Think the Worst With Neonatal Vesicles, Pustules

BY SHERRY BOSCHERT
San Francisco Bureau

SAN FRANCISCO — When pediatricians call in dermatologists to assess neonatal vesiculopustular eruptions, what they're really asking is, "Could it be herpes?" said Dr. Ilona J. Frieden.

Think of the neonate as an immunocompromised host, and consider the worst possible diagnosis, she advised at a meeting sponsored by Skin Disease Education Foundation.

Think of infection first, but don't stop there, because more than 25 other conditions can cause vesicles and pustules on the skin. "This is something that pediatricians call us about most often—children who have vesiculopustular eruptions," said Dr. Frieden, professor of dermatology and pediatrics at the University of California, San Francisco.

Herpes simplex virus infection in neonates is rare but devastating. The lesions can look like typical herpes lesions in older patients, or can have a more fragile-looking pustule because baby skin is thinner, "an almost impetigo-like look," she said. Commonly, neonatal herpes lesions are on the scalp, buried in hair and hard to see. Widespread erosions of the skin may be seen in infants born with intrauterine herpes infection.

The initial findings of neonatal herpes, however, tend to be nonspecific, such as temperature instability, lethargy, and a little regurgitation of breast milk or formula. These symptoms, plus metabolic acidosis and tachycardia or tachypnea, are signs and symptoms of neonatal sepsis. "Not so much high fevers—that would be quite unusual—but temperature instability," Dr. Frieden said.

More benign causes of pustular eruptions that can be confused with herpes include erythema toxicum or transient pustular melanosis. These occur only in term infants, not preterm. Transient pustular melanosis usually appears on the first day of life, while erythema toxicum tends to appear in the first 5 days, she said. Later lesions are more likely to be something else.

Erythema toxicum lesions tend to be migrating rather than fixed, Dr. Frieden noted. A noninflamed base is characteristic of transient pustular melanosis.

Pruritic papules and pustules in newborns also can be caused by eosinophilic pustular folliculitis, "which is a pretty uncommon condition," she added.

Langerhans cell histiocytosis can produce multiple crusted lesions, papules, and pustules. "The clue is these kinds of roundish pustular lesions," she said. This disease can become more indolent or aggressive later in life.

Other skin problems can also be cause for neonatal emergencies, Dr. Frieden added. Small purpuric lesions on a neonate—sometimes called a "blueberry muffin baby"—may be caused by dermal erythropoiesis (the presence of blood cells in the skin because they're not being produced in bone marrow). "These are very stingy blueberries, typically. You're not looking for big, plump blueberries. They are teeny blueberries, almost more like currants in the skin," she explained.

The lesions may be caused by congenital infection, hemolytic disease of the newborn, or neoplastic-infiltrative diseases such as congenital leukemia. Among infections, the most common cause of "blueberry muffin" babies is cytomegalovirus, but any infection can be the cause, including parvovirus, enteroviruses, rubella, and more. In this case, biopsies and a full evaluation are urgent, Dr. Frieden said.

Newborn skin that is extremely fragile or falling off also needs immediate care to dress the wound.

Apply a topical antibiotic sparingly and petrolatum thickly, add Vaseline gauze (not Xeroform, which doesn't stick to newborn skin), wrap it all in Kerlix for padding and top it off with a stockinette instead of tape to minimize trauma, she suggested.

SDEF and this news organization are wholly owned subsidiaries of Elsevier. ■

Vaccination Technique, Adolescents' Weight Should Influence Choice of Needle Length

BY BRUCE K. DIXON
Chicago Bureau

CHICAGO — When immunizing adolescents, body weight and injection technique should guide the needle choice, according to a poster presented at the annual Interscience Conference on Antimicrobial Agents and Chemotherapy.

Using a needle that is too short may result in reduced immunogenicity and more adverse reactions to vaccines intended for intramuscular injection. Using a needle that is too long may strike bone and injure underlying neurovascular structures, Dr. Michael Koster said in an interview.

With use of the pinching technique on adolescents weighing 88-155 pounds, a 1-inch needle is appropriate. For adolescents less than 88 pounds, a shorter needle is best, said Dr. Koster, who conducted the study at Schneider Children's Hospital at North Shore in Manhasset, New York.

With use of the muscle-flattening technique, the longer needle likewise is recommended when body weight is 88-155 pounds, and the 5/8-inch needle is appropriate for adolescents weighing less than 88 pounds, said Dr. Koster, who is now a pediatric infectious disease fellow at Hasbro Children's Hospital in Providence, R.I.

