Studies Point to Bocavirus Being Enteric, Seasonal

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CHICAGO — New data suggest the human bocavirus may be an enteric pathogen, and that infection with the parvovirus varies by season, Dr. Jeffrey S. Kahn said at the annual Interscience Conference on Antimicrobial Agents and Chemotherapy.

Researchers are beginning to piece together some information about the human bocavirus since its discovery just 2 years ago (Proc. Natl. Acad. Sci. USA 2005; 102:12891-6).

The virus, which closely resembles the genome of viruses in the *Parvoviridae* family, is common, with a positive infection rate in most studies of 1%-8%, although it exceeds 18% in others.

The majority of positive specimens are from children, said Dr. Kahn, director of the infectious diseases laboratory at Yale University, New Haven, Conn.

The bocavirus is also frequently detected in the presence of other viruses or pathogens.

Three studies published this year support the theory that the human bocavirus (HBoV) is an enteric pathogen, Dr. Kahn said.

In what is believed to be the first report to document HBoV in human feces, Spanish researchers identified HBoV in 48 of 527 (9%) fecal samples collected from children less than 3 years old with acute gastroenteritis without respiratory tract disease (Emerg. Infect. Dis. 2007;13:636-7).

In 28 of 48 (58%) specimens, another enteric pathogen was detected, including salmonella, campylobacter, norovirus, and rotavirus.

A prospective clinical and molecular study in Hong Kong detected HBoV in 30 of 1,435 (2%) fecal samples and in 83 of 1,200 (7%) nasopharyngeal aspirates collected from patients less than 18 years of age (J. Infect. Dis. 2007;196:986-93).

HBoV was codetected with other pathogens in 33% of aspirates and in 56% of fecal samples. There was little difference in genome sequence from isolates detected in each anatomic site, Dr. Kahn said at the meeting, which was sponsored by the American Society for Microbiology.

A third study from Seoul identified HBoV in 0.8% of 962 children hospitalized with gastroenteritis (J. Infect. Dis. 2007;196:994-7). In all, 44% of the study population had a viral agent including rotavirus (26%), norovirus (14%), adenovirus (3%), and astrovirus (1%).

"The spectrum of disease caused by this virus has not yet been defined, though the observation that this virus is frequently identified with other pathogens suggests that HBoV may not, for some populations, be a major pathogen," Dr. Kahn said in an interview.

A seasonal variation to HBoV infection has also been observed by Yale investigators, which suggests that in the United States the infection starts in the fall and runs into early spring. The study, led by Dr. Deniz Kesebir, identified HBoV in 5% or 22 of 425 respiratory specimens from children less than 2 years of age. Cases began in October (8%), peaked in November (10%) and December (9%), and dropped off in March (3%) and April (6%). No cases were reported from May to September.

Among 20 patients positive for HBoV, more than half had rhinorrhea, fever, cough, and wheezing.

DR. KESEBIR

None of the 96 asymptomatic children screened for HBoV were positive. Among the 20 children who were positive for HBoV, fever, rhinorrhea, cough, and wheezing were observed in more than 50%, and diarrhea was observed in 25% (J. Infect. Dis. 2006; 194:1276-82).

A recent population-based surveillance study conducted in rural Thailand reported its highest number of cases from January to March and none from August to December, (J. Infect. Dis. 2007; 195:1038-45). In the same study, HBoV infection was detected in 5% of hospitalized patients with pneumonia, of which 83% were children younger than 5 years old.

Although the amount of information collected on HBoV is impressive, further studies are needed on the biology and pathogenesis of the human bocavirus, Dr. Kahn said.

The study of HBoV is limited to the detection of viral DNA because the virus has yet to be successfully propagated in cell culture or animal models. ■

Bocavirus Seen in Acute Asthma Cases

The recently identified human bocavirus is present in children hospitalized with asthma, and infects children older than 2 years of age, Dr. Dominique Gendrel and colleagues reported in a poster at the annual Interscience Conference on Antimicrobial Agents and Chemotherapy.

Human bocavirus was detected by real-time polymerase chain reaction in nasopharyngeal aspirate samples from 16 of 136 children (12%), aged 2-16 years, who were hospitalized with severe acute asthma from November 2005 to May 2007 in the St. Vincent de Paul-Cochin Hospital in Paris. All the children had been hospitalized with acute asthma after evaluation in the emergency department.

The infected children had a mean age of 3.2 years; two children were older than 5 years, which suggests that the respiratory tract infection is not limited to young infants.

The bocavirus was associated with *Mycoplasma pneumoniae* in two cases, respiratory syncytial virus (RSV) in one case, and human metapneumovirus in one case.

In all, there were 16 cases of *M. pneumoniae* (12%), 12 cases of RSV (9%), 4 cases of influenza A (3%), 1 case of influenza B, and 1 case of parainfluenza III. Three of 90 children (3%) tested positive for human metapneumovirus, the investigators reported at the meeting, which was sponsored by the American Society for Microbiology.

As was observed in other studies, Dr. Gendrel said in an interview that there was a seasonal variation to the virus, with more cases identified in winter and spring. Dr. Gendrel is with the Pediatric Department, Paris 5 University and Medical School, Hospital St. Vincent de Paul-Cochin, Paris, according to the poster.