

A RARE CASE OF NEUROBRUCELLOSIS

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ABSTRACT

BACKGROUND

One of the most common causes of fever with back pain in India is brucellosis along with tuberculosis infection of the spinal cord and vertebral column. Brucellosis is a multisystem infection with a broad-spectrum of clinical presentations. Its nervous system involvement is known as neurobrucellosis is complication of brucellosis occurring in 0 to 25% and can present as meningitis, encephalitis, myelitis-radiculoneuritis, brain abscess, peripheral neuropathy and psychosis.

MATERIALS AND METHODS

In this case study, we present a 54-year-old male patient a cattle worker with unexplained back pain. Appropriate blood investigations, CSF analysis and MRI scan were taken towards the cause of the diagnosis.

RESULTS

CSF analysis showed lymphocyte pleocytosis with agglutination in Rose Bengal test. MRI diagnostic of neurobrucellosis revealed anterosuperior osteophyte inflammations, namely Pedro Pons' sign or Pom's sign.

CONCLUSION

Through this case report, we would like to notify that neurobrucellosis should be considered as one of the differential diagnosis and not to be missed as it is treatable. In such conditions, patient has to be treated with two or more antimicrobials such as rifampicin, co-trimoxazole and doxycycline in order to achieve complete cure rate and to prevent relapse.

KEYWORDS

Neurobrucellosis, Zoonosis, Pons Pedro Sign, Rose Bengal Test.

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BACKGROUND

Human brucellosis is a systemic infection caused by intracellular bacteria of genus *Brucella* transmitted from animals to humans (zoonosis).¹ Brucellosis has a wide clinical polymorphism and almost every organ can be affected during the infection. The disease is mainly transmitted to humans through the ingestion of raw milk or non-pasteurised cheese contaminated with one of the four *Brucella* species pathogenic to humans.² The clinical presentation can vary from asymptomatic infection with seroconversion to a full blown clinical picture of fever, night sweats and joint manifestations. Rarely, there is hepatic, cardiac, ocular or central nervous system involvement. Neurobrucellosis is an uncommon and rare, but serious presentation of brucellosis that can be seen in all stages of

the disease. The incidence of neurological complications range between 0-25% in adult patients, but it is rarely seen in children. The incidence is equal in males and females. Neurological complications are infrequent, but have marked clinical importance for their severity and important morbidity. *Brucella* bacteria may affect the nervous system directly or indirectly as a result of cytokine or endotoxin on the neural tissue. The objective of this case study was to evaluate and discuss the regimens used to treat neurobrucellosis. CNS involvement is generally in meningoencephalitis form. Development of basal meningitis may lead to lymphocytic pleocytosis, cranial nerve involvement or intracranial hypertension.³ In diagnosing brucellosis, the bacteria isolation from serum and other specimens are the gold standard. In neurobrucellosis, imaging findings may be found in four types; normal, inflammation (abnormal enhancement), white matter changes and vascular changes. Imaging abnormalities in neurobrucellosis are variable and may mimic other infections or inflammatory conditions. The imaging appearance reflects inflammatory or demyelinating processes or a vascular insult and does not always correlate with the clinical picture. The reasons for such variable manifestations remain obscure.⁴

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MATERIALS AND METHODS

A case study of 54-year-old male patient, cattle shed owner presented with history of generalised myalgia for two months, history of sweating, which was present at rest, back pain for one month and with no history of fever.

On CNS examination, straight leg raise test (Lasegue's sign) was positive at 60 degrees.

Laboratory Tests Include

1. Complete blood count revealing haemoglobin - 10 gm%, total count - 3,600 cells.
2. Other parameters like Erythrocyte Sedimentation Rate (ESR), biochemical tests and urine analysis appears normal.
3. AFB was negative in CSF.
4. CSF analysis revealed elevated protein levels 60 mg/dL, low glucose level 20 mg/dL, cell count of 110 cells out of which 90 are lymphocytes and adenosine deaminase being 8 IU/L.
5. Brucella agglutination test (rose Bengal test) was positive in the serum and CSF (Figure 1).
6. MRI spine revealed diffuse posterior central disc bulge seen at L3-L4 intervertebral disc (Figure 2 and 3).

