Prediction Tool for Lyme Meningitis Validated

BY DOUG BRUNK

Clinical features that separate Lyme meningitis from other causes of aseptic meningitis in children include longer duration of headache, the presence of cranial nerve palsies, and cerebrospinal fluid mononuclear cell predominance, results from a single-center study in Rhode Island demonstrated.

Those are key findings from a validation study of a clinical prediction model developed in 2006 to help clinicians distinguish Lyme meningitis from other causes of aseptic meningitis in children. It marks the first time the model has been prospectively evaluated in children living in a Lyme-endemic region of the United States.

The study "validates what clinicians have thought with regard to Lyme disease, that is, we can use acute clinical presentations to help differentiate Lyme meningitis from other causes of aseptic meningitis," Dr. Sharon Nachman of the department of pediatrics at the State University of New York at Stony Brook wrote in a commentary about the work (Pediatrics 2009;123:1408).

The original prediction model applied in the analysis is a logistic-regression model that uses history, physical, and laboratory findings to predict Lyme meningitis (LM) in children; the model was developed by researchers led by Dr. Robert A. Avery of the department of pediatrics at Jefferson Medical College, Philadelphia (Pediatrics 2006;117:e1-7).

The study validates the idea that 'we can use acute clinical presentations to help differentiate Lyme meningitis from other causes of aseptic meningitis.'

To prospectively validate this model, investigators led by Dr. Aris C. Garro of the division of pediatric emergency medicine at Rhode Island Hospital, Providence, studied 50 children aged 2-18 years who presented to Hasbro Children's Hospital in Providence with a lumbar puncture for meningitis that showed a cerebrospinal fluid white blood cell count of more than 8 cells/mcL. Cases of definite LM were defined as cerebrospinal fluid pleocytosis with positive Lyme serology confirmed by immunoblot or erythema migrans rash. Cases of possible LM were defined as cerebrospinal fluid pleocytosis with positive cerebrospinal fluid Lyme antibody.

The researchers applied the original prediction model to their cohort. They also used 10% increments of calculated probability of LM to determine sensitivity, specificity, and likelihood ratios for definite and possible LM (Pediatrics 2009;123:e829-34).

The mean age was 10 years, 60% were boys, and 78% were white. Fourteen had definite LM, 6 had possible LM, and 30 had aseptic meningitis.

Probability percentage ranges were used to categorize risk. Calculated probabilities of less than 10% resulted in a 100% negative predictive value (low risk, with a negative likelihood ratio of 0.006); calculated probabilities of 10%-50% placed patients into an intermediate-risk group; and calculated probabilities of greater than 50% placed patients into a high-risk group, with a positive likelihood ratio of 100.

If a child had less than 7 days of headache, less than 70% mononuclear cells, and no cranial nerve 7 palsy or other cranial neuropathy, the probability of LM was always less than 10%. "We propose this 'Rule of 7's' as an easily remembered set of criteria that clinicians may be able to use to identify patients at low risk of LM," they wrote. "Future studies should evaluate this rule before it can be adopted into clinical practice."

The chief use of the clinical prediction model "is to limit unnecessary use of parenteral antibiotics in patients presenting with meningitis during peak enteroviral and [Lyme disease] seasons.

Funding was provided by the University Emergency Medicine Foundation at Rhode Island Hospital. ■

Knowledge Gaps Wide On MMRV Vaccine

BY DENISE NAPOLI

BALTIMORE — In a survey, just 26% of family physicians, compared with 71% of pediatricians, were aware of the known link between febrile seizure and the combination measles, mumps, rubella, and varicella vaccine in children aged 12-15 months.

Moreover, 18% of family physicians, versus 65% of pediatricians, were aware that the Centers for Disease Control and Prevention's Advisory Committee on Immunization Practices (ACIP) had withdrawn its preference for the combination vaccine in this population in February 2008, based on the increased seizure risk.

The MMRV vaccine, manufactured by Merck, was licensed in the United States in 2005, with an initial dose recommended at 12-15 months of age, and a second dose at 4-6 years. Postlicensure studies from 2007 showed that the risk for febrile seizures 5-12 days post vaccination was roughly twofold greater in children who had received the combination vaccine, compared with children who had received the MMR and varicella (MMR+V) vaccines separately.

