# Design Vaccine by Serogroup Data?

**Meningitis** *from page 1*

2005, serogroups 22 (19%), 14 (11%), 18C (11%), and 3 (7%) were the most common.

When analyzed by serogroup, 7 of 11 serogroup 22 isolates (64%) were recovered in blood and cerebrospinal fluid from children with meningitis, reported Dr. Byington, professor of pediatrics at the University of Utah, also in Salt Lake City, and her associates. Serogroup 22 was more likely to be associated with meningitis (64% vs. 20%), with a relative risk of 3.8 compared with other non-PCV serotypes that caused meningitis (3, 7, 15, and 33). Sero-group 22 also was more often associated with meningitis than the PCV-7 vaccine serogroups 14, 19F, and 6B (64% vs. 42%), with a relative risk of 2.14.

**Serogroup 22 is not included in the licensed 7-valent conjugate vaccine or in higher-valent vaccines that are under investigation.**

The findings may be related to the fact that individual serotypes of *Streptococcus pneumoniae* have differing propensities to colonize and cause invasive disease, Dr. Byington said in an interview. "For example, in Utah, we have not documented a single pediatric isolate of serotype 1 that has resulted in colonization," she said. "Rather, all isolates of serotype 1 have been from children with invasive disease, specifically complicated pneumonia. As we continue our surveillance, we undoubtedly will learn more about serogroup 22 and its propensity to cause IPD."

Although meningitis cases nationally have declined significantly since the PCV-7 vaccine was approved, the trend was not significant in the Utah data.

Meningitis made up 20% of invasive pneumococcal disease cases in the prelicensure period (25/127) and 16% (27/173) in the postlicensure period, Dr. Byington and her associates reported. The gains experienced by the rest of the United States were not seen in Utah because prior to the introduction of PCV-7, Utah had a high proportion of invasive pneumococcal disease caused by nonvaccine serotypes, Dr. Byington explained, noting "This mismatch may then have allowed for more rapid serotype replacement than what has been seen in other parts of the U.S., including the emergence of serogroup 22."

It is hoped that these pneumococcal serogroup data may inform future vaccine design, Dr. Byington and her associates concluded. ■

# *Optic Neuritis After Varicella Often Resolves Spontaneously*

BY ROBERT FINN
*San Francisco Bureau*

A 6-year-old boy developed unilateral optic neuritis following a varicella infection, but the neuritis improved spontaneously with only symptomatic relief provided, investigators reported in the August 2007 issue of Pediatric Neurology.

Some clinicians advocate early steroid use for optic neuritis, but others say steroids might exacerbate the condition if there is direct viral invasion of the optic nerve, wrote Dr. Panagiotis K. Stergiou and colleagues from Hippokration General Hospital, Thessaloniki (Greece).

One week following a varicella eruption, the boy presented with severely decreased visual acuity and painful movement of his right eye; he was only able to count fingers for a counting test with that eye. The pupil was dilated and sluggishly reactive to light, and he had no color vision. His left eye was normal, with 20/20 vision (Pediatr. Neurol. 2007;37:138-9). Fundoscopic examination revealed edema of the right disk with opacification of the nerve fibers, venous engorgement, and a splinter hemorrhage at the margin of the disk. Visual-evoked potential measurements revealed abnormal responses in the right eye, while the left eye remained normal.

Clinicians prescribed only symptomatic relief with antipyretics, and the boy returned 4 weeks later with a visual acuity of 20/60 in the right eye. After 3 months there was further improvement to 20/40, but the right optic disk remained pale, the pupil did not react to light, and the boy's color perception remained poor.

The investigators noted optic neuritis is a rare complication of varicella. It often accompanies complications like acute transverse myelitis, encephalomyelitis, ataxia, and retinopathy. Pathogenesis is unknown. The condition may result from direct viral invasions or from an autoimmune mechanism.

Steroid treatment is usually contraindicated since the disease typically improves rapidly and spontaneously. However, steroids do seem appropriate in bilateral optic neuritis after chickenpox, they noted. ■

# In Neonates, CNS Herpes Diagnosis Can Prove Challenging

BY BRUCE JANCIN
*Denver Bureau*

Aspen, Colo. — A negative cerebrospinal fluid polymerase chain reaction test for herpes simplex virus does not rule out neonatal herpes with CNS involvement, Dr. April Palmer said a conference on pediatric infectious diseases sponsored by Children's Hospital, Denver, and the University of Colorado.

