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Rhombencephalitis due to *Listeria monocytogenes*: A case study☆

A propósito de un caso: rombencefalitis por Listeria monocitogenes

Dear Editor:

Listeria monocytogenes normally affects multiple organs. In exceptional cases, it may involve the brainstem in a condition called rhombencephalitis. Rhombencephalitis due to *Listeria* is a rare disease that strikes previously healthy individuals.[1] The course of the disease is biphasic[2]; the patient initially presents non-specific virus-like symptoms, after which neurological symptoms occur (initially, progressive brainstem signs and cranial nerve deficits followed by obnubilation and seizures).

Diagnosis is not easy. In up to 60% of all cases, CT scan results are normal but pontine involvement is typical in MRI scans. Blood culture results may be negative[3] and lumbar puncture may yield a low white blood cell count and normal protein and glucose levels in CSF.

Differential diagnosis is performed to rule out infection (TB, fungus, HSV), inflammatory processes, lymphoma, or paraneoplastic syndromes. Treatment consists of intravenous ampicillin[4] dosed at 150 to 300 mg/kg/day over at least 6 weeks. Its prognosis depends on how early treatment is started. Mortality is 100% in untreated cases and 30% in treated ones. Neurological sequelae persist in 61% of the total patients.[2]

Our patient was a 50-year-old man with no relevant medical history who came to the emergency department with symptoms of dizziness without spinning sensation and right facial paraesthesia. The only finding from the examination was right facial hypoaesthesia. As the head CT revealed no anomalies, the patient was discharged.

Five days later, he returned to the emergency room with diplopia and low-grade fever. In addition to sensory alterations, the examination found that he could not walk in tandem gait. Doctors performed a laboratory analysis, chest radiography, and electroencephalography; all yielded normal results. CSF analysis found 10 white cells (75% neutrophils), a glucose level of 58 mg/dL, and protein level of 51.8 mg/dL. Given a suspected diagnosis of acute meningoencephalitis, the patient was admitted and initially treated with antibiotics and acyclovir. He remained stable during hospitalisation with no infectious signs and no changes in the examination. To complete the work-up, we performed serology tests (HIV, *Coxiella*, *Bartonella*, hepatitis B, cytomegalovirus, herpesvirus 1, 2 and 6, Epstein-Barr virus, and *Leptospira*); autoimmunity test, blood cultures, and CSF cultures; all results were negative. A second cerebrospinal fluid examination found 36 white cells (83% lymphocytes), glucose 58 mg/dL, proteins 57.7 mg/dL, and ADA 5.9 U/L. Brain MRI (Fig. 1) showed inflammatory lesions in the cerebellar peduncles.

Based on negative results from cultures and the suspicion of a non-infectious inflammatory process, doctors suspended acyclovir and antibiotics. On the fifth day the patient's

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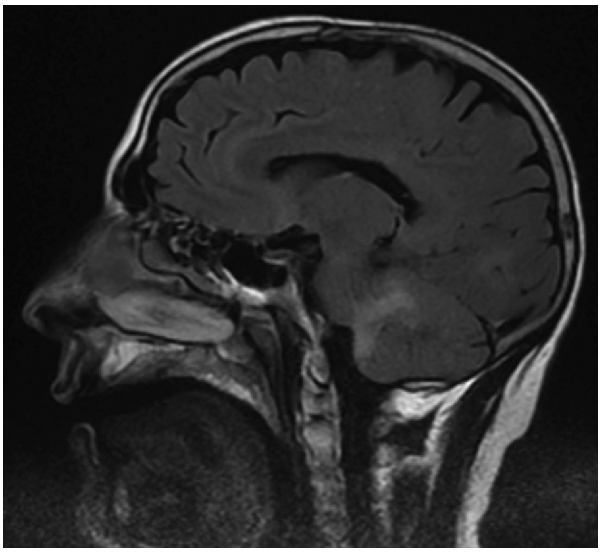

Figure 1 T1-weighted brain MRI. Lesion suggesting inflammation of the cerebellar peduncles.

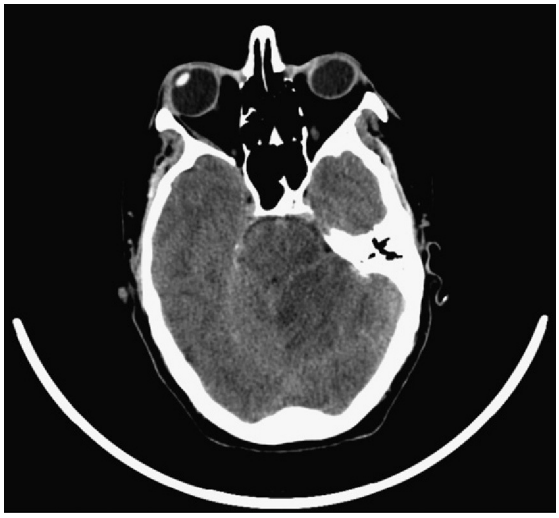

Figure 2 Head CT. Oedema and small fourth ventricle: signs of intracranial hypertension.

condition worsened, and he presented ataxia, increased nystagmus and right-sided dysmetria, so doctors started dexamethasone treatment. The patient improved, although diplopia, hypoaesthesia, and mild right-sided dysmetria persisted. He was then discharged with pending tests: serology for hepatitis C, *Listeria*, and *Legionella*; oligoclonal bands; routine MRI; full-body PET scan).

Two days later he was hospitalised again with headache, restlessness, and low-grade fever. The key finding in the examination was dysarthria. A new head CT (Fig. 2) revealed oedema and a small fourth ventricle, signs compatible with intracranial hypertension. The patient was referred to the neurosurgery department and underwent emergency decompressive craniectomy. CSF sample cultures were negative, but the culture repeated a week later tested positive for a *Listeria* strain sensitive to ampicillin. The patient's condition improved after treatment with that antibiotic and he was asymptomatic 6 months later.

The point to ponder in this case is the precise fact that infection had been ruled out due to negative results from all of the cultures. Given a similar case, doctors should recall that MRI may prove useful in the search for symptom aetiology when characteristic lesions are present (brainstem inflammation, especially in the pons near the fourth ventricle).

In conclusion cases of meningoencephalitis, especially those showing brainstem symptoms and MRI evidence of typical pontine lesions, should be treated with ampicillin to cover *Listeria* even if culture results are negative.

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