Neurobrucellosis in a Patient with Multiple Sclerosis; a Case Report

**Peyman Petramfar**

Associate Professor of Neurology

**Alireza Nikseresht**

Associate Professor of Neurology

**Maryam Sharifian**

Resident of Neurology

Student research committee

**Mohammadali Davarpanah**

Associate Professor of infectious disease

*Department of Neurology*

*Shiraz University of Medical Sciences*

*Shiraz, Iran*

Corresponding author:

*Dr. Maryam Sharifian*

*Resident of Neurology*

*Department of Neurology*

*Student Research committee*

*Shiraz University of Medical Sciences*

*Tel: +9809177133608*

*Email: maryam\_sharifian@yahoo.com*

**Abstract**

**Introduction:** Neurobrucellosis is an uncommon complication of brucellosis. Acute meningitis and encephalitis are the most common clinical manifestations, however symptoms may be subacute and diagnosis requires a high index of suspicion in patients from endemic areas. Diagnosis is often based on neurological symptoms, serology, and suggestive brain imaging because cerebrospinal fluid culture yields are low.

**Case presentation**: Herein we report a 30 year old lady a known case of MS who came with ataxia, in physical examination and para clinical evaluations [Neurobrucellosis](http://www.ncbi.nlm.nih.gov/pubmed/18398283) was detected as the cause.

**Discussion:** Due to several of immunomodulating or immunosuppressive treatments in the patients with MS, and Chronic suppression of cell-mediated immunity these patients may be more prone to infections. So in such patient careful evaluation of clinical finding are very important

**Introduction**

Brucellosis is an endemic zoonotic disease, common in certain areas such as the Middle East or South America and continues to be an important public health problem. It is transmittable to humans through the consumption of animal products, with exposure to their blood, or through direct contact. The primary symptoms of the infection are nonspecific. Neurobrucellosis is rare and infrequent but have marked clinical importance due to its severity and important morbidity. It ranges from 1.7 to 10% of all Brucella infections. (1, 2)

Herein we report a 30 year old lady a known case of Multiple Sclerosis (MS) who came with ataxia and lower extremities hypoesthesia that was referred to our hospital for rolled out of an MS attack but in physical examination and para clinical evaluations Neurobrucellosis was detected.

**Case Presentation:**

The patient was a 30 year old lady a known case of MS since about 3 years before admission in our ward and was on interferon beta-1a (Cinnovex) for treatment of MS.

She was relatively well since about 2 months ago when presented with some nonspecific muscle pain and weakness. Gradually the patient developed with mild agitation and ataxia. MRI was performed for her which showed mild hydrocephaly more than previous demyelinating plaques of MS disease.

The condition considered as MS attack, so the patient referred to our clinic for treatment with corticosteroids.

In the ward, physical examination showed normal vital signs. Mini mental status score was significantly decreased.

Moreover the patient had lower extremities numbness, generalized weakness and ataxic gait. Other physical examinations were within normal ranges. No neck rigidity was detected.

Brain MRI showed significant brain atrophy and hydrocephaly. Laboratory work ups showed a lymph dominant leukocytosis. ESR and CRP rose significantly. CSF obtained and sent for cell count and chemistry analysis.

The CSF analysis showed protein: 1734 mg/dl, cell count showed 254 leukocytes (80% lymphocyte). Complete blood count (CBC) showed lymph dominant leukocytosis. (Table 1)

Wright test in CSF was positive. Neurobrucelosis was diagnosed as the cause of the condition.

The patient showed a dramatic response to treatment and discharged with an acceptable condition.