That's just one of several reasons why early diagnosis of neonatal herpes simplex virus (HSV) CNS disease can be so difficult. Another is that 30%-40% of affected babies don't have skin lesions, added Dr. Palmer of the University of Mississippi, Jackson.

In neonates, herpes encephalitis often involves both temporal and extratemporal areas of the brain. It can look in certain respects like bacterial or enteroviral meningitis, cytomegalovirus infection, syphilis, or toxoplasmosis, all of which are in the differential diagnosis.

The sensitivity of cerebrospinal fluid (CSF) polymerase chain reaction (PCR) for HSV in neonates is 75%-100%. The test is most likely to be negative early in the disease course, but it can remain falsely negative on repeat spinal taps as well. Still, PCR is a big improvement over CSF viral culture, which is positive in only about 40% of cases, she continued.

Blood PCR for HSV is useful in ruling in neonatal disseminated HSV infection, which includes CNS disease in 60%-75% of cases. However, blood PCR can't be used to rule out disseminated HSV because the test is sometimes falsely negative in this setting.

As in neonatal CNS herpes, up to 40% of neonates with disseminated HSV don't have skin lesions. They present with a septic picture that may be marked by liver failure, disseminated intravascular coagulation, and respiratory failure. One of the key points in making the diagnosis of neonatal disseminated HSV is the associated extreme elevation of liver enzymes; bacterial sepsis seldom entails such high liver transaminase levels, she said.

**Blood PCR for HSV can't rule out disseminated infection because the test may be falsely negative in this setting.**

**DR. PALMER**

For skin lesions the diagnostic test of choice remains viral culture, which is typically positive within several days if the lesions are fresh and the patient hasn't been treated with acyclovir. If the culture is still negative on day 5, it can be considered a negative result.

Symptoms of neonatal CNS HSV include seizures, lethargy, fever, tremors, irritability, temperature instability, poor feeding, and a bulging fontanelle. Affected babies most often present on days 16-19 of life; however, they can present anytime in the first 3 months. In contrast, neonatal disseminated HSV involving visceral organs almost always presents within the first 2 weeks of life, and disease limited to the skin, eyes, or mucous membranes typically appears on days 10-11.

In the pre–antiviral therapy era, one-third of neonates with HSV presented with CNS disease, compared with 17% today. Similarly, the proportion of neonates presenting with disseminated disease has been cut in half, compared with the 48% prevalence in the pre–antiviral therapy era.

The treatment recommended by the American Academy of Pediatrics for CNS or disseminated neonatal HSV is intravenous acyclovir at 60 mg/kg per day for 21 days.

It's a less than ideal therapy. In the landmark randomized trial that established high-dose acyclovir as the treatment of choice in neonatal CNS and disseminated herpes, only 31% of treated patients with CNS HSV were developing normally at age 12 months (Pediatrics 2001;108:230-8).

Acyclovir is far more effective in older children and adults with CNS disease. The drug is a potent suppressor of viral replication. So the current thinking is that achieving improved developmental outcomes in affected neonates is likely to require adjunctive therapy that addresses apoptosis or the increased cytokine response to HSV that characterizes neonatal CNS infection, according to Dr. Palmer.

An effective vaccine is thought to be a decade or more away, she added.

Dr. Eli Somekh said he knows of investigators who claim they can find a specific immunologic defect in patients with CNS HSV.

"Maybe some neonates are getting HSV encephalitis not because of bad luck but because of a lacunar immunologic problem. [Interferon-α] may be evaluated in the near future as adjunctive therapy to acyclovir to improve the prognosis of HSV in neonates," predicted Dr. Somekh, chairman of the department of pediatrics at Wolfson Medical Center, Holon (Israel). ■

## FYI

### Spine Information Web Site

The medical education company SpineUniverse LLC has redesigned its Web site, www.spineuniverse.com. The site offers online CME practice marketing tools, industry event listings, and archived course lectures for health care professionals, and consumers can use the site to access data on spine-related conditions and treatments, and learn how to find a spine care professional.

### Palliative Care Curriculum CD-ROM

The National Cancer Institute is offering "Education in Palliative and End-of-Life Care for Oncology," on CD-ROM, a comprehensive multimedia curriculum developed for clinicians who care for patients with cancer, and for teachers of those clinicians. The CD-ROM and companion DVD contain 3 plenary sessions, 15 content modules, and 2 teaching skills modules. CME is provided by the American Society of Clinical Oncology. To order, call NCI at 800-422-6237, or visit www.cancer.gov and click on NCI Publications under Quick Links.