Predictions for ’09: What’s Old Is New Again

Varicella/speC Gene May Up Risk of Necrotizing Fasciitis

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WASHINGTON — Recent varicella infection and the presence of a specific virulence factor gene were strongly associated with development of necrotizing fasciitis among Quebecois children with invasive group A streptococcal infections, according to a retrospective analysis involving 68 patients.

Children with varicella had a sixfold greater risk of necrotizing fasciitis (odds ratio 6.2) and those with the speC gene had a fourfold greater risk (odds ratio 4.0), on the basis of a multivariate analysis, Dr. Philippe Ovetchkine reported at the jointly held Annual International Conference on Antimicrobial Agents and Chemotherapy and the annual meeting of the Infectious Diseases Society of America.

The story began a few years ago in Montreal, when we observed a high number of children hospitalized for invasive group A streptococcal infections. In particular, we noticed concomitant necrotizing fasciitis,” said Dr. Ovetchkine, a pediatrician at the Saint-Justine Mother and Child University Hospital Center in Montreal. This observation was recently confirmed by the public health department of Quebec.

The researchers conducted a retrospective chart review of all children (younger than 18 years) with documented invasive group A streptococcal infection from January 1999 to December 2007, in order to understand the risk factors for necrotizing fasciitis. Necrotizing fasciitis (NF) cases occurred only during the years 2003-2005.

Invasive group A streptococcal infection was defined as the presence of a compatible clinical presentation and the isolation of group A Streptococcus from a normally sterile body site. NF was defined as the presence of necrosis in the fascia and polymorphic infiltrate. A total of 68 children with invasive group A streptococcal infections (44% girls, mean age 60 months) were identified.

Group A streptococcus was recovered from blood culture in 38 of the children, cerebrospinal fluid in 1, pleural fluid in 7, and surgical/trauma samples in 17. Eighteen children had NF, all of whom required surgical intervention.

Recent varicella was significantly more common in the children who developed NF than in those who did not—56% and 14%, respectively. Toxic shock syndrome was also significantly more common among those who developed NF (33%) than in those who did not (4%). On multivariate analysis, toxic shock syndrome was not found to be a significant factor in the development of necrotizing fasciitis. This may be because of the low number of cases (six in the NF group and two in the group without), Dr. Ovetchkine said in an interview.

Group A streptococcal isolates were evaluated for cell surface M protein gene (emm) typing and the presence of several virulence factor genes (speC, speB, and cpa, ssa, smeZ, and sic). In terms of 15 protein genes, emm (30%) and emm12 (17%) were predominant. In some patients without NF, the researchers did observe speC genes in the streptococcal strains.

Dr. Ovetchkine hypothesizes that the presence of the speC gene can lead to a specific phenotype of invasive group A streptococcal infections: necrotizing fasciitis. “Moreover, speC could act as a repertoin and favors the occurrence of toxic shock syndrome in this context,” he said.

Dr. Ovetchkine stated that he had no conflicts of interest to disclose regarding his presentation.