Scientific letter

*Listeria monocytogenes* meningitis: PCR multiplex diagnosis

*Meningitis por Listeria monocytogenes: diagnóstico mediante PCR multiplex*

Infectious meningitis and encephalitis are clinical syndromes with high morbidity and mortality rates. Rapid and accurate aetiological diagnosis is vital for correctly managing the patient and establishing preventive measures for populations at risk. New molecular techniques may be an effective tool for achieving this objective. The FilmArray Meningitis/Encephalitis Panel (BioFire) is a multiplex PCR assay capable of simultaneous detection of 14 of the main pathogens responsible for meningitis/encephalitis, which has been evaluated in several studies. This article studies the case of a 79-year-old male patient who, after undergoing surgery for bladder cancer two years earlier, visited the emergency department complaining of generally feeling unwell with a fever of 39.8°C, altered level of consciousness, abnormal speech and gait, tremors and severe headache. He reported having started with a dry cough, oedynaphagia and fever 10 days earlier, which was diagnosed as acute pharyngitis. He was initially treated with paracetamol and amoxicillin + clavulanic acid and was then treated with moxifloxacin due to persistent symptoms.

A neurological exam performed in the emergency department found no signs of meningitis. As the doctors suspected encephalitis, a head CT scan was performed which showed no alterations. The CSF showed pleocytosis, with 514 leukocytes/mm³ (87% mononuclear), glucose 36 mg/dL and protein 87.6 mg/dL. Gram staining showed no microorganisms. Cultures were grown on blood agar, chocolate agar and thioglycollate broth, which were incubated at 35°C with 5% CO₂ for 72 h. Treatment was started with ceftriaxone and vancomycin and the patient was admitted to the ICU.

In view of the CSF results (pleocytosis with negative Gram stain), the FilmArray Meningitis/Encephalitis Panel was used, which detected *Listeria monocytogenes*. The results were available within 1 h, which caused doctors to change the antibiotic treatment to a regimen of ampicillin and gentamicin. Over the next few hours, the patient remained haemodynamically stable with a good level of consciousness, and 24 h later, was moved to a ward, where he remained throughout the 19 days of treatment. After this period, he was discharged as he was asymptomatic. The CSF culture was negative.

*L. monocytogenes* is a gram-positive bacillus that causes meningitis and encephalitis, generally in very elderly and young patients and immunosuppressed patients. Clinical presentation among adults is similar to that caused by pneumococci or meningococci, although the duration of symptoms prior to presentation is longer. Gram staining and CSF cultures are still the reference techniques for bacterial meningitis, allowing the responsible microorganism to be identified in 70–85% of cases. However, culture results are not available for at least 24–72 h and may be negative in patients who have received antibiotics, as occurred in our case. In Listeria meningitis, CSF tends to show low pleocytosis and high protein levels, whereas both cell and protein counts are only slightly elevated in cases of encephalitis. Hypoglycorrhachia is only present in 21% of patients. These data may make diagnosis difficult due to the similarity of symptoms with a viral aetiology. The sensitivity of Gram staining in *Listeria* meningitis is low, ranging from 23% to 36% in both children and adults, and cultures may be negative, even in patients who have not received prior antibiotic therapy. In one recent article, the CSF culture was positive in only 83% of patients while blood cultures were positive in 64% of patients with *Listeria* meningitis, highlighting the need for more sensitive diagnostic tests. A false negative culture result or delayed diagnosis can result in inadequate treatment as third-generation cephalosporins (the antibiotics most commonly used for empirical treatment of meningitis) are not effective against this bacterium. Inadequate empirical therapy was a risk factor for mortality in the aforementioned study of patients with *Listeria meningitis.*

In our case, use of the FilmArray Meningitis/Encephalitis Panel, which detects the main pathogens responsible for meningitis, providing results within 1 h, allowed us to make a rapid diagnosis. This had repercussions on control and isolation measures (which were quickly withdrawn) and resulted in the patient being changed to the correct antibiotic treatment, which had a favourable impact on the patient’s outcome.

References


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