Neurobrucellosis Presented with a Hyperacute Onset: A Case Report

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Abstract
Neurobrucellosis is uncommon; however, it is an important complication of brucellosis, which could be seen in any stage of the disease. It presents with different kinds of neurology manifestations and diagnosis is mainly made on history, physical examination and laboratory tests. The clinical course of the disease is relatively insidious and the most common pattern of presentation is subacute or chronic. It has a long-term treatment period and its response to treatment is slow. Here, we report a case of an apparent healthy 25 yr-old Afghani woman from Fars Province (south of Iran) that presented at first with hyperacute onset of headache and abnormal behavior and diagnosed neurobrucellosis in Nov 2015. In endemic areas, neurobrucellosis should be considered for each patient referred with unexplained neurological problems.

Keywords: Neurobrucellosis, Hyperacute onset, Neurologic manifestation, Iran

Introduction
Brucellosis is the most common zoonotic disease in the world. Although, the disease has been reported around the world, it has a higher prevalence in countries where the health care problems and animal health are not standardized. In Asian countries and Turkey, a high incidence of the disease has been reported (1, 2). The course of the disease may be acute, sub-acute or chronic. Clinical manifestation of brucellosis includes weakness, fever, headache, pain involving muscles and joints (low back pain in 60% of cases), rash, splenomegaly and hepatomegaly, diarrhea, nausea, vomiting, constipation, and lack of appetite (3, 4). Neurobrucellosis (NB) is an uncommon complication, which occurs in 3%-5% of brucellosis and could present in any stage of the disease. Although, this side effect is not so common, it is a significant problem in Mediterranean regions (1, 5). There is a controversy about diagnostic criteria for NB in different papers. Diagnosis based on the detection of neurological symptoms in a patient with brucellosis and in others on the microbiological results of cerebrospinal fluid analysis. Microbiological evaluation and culture of the cerebrospinal fluid is the gold standard for diagnosis of NB, however, because growth rate of microorganism is low this method is time consuming. Thus, performing serological tests and cerebrospinal fluid (CSF) analysis in suspected patients is necessary and could be more helpful (5, 6). The clinical course of the disease is relatively insidious and the most common pattern of presentation is subacute or chronic (4).

Here, we reported a case of an apparent healthy young woman presented with hyperacute onset of headache and abnormal behavior and diag-
nosed NB. In endemic areas, NB should be consi-
ered for each patient referred with unex-
plained neurological problems.

**Case report**

The patient is a 25 yr-old Afghani woman pre-
sented with severe acute headache, agitation and
abnormal behavior since one day prior to her
admission in Nemazee Hospital, an academic
center affiliated to Shiraz University of Medical
Sciences, Shiraz, south of Iran in 2105. She was
an animal husbandry and had no any significant
disease in the past medical and drug histories.
The patient lived in rural areas of Shiraz (south of
Iran) and used to consume unsterilized milk
products.

On arrival in the hospital, the patient was con-
fused, restless and agitated without verbal com-
munication. She had no fever and other parts of
the vital signs were normal. There was nuchal
rigidity; however, the rest of general and neu-
rological examinations were normal.

Laboratory tests including Complete Blood
Counts (CBC), Blood Urea Nitrogen (BUN), se-
rum creatinine, electrolytes and liver function
tests proved to be normal. Erythrocyte Sedimen-
tation Rate (ESR) was 51 and CRP 68. Antibody
for HIV virus was negative. Brain MRI with and
without contrast was consistent with diffuse dural
and leptomeningeal enhancement (Fig. 1). Lu-
mbar puncture was performed 2 times in a 72-h
period and checked for analysis, gram staining
and culture (Table 1).

![Fig. 1: Coronal (a) and axial (b) views of brain MRI with and without contrast show diffuse dural and leptomeningeal enhancement (Original)](image)

Further CSF evaluations were requested for
herpes simplex virus (HSV-PCR), IgG- and IgM-
antibody for NB, ADA and PCR for mycobacte-
rium tuberculosis (TB). HSV-PCR, ADA and
TB-PCR were negative. IgG-antibody for NB
was 121.3 mg/dl, (normal range lower than 0.5
mg/dl). IgM-antibody was not detected.

Serum IgG for brucella demonstrated 108 mg/dl
(normal range less than 8 mg/dl) and for IgM 3.2
mg/dl(less than 8 mg/dl); 2-ME titer also was
1:20 and Wright test 1:80 which were positive for
this endemic area. With suspicion to brucellosis,
treatment was initiated with rifampin, doxycyc-
line, and co-trimoxazol.

Fortunately, she was improved and was awa-
kened after 48 h of treatment. Few days later, she
was discharged from the hospital in a good situ-
a tion with oral medications.

**Discussion**

Brucellosis is still one of the important problems
in some areas of the world. Consumption of unpasteurized milk products, as well as contact with
infected animals, is a common route of transmis-
sion (7, 8).
Table 1: Pattern of first and second CSF analysis

| CSF analysis          | The first | The second |
|-----------------------|-----------|------------|
| Opening pressure      | 45 cm H2O | 23 cm H2O  |
| Leukocyte:            |           |            |
| - Lymphocytes         | 180:      | 180:       |
| - Polymorph-nuclear cells | 45:       | 45:        |
| Glucose               | 33 (mg/dl)| 40 (mg/dl) |
| Protein               | 140 (mg/dl)| 80 (mg/dl)|
| Culture               | negative  | negative   |
| Gram stain            | Gram negative rod | Gram negative rod |

Our patient had a history of consuming unpasteurized milk products, too. Neurologic complications of brucellosis are not so common, but very important. Diagnosis of NB was difficult and there was not a definite diagnostic test for this disease (9). Since this condition can be very dangerous and problematic for patients, it is very important to consider it in every patient with undiagnosed neurological manifestations.

Usually, NB has a chronic course and its symptoms present gradually. Indeed, it has a long-term treatment period and its response to treatment is slow. In one study in Turkey, 13 adult patients with NB were evaluated. In this study, 77% of patients had chronic presentation (10). This finding has also been confirmed in other studies (11, 12).

Our patient presented with hyperacute onset of symptoms (which started and reached its peak among hours), such as headache, abnormal behavior, and impaired level of consciousness. This hyperacute presentation for NB is very unusual. Turel and colleagues reported a case of acute NB. The patient was reported in Turkey and her primary symptom was seizure. Clinical symptoms and the course of the disease were also consistent with NB; however, that was contrary to the usual cases, and her symptoms appeared suddenly (13).

Initial symptoms of this patient in our study were started by sudden headache and behavioral changes. Diagnosis of this patient was made based on clinical laboratory and response to treatment.

The aim of this case study was to alert physicians on the unusual manifestations and presentations of NB, which could be missed if there is no suspicion about it.

**Ethical considerations**

Ethical issues (including plagiarism, informed consent, misconduct, data fabrication and/or falsification, double publication and/or submission, redundancy, etc.) have been completely observed by the authors.

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