

Neurobrucellosis in child: a rare entity

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Abstract

Neurobrucellosis is an uncommon but serious manifestation affecting central and peripheral nervous system. We present an unusual case of neurobrucellosis with meningitis and signs of raised intracranial tension in 10 years old boy from Wardha, Maharashtra.

Keywords: Neurobrucellosis, brucella meningitis, child brucella

Introduction

Brucellosis is still a common zoonotic disease in many parts of the world, including North and East Africa, Middle East, South and Central America, Mediterranean countries of Europe, South and Central Asia. Human brucellosis, typically, is acquired by ingestion of unpasteurized milk, cheese and other dairy products or by infected aerosols or through occupational exposure to infected animals; in particular sheep, goat, swine, camel and cattles¹. Central nervous system involvement is a rare but is a serious manifestation of human brucellosis even in children. Neurobrucellosis can present as meningitis (acute, sub acute or chronic), meningoencephalitis, brain abscess, epidural abscess, myelopathy, polyradiculopathy, mononeuritis or vascular involvement¹⁻⁶. We present an unusual case of neurobrucellosis with meningitis and signs of raised intracranial tension in 10 years old boy.

Case presentation

A 10 years old male child suffered from fever (45 days), migratory joint pain and

swelling involving large joints of upper and lower limbs (45 days), headache and vomiting (15 days). All the complaints were gradually increasing in severity. He was prescribed with some medications by a local practitioner but not much improved except some symptomatic relief (detail of medication was not available). He was admitted to our hospital due to worsening headache and vomiting accompanied with double vision. Detailed history revealed exposure to cattle and goat as a part of family occupation. He used to consume raw milk of goat also. There was no history of contact of tuberculosis.

Physical examination at the time of admission revealed fever (38.4°C), joint pain and swelling accompanied with signs of inflammation, enlarged liver (3 cm) and spleen (2.5 cm), cervical lymphadenopathy and pallor. Neurological examination revealed signs of meningeal irritation in form of neck stiffness and kernig sign and left abducens nerve paralysis. No focal neurological sign was there but bilateral disc pallor was present on fundus examination.

Blood counts (hemoglobin: 11.2 gm%, total leucocyte counts: 7,600/ dl, total platelet counts: 2.72 lacs/ dl), blood biochemistry (SGOT: 30.5, SGPT: 27.24, bilirubin: 0.72, urea: 33.0, creatinine: 0.67), erythrocyte sedimentation rate: 64mm in first hour, chest x-ray all were uninformative. Purified protein derivative (PPD) skin test was negative. Hepatosplenomegaly was present in abdominal sonography scan. Serological tests for malaria (optimal), enteric fever (widal), HIV (ELISA) were also negative but standard tube agglutination test for brucella was positive (titer: 1/320). Urine and blood cultures yield no growth of pyogenic bacteria, mycobacterium, fungi or brucella. No significant finding was seen in neuroimaging (CT scan and MR scan).

Lumber puncture was performed and examination of cerebrospinal fluid showed elevated protein level (88.86 mg/dl), low glucose level (41.03 mg/dl, concurrent blood glucose was 96.38 mg/dl) and lymphocytic pleocytosis (480 cells/ ml, 80% lymphocytes). CSF IgG agglutination titre was not significantly high. Gram stain and Ziehl-Nielsen stain were negative. Adenosine deaminase score was 2.6 (<10 is normal). Cerebrospinal fluid cultures yields no growth. Standard tube agglutination test for brucella was positive (titer: 1:264) but culture was again negative. Neurobrucellosis was considered as the possible diagnosis causing brucella meningitis and treatment with streptomycin (750 mg intramuscular, once a day), rifampicin (600 mg, once a day) and doxycycline (200 mg, once a day) was started.

Fever disappeared within 7 days after the treatment was started. Other signs and symptoms were also improved gradually. A repeat lumber puncture was done after 10 days of treatment and cerebrospinal fluid was analyzed. The findings of cerebrospinal fluid were dramatically improved (protein level: 37.23 mg/dl, glucose level: 65.21

mg/dl with concurrent blood glucose: 86.90 mg/dl and cell count: < 5 cells/ml, all lymphocytes). Patient was discharged on the same treatment and remained free of any complaints (follow up period of 6 months).

Discussion

Brucellosis should be common in India because all species of brucella are abundant in Indian cattle. It is quite surprising that there is scanty literature available on neurobrucellosis with meningitis from India. It is due to lack of high index of suspicion and investigation facilities¹. Neurobrucellosis may present with meningo-encephalitis, meningomyelitis, papilloedema without localization, meningovascular involvement (TIA or stroke), peripheral and cranial neuritis, central or peripheral demyelination, spondylitis, meningeal involvement with CSF abnormality is seen in all cases of neurobrucellosis irrespective of the mode of presentation¹⁻⁵.

The criteria necessary for definite diagnosis of neurobrucellosis are 1) neurological dysfunction not explained by other neurologic diseases, 2) abnormal CSF indicating lymphocytic pleocytosis and increased protein, 3) positive CSF culture for Brucella organisms or positive Brucella IgG agglutination titre in the blood and 4) CSF, response to specific chemotherapy with a significant drop in the CSF lymphocyte count and protein concentration. Our patient fulfilled all the above mentioned criteria for the diagnosis of neurobrucellosis except that the CSF IgG agglutination titre was not significantly high. Demonstration of Brucella organism from CSF in culture media is the confirmatory test for diagnosis of neurobrucellosis. However, this is uncommon in most of the series and yield does not exceed 30%. STA test may give false negative titre because of the blocking antibodies⁶. This can be the reason for low CSF Brucella titre which was not

significantly higher in the present case though serum was strongly positive. Improvement of clinical and CSF parameters only on antibrucella treatment gives further confirmation to the etiology.

We suggest every clinician to have a high index of suspicion to rule out Brucella in any case of chronic meningitis of apparent unproven etiology. It may be possible that many cases of tuberculous meningitis are basically cases of Neurobrucellosis receiving unnecessary prolonged therapy. It is to be noted that both share some common drugs for treatment.

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Ethical approval: Yes, it was taken only for the side effects of the antibrucella drugs because patient was only seropositive for brucella and negative for CSF. So patient was informed about that.

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