] Furthermore, mRNA and antigens for HHV-6b and HHV-7 (evidence for viral reproduction) can be isolated from skin lesions from patients with active PR but only rarely in control patients.[6,12] Last, Broccolo et al[11] was able to correlate systemic symptoms from PR with peripheral blood mononuclear cell HHV-6b and HHV-7 viral loads.

Betaherpesviruses, such as HHV-6b and HHV-7, are found predominantly in circulating CD4+ white blood cells.[13–15] When transmission electron microscopy and in situ hybridization were used to examine skin with signs of active PR, no herpes virions could be found.[12] This led Watanabe et al[12] to conclude: "skin lesions of PR are not due to direct infection of skin cells, but rather occur as a reactive response to systemic viral replication." These findings are in contrast to alphaherpesvirus (eg, herpes simplex and herpes zoster), which replicate in epithelial cells during active infection.[16,17] This difference in virus location is consistent with mode of transmission because PR is not generally thought to be spread by direct contact, while varicella zoster and herpes simplex can be contracted by touching skin lesions.[18,19] Thus, the potential to seed deeper structures (epidural or intrathecal space) with virion from the skin

when needling the back may be less for betaherpesviruses than for alphaherpesviruses based on a lower viral load in epithelial cells.

Although the risk for seeding the central nervous system (CNS) with virions from the skin may be less for patients with PR than active alphaherpesvirus infection, the risk for seeding the CNS with virions from the blood may not be different. Virions have been found in the blood in primary herpes simplex infection,[20] in acute herpes zoster,[21] and in active PR.[11,12] There are examples of uncomplicated needle placement into the epidural and intrathecal space in patients with bacteremia,[22,23] human immunodeficiency virus (HIV),[24] and acute lymphoblastic leukemia (ALL).[25] However, these scenarios are quite different from the situation of placing an epidural in a parturient with HHV-6b or -7. Systemic antibiotics can rapidly cause blood and cerebrospinal fluid (CSF) bacterial concentrations to decline within hours of administration,[26,27] while antiviral medications have not shown efficacy against HHV-6b and -7.[28] Introducing HIV into the CNS is not as great a concern as introducing HHV-6b or -7 into the CNS because HIV RNA is already present in the CSF in up to 95% of untreated patients.[29] Furthermore, the HIV viral load in blood and CSF can be dramatically reduced by highly active antiretroviral treatment.[29] Lastly, the potential benefit of preventing or treating CNS ALL is far greater than the potential benefit of avoiding labor pain or general anesthesia in a parturient. Thus, the ability to mitigate risk and the potential benefits of neuraxial access in the aforementioned scenarios are quite different from the scenario of the parturient with PR. To this extent, there is not a good precedent for safe neuraxial placement in patients with PR. Parturients with PR likely have the same risk of potentially catastrophic meningitis or encephalitis from blood to CNS transmission as patients with active alphaherpesvirus infection.

Despite the fact that the standard of practice anesthetic for cesarean delivery at our institution is a spinal anesthetic, we chose to place an epidural. An epidural was chosen over a spinal to minimize the risk of HHV-6b or HHV-7 virion entry into the CSF. In 2006, Gorniak et al[30] was able to correlate new-onset anterograde amnesia in 4 immunocompromised patients with HHV-6 CSF DNA and T2 prolongation on MRI (a finding consistent with virally induced cytotoxic edema) in the medial temporal lobes (an area known to be important for the processing of memory) leading the authors to conclude that these patients had HHV-6 limbic encephalitis. Furthermore, through the California Encephalitis Project, Yao et al[31] found increased levels of HHV-6 IgG and IgM in patients with encephalitis compared with other neurologic diseases. Yao et al[31] also found cell-free HHV-6 DNA (associated with active infection) in 40% of encephalitis patients compared with 0% of cohort compared nonencephalitis patients with various types of neurologic disease. It follows that HHV-6 may be associated with encephalitis, because such introduction of HHV-6 and possibly HHV-7 into the CNS can be devastating and life threatening. Thus, one should proceed cautiously in patients with PR avoiding neuraxial anesthesia unless there is a significant risk associated with general anesthesia. If neuraxial anesthesia is chosen, a high index of suspicion for catastrophic neurologic or infectious sequelae must be maintained.

In conclusion, PR is a disease common in women of childbearing age with a higher frequency in pregnancy than in the general population.[7] As there is mounting evidence that PR results from the reactivation of HHV-6b and HHV-7 (betaherpesviruses not found in the skin), the risk of seeding the CNS from skin virions when performing a neuraxial block may be lower for patients with PR than for patients with alphaherpesvirus infection. This has not been previously reported. Despite this potential difference in risk for introducing virus from the skin, there is likely no difference in risk for introducing virus from the blood. Thus, extreme caution and restraint must be exercised when considering neuraxial placement in a patient with PR. In our opinion, it should only be considered in situations where general anesthesia carries an extremely high risk (eg, parturients for cesarean delivery with known difficult mask ventilation and intubation) and the patient demonstrates a true understanding of and willingness to accept the potential for catastrophic complications. Our patient, a practicing internal medicine physician that greatly desired neuraxial anesthesia for her cesarean delivery, has remained complication free but continues to have a high index of suspicion for sequelae from the procedure.

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