Enterovirus 71 May Be Spreadable Via Respiration

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ASPEN, COLO. — When Colorado had two separate outbreaks of aseptic meningoencephalitis associated with enterovirus 71, the patients were more likely to have the virus detected in throat swabs than in the cerebrospinal fluid, Dr. Mark J. Abzug said at a conference on pediatric infectious disease sponsored by Children's Hospital, Denver.

That may mean this particular virus is easily transmissible via respiratory secretions, and that could explain the recent, prolonged outbreaks of this very serious disease that have been occurring in various locations, primarily in East Asian countries and most notably in Taiwan, said Dr. Abzug, a professor of pediatrics at the University of Colorado, Denver.

Outbreaks are becoming more common. One serosurvey conducted in New York state found that 26% of adults had antibodies to the virus.

In the outbreaks, infection with this virus has been associated with brain stem encephalitis with an acute flaccid paralysis reminiscent of polio and, in the cases where it has proved fatal, pulmonary edema and cardiovascular collapse. In children less than 5 years of age, who make up the majority of patients with these infections, the disease has been fatal in 20% of cases.

Colorado has had 17 cases, with 8 in 2003 and 9 in 2005. The children ranged in age from 4 months to 9 years; most were under 5 years of age. One child died and one was left respirator-dependent. Three were left with some persistent paralysis.

Only 5 of these 17 patients had virus retrieved from the cerebrospinal fluid, with all of the testing being polymerase chain reaction (PCR) assay. These patients tended to be the younger ones; they generally were tapped early in the course of their illness, and none had pleocytosis. Most of these patients had less severe disease.

Those with pleocytosis tended to be the older patients, and they generally did not have virus retrieved from their cerebrospinal fluid.

On the other hand, all of the 12 patients who had throat swabs tested by PCR were positive for the virus. Some of these patients had stools that tested positive as well.

Many of these patients had mucocutaneous rash, and the progression in those who developed acute flaccid paralysis was rapid, Dr. Abzug said.

Imaging of patients has suggested that the virus causes lesions in the spinal anterior horn cells, much like polio virus does. The hypothesis is that the cardiopulmonary manifestations of severe cases come not from direct destruction of the heart and lungs by the virus, but rather from the brain stem lesions causing sympathetic system hyperactivity.

Care is largely supportive, Dr. Abzug added. In Taiwan, physicians have treated patients with intravenous immunoglobulin, but the experience has suggested that it does not help, and a small trial conducted in Australia of immunoglobulin also found it was of no benefit.

Others have tried interferon-α, corticosteroids, and pleconaril, none of which have shown any benefit.

Supportive care includes fluid restriction and vasodilators for those with cardiac and pulmonary involvement. Inotropes have been shown to be associated with a worse outcome, but milrinone, which is both an inotrope and a vasodilator, may be associated with some improvement in outcome.

Notable enterovirus 71–encephalitis outbreaks are becoming more common, but infection does not appear to be rare and it is not seen just in foreign locales, Dr. Abzug said. One serosurvey conducted in New York state found that 26% of adults had antibodies to the virus. Prior to the Colorado cases, there was a previous U.S. outbreak in 1994.

There have been three proposed explanations for the recent outbreaks. One is that the virus itself may be becoming more neurovirulent. Another is that it has become more readily transmissible via respiration. The last is that perhaps more people are becoming susceptible to serious sequelae. Prior to the Colorado evidence, findings from Taiwan have suggested that all three are probably factors, Dr. Abzug said. ■