U.S. Study of Human Parechovirus: 7% Prevalence

BY MIRIAM E. TUCKER

FROM THE PEDIATRIC INFECTIOUS DISEASE JOURNAL

VITALS

Major Finding: Of 780 enterovirus RNA–negative CSF samples taken during 2006-2008, RT-PCR was detected HPeV in 2% of 218 samples from 2006, 17% of 320 from 2007, and in none of 242 from 2008. A separate case report found abdominal distension in six of eight infants with HPeV.

Data Source: Retrospective RT-PCR analysis of frozen CSF samples from a 3-year period in the larger study, and a case report of eight infants.

Disclosures: The Kansas City study was supported by research residual funds from Dr. Selvarangan. Dr. Selvarangan said he had no other relevant financial disclosures. Dr. Bangalore said he had no relevant financial disclosures.

Human parechovirus was found in 7.4% of nearly 800 cerebrospinal fluid samples taken from children seen at a Midwestern U.S. pediatric hospital over a 3-year period, Rangaraj Selvarangan, Ph.D., and his associates reported.

Sepsislike syndrome was the most common clinical presentation in that group, along with irritability, fever, and nonspecific rash. However, the combination of abdominal distension and an erythematous rash was a distinctive feature of human parechovirus (HPeV) among eight infants with sepsislike illness described in a separate case series report published in the same issue (PIDJ 2011;30:260-2; also available at http://journals.lww.com/pidj/Fulltext/2011/03000/Abdominal_Distension__An_Important_Feature_in.21.aspx).

Human parechovirus (HPeV) is a newly classified genus ("*Parechovirus*") that was previously classified as enterovirus within the family *Picornaviridae*. Detectable by specific (i.e., not enteroviral) real-time reverse-transcription polymerase chain reaction (RT-PCR) assay, HPeV has been associated with sepsislike illness and meningitis, particularly in young infants. Until now, epidemiologic data on HPeV illness have come from Europe, South America, and Asia, but not the United States, said Dr. Selvarangan and his associates at Children's Mercy Hospital, Kansas City, Mo. (PIDJ 2011;30:238-42; also available at http://journals.lww.com/pidj/Fulltext/2011/03000/Human_Parechovirus_3_Causing_Sepsis_like_Illness.13.aspx).

Of 780 enterovirus RNA–negative cerebral spinal fluid (CSF) samples taken during 2006-2008, RT-PCR detected HPeV in 2% of 218 samples from 2006, 17% of 320 from 2007, and none of 242 from 2008.

Most samples were taken between June and October. The prevalence of enterovirus in CSF from children in the Kansas City area during the same time frame ranged from 20% to 33%, the investigators noted.

Most of those positive for HPeV were male (71%), with a mean age of 6.6 weeks (range 1 week to 7 months). Two-thirds (66%) presented with sepsislike syndrome, and 19% with suspected meningitis.

The most common symptoms were irritability (98%), fever (95%), and maculopapular rash (60%).

Mottling of the extremities was noted in 18%, and hypothermia in 9%.

Other signs included vomiting (19%), nonpurulent conjunctivitis (9%), neurologic symptoms (7%), abdominal distension (5%), and apnea (2%).

In contrast, among the eight infant cases reported in a separate article, five had abdominal distension – including one case so severe it was mistaken for a surgical condition – while six had an erythematous rash and four had both.

Definite neurologic symptoms, including seizures, hypotonia, and apnea, were also present in four infants, Dr. Harish Bangalore of Evelina Children's Hospital, London, reported.

In the larger Kansas City study, CSF pleocytosis was noted in only 7 of the 58 patients (12%), and abnormal CSF glucose and protein also were uncommon. Of the 54 patients with complete blood count data, the mean peripheral white blood cell count was 7,000/mm^3, with leukopenia in 19 of 55 (35%).

Of 30 patients with viral cultures, all were negative and just 1 bacterial culture was positive. All but one patient was hospitalized, with a mean stay of 3.6 days (range 0-13 days).

Nearly all patients (57/58) were treated with IV antibacterials.

A limitation of the study was that it only included cases in which meningitis or sepsis was suspected, so that other clinical presentations of HPeV – such as upper respiratory infection – would not have been detected, Dr. Selvarangan and associates noted.

All of the eight case-reported infants (mean age 25 days) had lymphopenia at admission, combined in five infants with a failure to mount a C-reactive protein (CRP) response of more than 5 mg/L during their illness.

CSF was the source of the HPeV-positive sample in six of the eight, stool/rectal swabs in four, and blood in one, Dr. Bangalore and associates commented.

The "striking" clinical picture of prominent abdominal distension and a widespread erythematous rash in a young infant with sepsislike illness, along with fever, irritability, lymphopenia, and relative thrombocytopenia without CRP elevation, may assist in early diagnosis and avoid both confusion with surgical conditions and unnecessary broad-spectrum antibiotic use.

A specific RT-PCR assay is required for HPeV detection from blood, CSF, throat, or rectal swabs, rather than the standard enterovirus detection methods, Dr. Bangalore and associates noted.

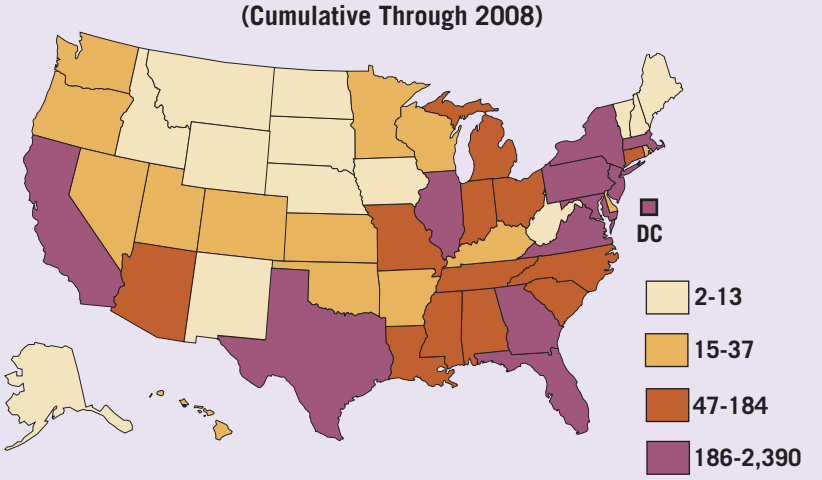
The Kansas City investigators found a triad of fever, irritability, and rash as the most common presentation of HPeV in their study, with infections occurring in late summer or autumn with "strikingly variable annual prevalence."

Dr. Selvarangan and his associates suggested "that HPeV CNS infection should be considered with sepsislike illness of infants even in the absence of CSF pleocytosis.

Addition of HPeV RT-PCR assay to the enterovirus RT-PCR assay on pediatric CSF specimens (particularly infants less than 6 months old) could reduce hospital stay, antibiotic usage, and hospitalization costs," they commented ■

DATA WATCH

AIDS Diagnoses Among Children Under 13 Years Old
(Cumulative Through 2008)



Note: Based on data from the Centers for Disease Control and Prevention.
Source: Kaiser Family Foundation