# BrucellaCapt® in the Differential Diagnosis of Unexplained Paediatric Neurological Syndromes

Neurobrucellosis (NB), although rare, should be considered in the differential diagnosis of patients presenting with unexplained neurological symptoms, particularly in endemic regions, as its nonspecific presentation often leads to misinterpretation and missed diagnoses. Early identification is essential to prevent severe neurological sequelae.

The first reported case in Saudi Arabia of brain microabscesses secondary to Brucella infection describes an 11-year-old boy with a history of raw milk ingestion and camel contact, presenting with nonspecific systemic symptoms such as bone and muscle pain, along with neurological manifestations including frontal headache, vomiting, double vision, ophthalmoplegia, and transient aphasia. A positive family history of brucellosis further strengthened clinical suspicion of NB.

Diagnostic investigation highlighted the limitations of conventional methods. Multiple blood cultures were negative. Cerebrospinal fluid (CSF) culture and Gram stain revealed no microorganisms. A multiplex PCR meningitis panel (BioFire FilmArray®), covering viral, bacterial, and *Cryptococcus neoformans* targets, was negative at the initial CSF evaluation and remained negative after one week of therapy. These findings align with the well-documented low sensitivity of microbiological techniques in NB, particularly in focal central nervous system disease.

In this context of microbiological and molecular failure, serological testing, recognized as the cornerstone of NB diagnosis, proved decisive. **The BrucellaCapt®** immunocapture agglutination assay demonstrated significant serum titers (1:640) against *Brucella melitensis* and *Brucella abortus,* providing etiological confirmation of infection.

**BrucellaCapt®** detects total anti-Brucella antibodies (IgM, IgG, and IgA), including incomplete or non-agglutinating antibodies that may not be detected by conventional agglutination assays. This comprehensive antibody detection profile is particularly valuable in complicated or focal brucellosis, where bacterial load is low, and culture or PCR frequently yield false-negative results.

Following targeted combination antibiotic therapy, the patient showed significant clinical improvement within one week, with resolution of ophthalmoplegia, and follow-up demonstrated improvement in CSF parameters and radiological regression of lesions after one month.

This case reinforces a key diagnostic principle: in endemic settings, NB must remain a central consideration in children with unexplained neurological symptoms. When culture and molecular assays fail, **BrucellaCapt®** provides robust, standalone serological confirmation, enabling timely diagnosis and appropriate clinical management.

**Reference**

Alghamdi AO, Aljaed NM, Alharthi MA, Alsayyali MM, Algethami AS, Abosabie SA, Abosabie SA, Kamal NM. Neurobrucellosis in an 11-year-old child: A rare case report of brain microabscesses from an endemic region. J Int Med Res. 2026 Jan;54(1):3000605251353490. doi.org/10.1177/03000605251353490



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