



# Enfermedades Infecciosas y Microbiología Clínica

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## Scientific letter

### An exceptional cause of brain abscess

#### Una causa excepcional de absceso cerebral

Dear Editor,

Brucellosis is a bacterial zoonotic disease caused by *Brucella* spp. Depending on the causative reservoir, is classified as *B. abortus* (cattle), *B. mellitensis* (goats and sheep), *B. suis* (pigs, reindeer, rodents) and *B. canis* (dogs).<sup>1</sup> Transmission occurs by ingestion, inhalation or direct contact with animals or their products. The usual incubation period is 2–8 weeks but can range from 5 days to several months.<sup>2</sup>

The most common form of acute presentation is fever with generalized symptoms. It also causes abortion and reproductive failure. Chronic manifestations include osteoarticular infections, genitourinary and intra-abdominal abscesses, and infective endocarditis. Central nervous system (CNS) involvement has also been described, most commonly as meningitis or encephalitis.<sup>3</sup>

Brucellosis is a notifiable disease and is a major public health concern, especially for people living in resource-limited settings.<sup>4</sup> However, the clinical index of suspicion for infections caused by *Brucella* spp. is low.

A 46-year-old peruvian man presented with epileptic seizures associated with left hemiparesis. Three months prior to admission, he reported an epileptic seizure for which he was evaluated in his home country. A CNS-MRI was performed and showed an anfractuous image with lobulated borders centered in the right middle frontal gyrus. Contrast showed diffuse enhancement with a multinodular pattern (Fig. 1a and b).

Surgical excision of the lesion was performed. Samples were sent for histologic analysis, which excluded malignancy and was reported as necrotizing granulomatous inflammation with negative Ziehl–Neelsen staining (Fig. 1c). Microbiologic studies included HIV, syphilis, HBV, HCV, *Toxoplasma* sp., *Leishmania* sp. serologies, Rose Bengal test and dimorphic fungal immunodiffusion, all of which were negative. On the biopsy specimen, PCR for *Mycobacterium tuberculosis*, *Toxoplasma gondii*, *Histoplasma capsulatum*, universal 16S rRNA gene and panfungal PCRs were all negative. Tuberculosis IGRA (Quantiferon-TB-Plus®) was positive and tuberculostatic treatment with rifampin, isoniazid, pyrazinamide and ethambutol was started.

Bacterial cultures were negative after 48 h of incubation, but two weeks later small colonies of an oxidase-positive gram-negative cocci were detected on chocolate agar (Fig. 1d). Repeated attempts at identification by MALDI-TOF® using the standard database showed a good peak pattern but an unreliable score (below 1400). PCR of the complete 16S rRNA gene and sequencing were performed, resulting in the identification of *Brucella* sp. without species differentiation. Antibiotic treatment was then changed to rifampin

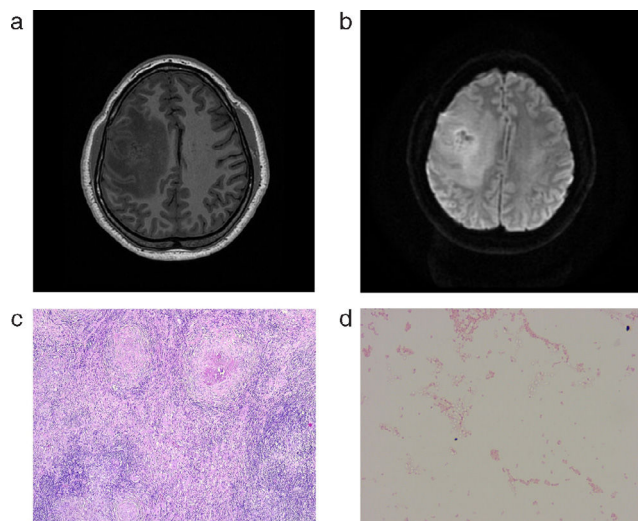


Fig. 1. (a) and (b) CNS MRI findings. (c) Necrotizing granuloma in histologic specimen. (d) Gram stain of *Brucella* sp. colonies.

at higher doses (900 mg/day), doxycycline, and ceftriaxone at a dose of 2 g IV every 12 h for the first 4 weeks. The patient completed 4 months of treatment and subsequently had a favorable course, with no further neurologic symptoms or treatment-related adverse events.