Table 1: other lab work up of the patient

|  |  |
| --- | --- |
|  |  |
| 8800 | WBC |
| 65% | lymphocyte |
| 30% | PMN |
| 10 | Hb |
| 152000 | Plt |
| 21 | BUN |
| 1.1 | Cr |

**Discussion:**

Clinical presentations of neurobrucelosis are nonspecific and subacute. The signs and symptoms of central nervous system (CNS) involvement are non-specific in neurobrucellosis. Neck stiffness occurs in less than one half of patients with meningitis. Although chronic meningoencephalitis is the most common clinical presentation, Myelitis, radiculoneuritis, brain and epidural abscess, and meningovascular syndromes are seen in some cases.(3)

MRI findings are variable, it may present with normal findings, inflammatory changes, or white matter and vascular changes. (4)

In cerebral fluid Leukocyte pleocytosis and high protein levels are seen, positive cultures from serum or cerebral fluid are observed in less than 50% of the cases. (5)

Brucella Infection triggers the immune mechanism leading to a demyelinating state in CNS. As the disease gets more chronic in a patient the immune mechanism processes increased. Encephalopathy in neurobrucellosis is always secondary to vascular involvement. Cranial nerve paralyses are seen more frequently during the acute or subacute stages of the disease course associated with diffuse CNS involvement. The acoustic nerve is the most frequently involved cranial nerve. (6, 7, 8) Neurobrucellosis is a treatable disease with a favorable outcome. The neurologic sequel may be minimal in these patients. The important prognostic factors are duration of the disease, virulence of the microorganism and early start of antibiotic therapy, so early diagnosis is important and lifesaving.

Multiple sclerosis (MS) is a demylinating disease of central nervous system which is significantly affected young adults especially females. (9,10) It is considered that both genetic and environmental factors involved in developing MS. (9,10) After trauma multiple sclerosis considered as the second cause of neurological disability in young adults, the prevalence of MS has a considerable variability worldwide. (9, 10)

Due to several of immunomodulating or immunosuppressive treatments in the patients with MS, and Chronic suppression of cell-mediated immunity these patients may be more prone to infections. So in such patient careful evaluation of clinical finding are very important. According to complete different treatment of the attacks of MS, in these patients roll out of other chronic infections are very important before starting corticosteroids for treatment of attacks.

**References:**

 1-Young EJ. Brucellosis. In: Evans AS, Brachman PS, editors. Bacterial Infections of Humans. Springer Science and Business Media, LLC; 2009. pp. 177–188

2-Özisik HI, Ersoy Y, Refik Tevfik M, Kizkin S, Özcan C. Isolated intracranial hypertension: a rare presentation of neurobrucellosis. Microbes and Infection. 2004;6(9):861–863

3-Yilmaz S, Serdaroglu G, Gokben S, Tekgul H. A case of neurobrucellosis presenting with isolated intracranial hypertension. Journal of Child Neurology. 2011;26(10):1316–1318

4-Al-Sous MW, Bohlega S, Al-Kawi MZ, Alwatban J, McLean DR. Neurobrucellosis: clinical and neuroimaging correlation. American Journal of Neuroradiology. 2004;25(3):395–401

5-Ceran N, Turkoglu R, Erdem I, et al. Neurobrucellosis: clinical, diagnostic, therapeutic features and outcome. Unusual clinical presentations in an endemic region. Brazilian Journal of Infectious Diseases. 2011;15(1):52–59

6-Seidel G, Pardo CA, David Newman-Toker, Olivi A, Eberhart CG. Neurobrucellosis presenting as leukoencephalopathy. Arch Pathol Lab Med. 2003; 127:e374-377.

. 7-Al-Orainey IA, Laajam MA, Al-Aska AK, Rajapakse CN. Brucella meningitis. J Infect. 1987; 14:141-145.

8-McLean DR, Russell N, Khan MY. Neurobrucellosis: clinical and therapeutic features. Clin Infect Dis. 1992; 15:582-590

9-Compston A, Coles A. Multiple sclerosis. Lancet. 2008 Oct 25; 372(9648):1502-1

 10-Weiner HL. Multiple sclerosis is an inflammatory T-cell-mediated autoimmune disease. Arch Neurol 2004 Oct; 61(10):1613-5