Neurobrucellosis In A Patient With Multiple Sclerosis; A Case Report

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**Abstract**

Neurobrucellosis is an uncommon complication of brucellosis. Acute meningitis and encephalitis are the most common clinical manifestations, however symptoms of these two conditions 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.

Herein we report a 30 year old female a known case of MS( Multiple Sclerosis) who came with ataxia and agitation , in physical examination the patient had ataxic gait and decreased concentration, Brain MRI showed significant brain atrophy and hydrocephaly. Laboratory work ups showed a lymph dominant leukocytosis. ESR and CRP rose significantly. CSF ( Cerebrospinal fluid) 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. Wright test in CSF was positive. Accordingly [Neurobrucellosis](http://www.ncbi.nlm.nih.gov/pubmed/18398283) was considered as the cause.

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, it is common in certain parts of the world such as the Middle East or South America . the disease continues to be an important public health problem in the endemic areas.It is transmittable to humans through the consumption of animal products, with exposure to their blood, or through direct contacts.The primary symptoms of the infection are nonspecific.Neurobrucellosis is rare and infrequent . It ranges from 1.7 to 10% of all Brucella infections . although the rate is not very significant but it has a marked clinical importance due to its severity and important morbidity. [1, 2]

Clinical presentations of neurobrucelosis are nonspecific and subacute. The signs and symptoms of central nervous system (CNS) involvement are very vague . 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]

Herein we report a 30 year old female ,a known case of Multiple Sclerosis (MS) who came with ataxia and lower extremities hypoesthesia . in physical examination and para clinical evaluations Neurobrucellosis was detected.

**Case Presentation:**

The patient was a 30 year old female 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 presented mild agitation and ataxia.

She also reported consumption of rural dairy in about 3 months before admission.

In the ward, physical examination showed normal vital signs , But 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.

MRI ( magnetic resonance imaging)was performed for her which showed mild hydrocephaly and demyelinating plaques of MS disease . comparing to the previous imagings the size and count of the plaques hadn’t any change but the hydrocephaly was a new finding.

. Laboratory work ups showed a lymph dominant leukocytosis. ESR and CRP rose significantly. CSF ( Cerebrospinal fluid) 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.

Considering the abnormal CSF findings and the physical examinations , Vasculitis , Malignancies , Collagen-vascular disease ,Tuberclosis and fungal meningitis were considerd as the possible difrential diagnosis , but these conditions were ruled out with the paraclinical evaluations.

At the end Neurobrucelosis was diagnosed as the cause of the condition. Treatment was started with doxycycline, streptomycin, rifampin, and trimethoprim-sulfamethoxazole (TMP-SMZ).

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

**Discussion:**

As mentioned in introduction , Clinical presentations of neurobrucelosis are nonspecific and subacute. The signs and symptoms of CNS involvement are vague. [1,2]

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.

MS is a demylinating disease of central nervous system which is significantly affected young adults especially females. It is considered that both genetic and environmental factors involved in developing MS. The prevalence of MS has a considerable variability worldwide and it seems that the prevalce rate is increasing in Iran [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. In these patients infections as a cause of a new sign must always be considered.

Moreover , regarding to this fact that in the MS patients any new signs and symptoms may be due to a new attack of the disease , and the treatment of the attacks are with corticosteroids, it is very important to differentiate a new attack and a subacute infection like neurobrucellosis. In the patients with subacute infections corticosteroid dramatically worsen the disease and may be fatal.

On the other hand , according to variable MRI findings in the patients with neurobrucellosis there are some reports that presented the patients who considered as MS in the primary evaluations but in the further i investigations Neurobrucellosis was detected. [11]

Collectively , according to significant increasing in the prevalence of MS in Iran and also regarding to this fact that Iran is an endemic area for Brucellosis , coincidence of these two condition may be seen more frequent than the other parts of the world, so in the patients with MS especially those who are on the immunomodulating or immunosuppressive treatments, neurobrucellosis must be considered as a possible differential diagnosis when the patient has a new complaint.

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

Table 1: other lab work up of the patient