

Bocavirus May Not Be a Pathogen in Children

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Bocavirus does not appear to be pathogenic in children, Canadian researchers reported.

Investigators in Sweden, Japan, Australia, and Thailand have previously reported bocavirus infections in children that appeared to be associated with bronchiolitis and viral pneumonia.

However, the Canadian group recently found human bocavirus in 43% of 100 children without symptoms undergoing surgery, but in only 14% of 225 symptomatic children hospitalized with an acute lower respiratory tract infection (RTI).

These findings suggest that the virus may not be pathogenic, and further studies are called for before any conclusions can be drawn, Dr. Jean Longtin of Laval University Hospital Center, Quebec City, and colleagues wrote (*Emerg. Infect. Dis.* 2008;14:217-21).

Human bocavirus, which is a parvovirus, was first identified by researchers at the Karolinska Institute, Stockholm. Those researchers had developed a virus-screening system and sought to test it; in the process of screening nasopharyngeal aspirates, they picked up the human bocavirus (*Proc. Natl. Acad. Sci.* 2005;102:12891-6).

Dr. Tobias Allander and associates then went back and screened for the bocavirus in 378 culture-negative, nasopharyngeal aspirate samples drawn in Karolinska clinics, and found 7 to be positive for the virus. All seven samples came from children.

When they screened samples taken from 540 hospitalized children, they found 17 patients (3%) who were positive for bocavirus, and 14 of those patients were negative for any other virus the researchers searched for. All 14 patients had been admitted to the hospital from home for respiratory distress; bilateral interstitial infiltrates were seen in six of seven patients who had chest radiography.

The Swedish investigators said it could be difficult to prove that bocavirus was indeed a pathogen. They noted that with the modern methods that now detect probable pathogens, it is often not possible to adhere to Koch's postulates. There often isn't a proper culture for the agent, or a suitable experimental animal model to test whether one can make the animal sick and transmit the pathogen, they said.

Other studies have found a similar incidence of bocavirus in about 3%-5% in children with RTI symptoms and no other significant, identified viral infection, although an incidence as high as 19% has been reported. Most cases appear to have fever, and the most common diagnosis tends to be bronchiolitis.

The Canadian researchers had nasopharyngeal samples on hand from two previous studies that they now tested for human bocavirus. Those cohorts included 126 adults with chronic obstructive pulmonary disease who were seen in the emergency department for an acute exacerbation of their symptoms, plus 225 symptomatic children admitted to the hospital with an upper RTI and their controls

(100 symptomatic children entering the hospital for surgery).

Dr. Longtin and associates found bocavirus DNA in only one of the nasopharyngeal samples from the 126 adult patients (mean age, 71 years). They found bocavirus DNA in 31 samples from the 225 symptomatic children (mean age, 17 months). But human bocavirus DNA was found in the samples of 43 of the 100 asymptomatic controls (mean age, 22 months).

Moreover, 22 of the 31 symptomatic

children (71%) who had bocavirus also had at least one other virus detected in their samples: respiratory syncytial virus (16 patients), influenza A/B virus (3 patients), metapneumovirus (3 patients), adenovirus (1 patient), and parainfluenza virus (1 patient). Two of the children were infected with two viruses in addition to bocavirus.

Hospital stay was not greatly different for the symptomatic children infected with bocavirus, compared with the uninfected symptomatic children (a mean of 5 days vs.

7 days), Dr. Longtin and colleagues said.

The lone adult found to harbor bocavirus was a 71-year-old smoker who ended up being hospitalized for 7 days with his chronic obstructive pulmonary disease exacerbation, but he was not found to have any other viruses or bacteria in his sputum or nasopharyngeal aspirate.

"Overall, these data do not support a pathogenic role for [human bocavirus] in acute RTIs in children," Dr. Longtin and colleagues wrote. ■

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