Neurological manifestations of brucellosis are rare but may occur at any stage of systemic infection in a variety of clinical forms, including meningitis, meningoencephalitis, and cerebral or epidural abscess. In a series of 54 patients with neurobrucellosis, none presented with an intracranial mass.<sup>5</sup> Case reports of intracranial abscesses due to *Brucella* sp. have been reported but are very rare.<sup>6,7</sup>

Diagnosis of brucellosis is made by isolation of the bacteria but is often complex. *Brucella* spp. is a fastidious intracellular microorganism, so recovery by conventional culture is not effective in many cases. Although serology is helpful in the diagnosis, a negative test does not exclude the disease, especially in chronic forms. Rose Bengal is an agglutination test that readily detects IgM immunoglobulins, and is positive in acute infections, but titers decreased significantly during follow-up.<sup>8</sup>

Another important point that emerges from our case is the lack of identification of *Brucella* sp. by MALDI-TOF® standard database, despite presenting a good score in the identification peaks. The lack of reference spectra in the currently commercialized databases does not allow the identification of *Brucella* sp. isolates.<sup>9</sup> Therefore, in our case, we had to perform 16S PCR sequencing, which finally led us to the identification of *Brucella* sp. genus but was not able to distinguish between the species.

Finally, in the treatment of neurobrucellosis and infective endocarditis caused by *Brucella* sp., triple antimicrobial combination of doxycycline, rifampicin and cotrimoxazole for 4–6 months is recommended. In case of neurobrucellosis, substitution of cotrimoxazole by ceftriaxone in the first 4–6 weeks resulted in better evolution of patients and could shorten the duration of treatment to 4 months.<sup>10</sup>

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## Neonatal pneumonia with poor evolution: An unsuspected agent



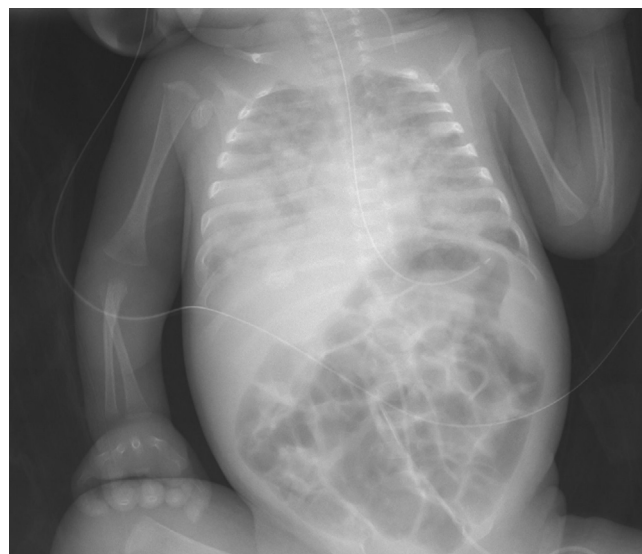
### Neumonía neonatal de mala evolución: un agente insospechado

Dear Editor,

The rarity of some infectious diseases in newborns causes a delay in diagnosis, leading to high morbidity and mortality rates. We present the case of a premature infant of 28 weeks gestational age, with healthy parents of Roma ethnicity, who was admitted to the neonatal unit due to prematurity and had been making good progress. At 57 days of life, close to hospital discharge, the infant developed severe respiratory distress along with fever, hepatosplenomegaly and clotting abnormalities. A diagnosis of nosocomial sepsis-pneumonia was made, but the patient had a poor clinical and radiological response (Fig. 1) to the usual antibiotic therapy, with a finding of extensive bilateral necrotising pneumonia on computed axial tomography. Secondary haemophagocytic syndrome was suspected as six of the eight clinical-analytical criteria were met.<sup>1</sup> Fifteen days after the onset of the condition, due to the poor clinical progress and the negative results of the microbiological tests for viruses, fungi and common bacteria, screening was performed for tuberculosis infection. Samples of gastric juices were taken for three consecutive days for polymerase chain reaction (PCR), sputum smear and culture testing, and a tuberculin skin test (TST) was performed. As the TST reading was negative at 48 h, an *interferon-gamma release assay* (IGRA) test was requested. The sputum smear microscopy and the PCR in gastric juices were positive for *Mycobacterium tuberculosis* and the IGRA was also positive.

Perinatal tuberculosis (TB) was diagnosed, and a positive culture for *M. tuberculosis* was subsequently obtained. Contact tracing of family members and healthcare personnel revealed bacillary pulmonary tuberculosis in both the mother and the grandmother. Both reported being asymptomatic and denied travelling abroad.

Perinatal TB is that which occurs in children under three months of age, with a low incidence in our setting.<sup>2</sup> In a series of cases from La Paz Hospital, it represents 1.4% of TB in the paediatric age group.<sup>3</sup> It may be congenital or acquired postnatally, with postnatal



**Figure 1.** Bilateral areas of consolidation in the lungs, most prominent in the right lower lobe and middle lobe.