The findings, presented by Dr. Christina Suh in a late-breaking abstract session at the annual meeting of the Pediatric Academic Societies, are based on a random sample of physicians in the American Academy of Family Physicians and the American Academy of Pediatrics membership databases. The survey was conducted via regular mail and over the Internet between October 2008 and January 2009. A total of 321 pediatricians and 299 family medicine physicians responded.

Dr. Suh, of the department of pediatrics at the University of Colorado, Denver, and colleagues, found that 43% of family physicians and 74% of pediatricians had offered the MMRV combination vaccine in the past 2 years to patients aged 12-15 months.

After being apprised of the risk data, 21% of pediatricians and 9% of family physicians indicated that they would give the combination MMRV to a healthy 12- to 15-month-old; 38% of pediatricians and 20% of family physicians would give the combination vaccine to a healthy 4- to 6-year-old.

The investigators disclosed no conflicts of interest. ■

Internet-Based Free Chlamydia Tests Net High Rate of Positive Results

BY BETSY BATES

LOS ANGELES — Free home swab test kits requested via the Internet have detected hundreds of cases of chlamydia, gonorrhea, and *Trichomonas* using a simple online recruitment strategy that was so effective that it is now being extended to several states.

The novel "I Want the Kit" program was devised by Johns Hopkins University researchers in 2004, alerting young women to facts about chlamydia and other sexually transmitted diseases, and offering kits with prepaid postage to allow for confidential testing.

Word went out via radio, magazine, and newspaper advertisements in Baltimore initially, but soon Internet traffic began to dominate responses.

"Our original objective was to reach out to teens who might have issues with fear and privacy going to a clinic," Dr. Charlotte A. Gaydos said at the annual meeting of the Society for Adolescent Medicine, where she presented interim study results.

Nearly 5,000 kits have been requested to date, 97% through the study's site, www.iwantthekit.org.

About one-third of the kits were returned with vaginal swab samples collected at home, with positive chlamydia results in 10% and positive gonorrhea tests in 1%, said Dr. Gaydos, of the university.

Trichomonas testing was added in 2006 and has resulted in a detection rate of 12% in 1,032 returned samples.

Dr. Gaydos reported that more than 98% of women said the instructions for collection were easy, 97% said the collection itself was easy, and 92% said they would use an Internet-based program again for STD testing.

After someone requests a kit, it arrives at her home in a plain envelope, listing as the return address only the street address of the project in Baltimore. The packet contains detailed instructions, the test swab, and return packaging—including postage.

"I'm reaching out to the 14-year-old who has no money for postage and is not going to tell her mother she's sexually active," said Dr. Gaydos.

Completed samples can be dropped off in any mailbox and are tested by nucleic acid amplification tests for all three STDs. The test method has been found in previous research to be highly accurate—and even more so with self-collected vaginal swabs than with urine specimens.

Positive test results are followed up by referrals to free treatment clinics close to the adolescents' or women's homes.

Beyond identifying cases of sexually transmitted infections that might not otherwise have been detected, the researchers were able to obtain demographic and sexual information from women who responded.

A few 14-year-olds participated but none were positive for chlamydia. However, more than one-quarter of all respondents were aged 15-19 years, and they had the highest prevalence for chlamydia of any age group, at 15%.

About one-third of the respondents were aged 20-24 years. In this group, the prevalence rate was 11%. Somewhat surprising to researchers was the high rate of participation among women 25-29 years (18% of respondents, with a prevalence rate of 7%) and those over 30 years (22% of the respondents, with a prevalence rate of 1%).

The researchers found a high rate of sexual risk among women participating in the study, with 55% reporting a history of an STD, 59% reporting more than one sex partner in the previous 90 days, 39% reporting a new partner in the previous 90 days, more than half reporting drinking before sex, 31% reporting anal sex, and 23% reporting a history of forced sex.

Every state receives Centers for Disease Control and Prevention funding for free STD testing through the CDC Infertility Prevention Program, she said.

Dr. Gaydos disclosed that GenProbe, Inc. of San Diego provided free diagnostic kits for the study. ■