Received: 30 Aug 2013
Revised: 20 Sep 2013
Accepted: 28 Sep 2013

Neurobrucellosis in a Patient With Multiple Sclerosis; A Case Report

Peyman Petramfar¹, Alireza Nikseresht¹, Maryam Sharifian^{2✉}, Mohammadali Davarpanah³, Masoud Nemovi⁴, Amirhossein Sharifian⁵

¹Department of Neurology, Shiraz University of Medical Sciences, Shiraz, Iran.

²Student Research Committee, Department of Neurology, Shiraz University of Medical Sciences, Shiraz, Iran.

³Department of Internal Medicine, Shiraz University of Medical Sciences, Shiraz, Iran.

⁴Student Research Committee, Department of Internal Medicine, Shiraz University of Medical Sciences, Shiraz, Iran.

⁵Student Research Committee, Jahrom University of Medical Sciences, Jahrom, Iran.

Abstract

Background: Neurobrucellosis is a rare 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. **Case report:** Herein we report a 30 year old female a known case of MS (Multiple Sclerosis) who presented with ataxia and agitation, in physical examination the patient had ataxic gait and decreased concentration, Brain MRI showed significant brain atrophy and hydrocephaly. Laboratory workups showed a lymph dominant leukocytosis. ESR and CRP rose significantly. CSF (Cerebrospinal fluid) was obtained and sent for cell count and chemistry analysis. The CSF analysis showed 1734 mg/dl protein, 254 leukocytes (80% lymphocyte). Complete blood count (CBC) showed lymph dominant leukocytosis. Wright test in CSF was positive. Accordingly Neurobrucellosis was considered as the cause. **Conclusion:** 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 patients careful evaluation of clinical findings are of great importance. [GMJ. 2014;3(2):120-22]

Keywords: Neurobrucellosis; Multiple Sclerosis; Clinical Findings; Brucellosis

Introduction

Brucellosis is an endemic zoonotic disease; it is common in certain parts of the world such as Middle East or South America. The disease continues to be an important public health problem in endemic areas. It is transmittable to human through the consump-

tion of animal products, with exposure to their blood, or through direct contact. The primary symptoms of the infection are non-specific. Neurobrucellosis is rare and infrequent. It ranges from 1.7 to 10% of all Brucella infections. Although the rate is not very significant it has a marked clinical importance due to its severity and important morbidity [1, 2].

GMJ

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Fax: +98 731 2227091
PO Box 7461686688
Email: info@gmj.ir

✉ Correspondence to:

Maryam Sharifian MD; Resident of Neurolog, Department of Neurology, Student Research committee, Shiraz University of Medical Sciences, Shiraz, Iran
Telephone Number: (+98) 9177133608
Email Address : maryam_sharifian@yahoo.com

Clinical presentations of neurobrucellosis are non-specific 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 years old female, a known case of Multiple Sclerosis (MS) who came with ataxia and lower extremities hypoesthesia. Following physical examination and paraclinical evaluations Neurobrucellosis was detected.

Case Presentation

The patient was a 30 years old female, a known case of MS since about 3 years before admission in our ward, and was on interferon beta-1a (Cinnoex) for treatment of MS. She was relatively well since about 2 months ago when presented with some non-specific 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. Compared with her previous MRIs, the size and number of the plaques had not changed but the hydrocephaly was a new finding.

Laboratory workups showed a lymph dominant leukocytosis. Erythrocyte sedimentation rate (ESR) and C-reactive protein (CRP) rose significantly. CSF (Cerebrospinal fluid) was 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 leu-

kocytosis. Wright test in CSF was positive. Considering the abnormal CSF findings and the physical examinations, Vasculitis, Malignancies, Collagen-vascular diseases, Tuberculosis, and fungal meningitis were considered as the possible differential diagnosis, but these conditions were ruled out with the paraclinical evaluations.

At the end, Neurobrucellosis was diagnosed as the cause of the patient's condition. Treatment was started with Doxycycline 100 mg twice a day, Rifampin 600 mg daily, and Ceftriaxone 1 gr twice a day. The patient showed a dramatic response to treatment and discharged with an acceptable condition, with doxycycline 100 mg twice a day, rifampin 600 mg daily and Ciprofloxacin 500 mg twice a day.

Discussion

As mentioned in introduction, clinical presentations of neurobrucellosis are nonspecific and subacute. The signs and symptoms of CNS involvement are vague [1,2]. MRI findings are variable; it may present with normal MRI, or inflammatory changes, and can even show white matter and vascular changes [4]. In CSF 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 increase. Encephalopathy in neurobrucellosis is always secondary to vascular involvement. Cranial nerve paralyzes 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 [6-8].

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 initiation of antibiotic therapy, which makes the early diagnosis important and life-saving. MS is a demyelinating disease of CNS which significantly affects young adults especially

females. It is considered to develop due to both genetic and environmental factors. The prevalence of MS has a considerable variability worldwide and it seems that its prevalence is increasing in Iran [9-11]

Due to several immunomodulating or immunosuppressive treatments in the patients with MS and Chronic suppression of cell-mediated immunity, these patients may be more prone to infections. Therefore, infections must always be considered as a cause of a new sign in these patients.

However, any new sign and symptom in MS patients may be due to a new attack of the disease, and the treatment of the attacks is with corticosteroids. In the patients with subacute infections corticosteroid dramatically worsens the disease and may be fatal. Thus, it is very important to differentiate a new attack

and a subacute infection like neurobrucellosis. On the other hand, according to variable MRI findings in the patients with neurobrucellosis there are some reports that presented the patients who were even considered having MS in the primary evaluations but in further investigations neurobrucellosis was diagnosed [12].

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

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