C. immitis Meningitis Can Be Elusive Diagnosis

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SAN FRANCISCO — Hydrocephalus is an easy clue to potential *Coccidioides immitis* meningitis, but a subacute course of the disease can make it much more difficult to pin down the diagnosis, Dr. Parvin Azimi said at the annual meeting of the American Academy of Pediatrics.

She described two cases of chronic meningitis that illustrate different manifestations of *C. immitis*. The first patient, a 16-year-old African American boy, had a history of exposure to soil in endemic areas, the likely source of his fungal infection, said Dr. Azimi, director of infectious diseases at Children's Hospital and Research Center, Oakland, Calif. The patient presented with a 5-week history of headache, vomiting, and decreased energy, with no response to treatment with oral amoxicillin. He had a fever higher than 100° F with a stiff neck, flat affect, and lethargy.

A spinal tap showed that the cerebral spinal fluid (CSF) had a high protein level (148 mg/dL) and a low glucose level (15 mg/dL). The RBC count was 3/mcL and the WBC count was 380/mcL with 25% polymorphonuclear leukocytes (PMNs), 66% lymphocytes, and 9% monocytes. Gram stain and culture were negative for bacteria.

"Obviously, the spinal fluid findings look very much like TB," so clinicians did a work-up for tuberculosis, she said. A purified protein derivative (PPD) skin test for tuberculosis produced no induration, although "that doesn't mean the patient doesn't have TB," she acknowledged. Chest x-ray, cranial CT scan, and EEG were all normal.

The teenager had been traveling to Corpus Christi, Tex., where he collected insects and played with his pet tarantula and puppy during his visit. He sought help for his symptoms at a Texas hospital and was sent home to California with a diagnosis of viral meningitis.

The headaches and vomiting continued. A repeat spinal tap 3 weeks after the first one showed that the CSF protein level had increased (176 mg/dL) and the glucose level decreased (9 mg/dL). The RBC was 1/mcL and the WBC was 737/mcL with 33% PMNs, 51% lymphocytes, 15% monocytes, and 1% macrocytes.

Infectious disease consultants were called in at this point. They ordered fungal, parasitic, and acid-fast bacilli studies and started the patient on empiric therapy for presumed TB meningitis pending results of cultures. The CSF was negative for cryptococcal antigen and amebic trophozoites, ruling these out of the differential diagnosis, Dr. Azimi said. An HIV test was negative.

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DR. AZIMI

Finally, the CSF and sera were found to be reactive to *C. immitis* antibodies.

In the second case described by Dr. Azimi, a 19-month-old Filipino-Latino boy from Antioch, Calif., presented with a 6-month history of decreased activity, clinging behavior, and poor growth. In the past 6 days, he'd had lethargy, frequent falls, and difficulty walking. On physical exam, he was mildly feverish and irritable, and refused to stand or walk.

A head CT scan showed hydrocephalus "that was significant enough that it prompted surgeons to place a shunt quickly" to provide decompression, she said. Hydrocephalus is a well-known complication of *Coccidioides* meningitis.

The patient's CSF showed highly elevated protein (319 mg/dL) and low glucose (25 mg/dL). The RBC was 340/mcL and the WBC was 117/mcL with 65% lymphocytes and 4% PMNs, among other findings. CSF Gram stain and cultures were negative, as were a chest x-ray and PPD skin test for TB.

As in the first patient with subacute disease, this patient's CSF and sera were reactive for *C. immitis* antibodies.

Fewer than 1% of cases of *Coccidioides* infection become disseminated, but half of disseminated cases have CNS involvement, Dr. Azimi said. Oral fluconazole is the treatment of choice, continued for life. Stopping therapy risks a recurrence in 35% of cases. ■