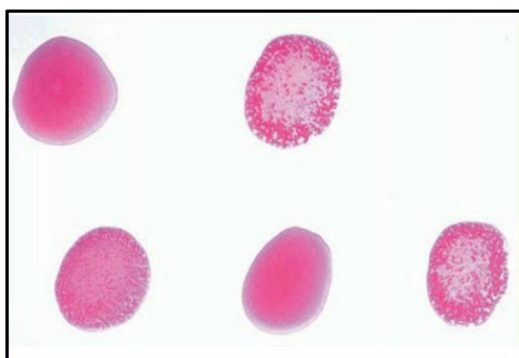


Figure 1. Rose Bengal Test



Figure 2. MRI Spine



Figure 3. MRI Spine

DISCUSSION

The above case illustrate that brucellosis can present in various clinical forms. Neurobrucellosis is a rare complication of brucellosis and sometimes neurological symptoms maybe the only symptoms. A depressed immune status is believed to be a risk factor for developing neurobrucellosis.

The criteria for definite diagnosis of neurobrucellosis are-

1. Neurological dysfunction not explained by other neurological 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.
4. CSF, response to specific chemotherapy with a significant drop in the CSF lymphocyte count and protein concentration.
5. Diagnostic findings in cranial or spinal magnetic resonance imaging or CT.

Neurobrucellosis should be considered in the wake of unexplained neurological symptoms such as cognitive dysfunction, transient ischaemic attacks in young, paraparesis and psychiatric symptoms.⁵ Other common cause, Pott's spine should be ruled out. In this condition, mainly lumbar spine is involved and epiphysitis of anterosuperior vertebral body is common, which is called Pedro Pons' sign. The diagnosis of human neurobrucellosis usually relies on the detection of antibodies to Brucella Lipopolysaccharide (LPS) in CSF by agglutination tests or Enzyme-Linked Immunosorbent Assay (ELISA).⁶ A regimen with a combination of three or four antibiotics are preferred

for neurobrucellosis.⁷ Doxycycline is the preferred tetracycline in neurobrucellosis because its tissue and CNS penetrance is much better and it also has a longer half-life. Rifampicin and co-trimoxazole also offer a good penetration into the CSF. Ciprofloxacin combined (not solely) with other antibiotics is as effective as the standard regimen of doxycycline and rifampicin. Ceftriaxone also offers good in vitro activity and penetration into the CSF.⁷

According to World Health Organization (WHO) following guidelines are recommended-

1. Doxycycline 100 mg p.o. twice daily plus rifampin 600-900 mg/day p.o. - Both drugs are to be given for 6 weeks; this regimen is more convenient, but probably increases risk of relapse.
2. Doxycycline 100 mg p.o. twice daily for 6 weeks and streptomycin 1 g IM for 2-3 weeks - This regimen is believed to be more effective, mainly in preventing relapse; gentamicin can be used as substitute for streptomycin and has shown equal efficacy.
3. Ciprofloxacin-based regimens have shown efficacy equal to the doxycycline-based regimens.

In this patient, we have treated with doxycycline 100 mg/12 hours for 6 wks. p. o. and rifampicin 600 mg for 6 weeks following, which patient had recovery from the severity of back pain and is now doing good. His straight leg raising test after treatment was negative.

CONCLUSION

Brucellosis is still an endemic zoonosis throughout the world and presents a major public health, clinical and diagnostic problem. Neurobrucellosis should be considered

in the presence of unexplained neurological symptoms such as cognitive dysfunction, transient ischaemic attack in a young, paraparesis and psychiatric symptoms. In the above case of unexplained back pain, headache with sweating at rest, treating physicians should never miss neurobrucellosis rather than the very common tuberculosis spine when acid-fast bacilli stain comes out negative in CSF analysis. These patients need a longer duration of treatment with combination of 2 or 3 antibiotics for complete cure rate.

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