Clinical Capsules

Rheumatic Fever Subtypes Pinpointed

Identification of *emm* types from acute rheumatic fever patients seen at Children's Hospital of Pittsburgh between 1994 and 2003 could aid in vaccine development.

Acute rheumatic fever (ARF) persists in western Pennsylvania despite declining rates in the United States overall, and Dr. Judith Marie Martin, of the University of Pittsburgh, and her colleagues reviewed 121 cases in children aged 3-18 years. They also studied the throat cultures of family members of the patients to look for trends in *emm* types.

Carditis, arthritis, and chorea were the most common major clinical manifestations of ARF, and they were present in 57%, 48%, and 29% of patients, respectively (J. Pediatr. 2006;149:58-63).

Throat cultures were performed on 84 of the children with ARF and 147 family members for a total of 231 cultures.

Acute rheumatic fever is caused by complications from group A streptococcus (GAS) pharyngitis. Group A streptococcus (*Streptococcus pyogenes*) isolates were found in throat cultures from 30 children (36%) and 20 family members (14%), but only one of the family members was symptomatic at the time of the culture. Six families had more than one member with a positive throat culture, and in these cases the GAS samples were always the same *emm* type (1, 2, 12, 18, or 75) and had the same field inversion gel electrophoresis patterns.

Protein Values and Meningitis

Procalcitonin and cerebrospinal fluid protein values were significantly more effective than other biologic tests at distinguishing bacterial from aseptic meningitis based on data from 167 hospitalized children who ranged in age from about 1 month to 15 years.

Dr. Francois Dubos of Paris Descartes University and his associates reviewed the predictive blood values for procalcitonin (PCT), C-reactive protein (CRP), WBC, and neutrophils, as well as the predictive cerebrospinal fluid (CSF) findings for protein, glucose, WBC, and neutrophils (J. Pediatr. 2006;149:72-6).

A total of 21 patients had bacterial meningitis and 146 had aseptic meningitis. All 21 patients who were diagnosed with bacterial meningitis had either a serum PCT value greater than or equal to 0.5 ng/mL or a CSF protein level of 0.5 g/L or greater.

Overall, serum PCT levels of at least 0.5 ng/mL and CSF protein levels of at least 0.5 g/L were the strongest independent predictors of bacterial meningitis after a logistic regression analysis. PCT had the highest specificity rate (89%) in distinguishing bacterial from aseptic meningitis, compared with rates below 83% in the other tests. CRP had the highest sensitivity rate (91%), followed by PCT (89%) and CSF protein (86%).

Streptococcus pneumoniae was the most common pathogen (10 cases), followed by *Neisseria meningitidis* (9 cases). *Haemophilus influenzae* and group B streptococci each caused one infection. The researchers noted that the widespread use of antipneumococcal vaccines is changing the etiology of bacterial meningitis and reducing the overall rate of illness.

Rhinovirus and Respiratory Illnesses

Rhinoviruses are the most common pathogens in the upper and lower respiratory tract of infants in their first year of life, according to findings from a study of 263 infants in an upper-class community who were followed up from birth until 1 year of age.

Although respiratory syncytial virus (RSV) accounts for many acute respiratory illnesses that are severe enough for hospitalization, other pathogens have been underrecognized because it is difficult to identify them, reported Dr. Merci Kusel of the University of Western Australia in West Perth and colleagues.

But the expanded use of polymerase chain reaction detection gives physicians a closer look at the pathogens behind respiratory tract illnesses. Nasopharyngeal aspirates were collected from children during 984 episodes of acute respiratory illnesses and compared with 456 control samples taken when the children were healthy (Pediatr. Infect. Dis. J. 2006;25:680-6).

Rhinoviruses appeared in 52% of upper respiratory tract illnesses (URIs), 41% of lower respiratory tract illnesses (LRIs), and 45% of LRIs with wheezing. By comparison, RSV appeared in 9% of URIs, 15% of LRIs, and 17% of LRIs with wheezing.

Rhinoviruses were the viruses most often detected in both LRIs and URIs, but rhinoviruses were twice as likely to cause URIs as LRIs in the cases when these viruses were detected. The other pathogens (RSV, parainfluenza, and human metapneumovirus) were equally likely to cause either URIs or LRIs. This finding suggests that rhinoviruses have a particular affinity for the upper respiratory tract in infants younger than 1 year of age, but additional research is needed in a diverse population, the researchers noted.

—Heidi Splete