The investigation included 141 participants aged 11-15 years, with 87% aged 12-13. Of the total, 28% weighed less than 88 pounds, while about 20% weighed more than 132 pounds.

The investigators recorded the adolescents' height, weight, and arm circumference, and conducted upper-arm ultrasonography during both muscle pinching and skin flattening of the participants' nondominant arms. These measurements were duplicated by a second investigator and averaged.

"When injecting someone [while using] the pinching technique, you increase muscle and subcutaneous tissue layers, in which case you'll want a little longer needle. When flattening, typically using the forefinger and thumb, you can go up to [a weight of] about 50 kilos [110 pounds] and be safe in terms of getting the vaccine into the muscle without striking bone," Dr. Koster said at the meeting, which was sponsored by the American Society for Microbiology.

The patient's body weight is a better predictor of required needle length than is arm circumference.

DR. KOSTER

As a general rule, with the pinching technique, a 1-inch needle is appropriate most of the time, and the shorter needle is appropriate only for patients who weigh less than 88 pounds.

With the flattening technique, the shorter length is appropriate only three-quarters of the time and only on patients weighing less than 110 pounds. "Independent of technique, it would be appropriate to use a 5/8-inch needle on subjects less than 88 pounds," he said.

Although females had a larger subcutaneous layer than did males of the same body weight, the difference did not result in the use of a different needle, Dr. Koster said, adding body weight was a better predictor of required needle size than was arm circumference.

The American Academy of Pediatrics Red Book makes needle length recommendations for adolescents only in terms of body weight and sex. For example, both sizes of needles are recommended for girls and boys who weigh less than 132 pounds. The 1-inch needle is recommended for girls who weigh 132-198 pounds and boys who weigh 132-260 pounds. The AAP recommends a 1½-inch needle for females over 198 pounds and males over 260 pounds. Only 2 of the 141 subjects were that heavy, and the data on these two still are being analyzed.

Previous data have suggested obese adolescents immunized with 1-inch needles develop lower hepatitis B virus (HBV) vaccine titer levels, versus those vaccinated with 1½-inch needles. Indeed, this seemed to be the case in a limited study of 24 obese subjects aged 14-24 years (J. Adol. Health 2006;38:101).

In that study, after randomization to 1-inch and 1½-inch needle groups, subjects (girls over 198 pounds and boys over 265 pounds) were given an HBV vaccination using a 0, 1-, and 4-month schedule. HBV surface antibody was obtained 2 months after the third vaccination, and data showed the final titer levels in the 1½-inch needle group were statistically significantly higher than those in the 1-inch needle group.

"I hope that adjustments are made in the 2009 Red Book to reflect our finding that optimal needle length is influenced by intramuscular injection technique," Dr. Koster said, adding that meningococcal conjugate vaccine, and human papillomavirus vaccine recently have been licensed and recommended for all adolescents in the United States. ■

CDC Panel Clarifies Pneumococcal Catch-Up Dosage Guides

ATLANTA — Healthy children between 2 and 5 years of age who have been incompletely vaccinated against pneumococcal disease should receive one dose of 7-valent pneumococcal conjugate vaccine, the Centers for Disease Control and Prevention's Advisory Committee on Immunization Practices voted at its fall meeting.

The panel also voted that children aged 24-59 months with underlying medical conditions who are incompletely vaccinated should receive two doses of 7-valent pneumococcal conjugate vaccine (PCV7) at least 2 months apart, unless they have already received three doses, in which case one dose should be given.

The definition of underlying conditions includes sickle-cell disease or related conditions, splenic dysfunction, HIV infection, immunocompromising conditions, chronic cardiac or pulmonary disease, cerebrospinal fluid leaks, and diabetes mellitus (MMWR 2000;49[RR-9]:1-38).

"The Work Group feels that simplifying and expanding the catch-up recommendation may improve PCV7 coverage among healthy, unvaccinated or incompletely vaccinated children aged 24-59 months, including immigrants and adoptees," said Dr. Pekka Nuorti of the CDC.

The catch-up recommendations could apply to a significant proportion of children, given that 32% of children aged 2-5 years have received fewer than four doses of PCV7, according to 2006 National Immunization Survey data. However, the majority of children (87%) have received at least three doses of the vaccine.

The ACIP vote passed 11-3, with panel members raising several concerns. Some questioned the extent of disease prevention that the change would provide and the cost-effectiveness of the recommendation. No formal cost-effectiveness analysis has been done, and panel members explained that the aim was just to clarify the existing recommendations. ACIP plans to revise its statement on pneumococcal diseases this year.

—Melinda Tanzola