



## Epileptic Seizure: An Atypical Presentation in Brucellosis

Simin-Dokht Shoaie<sup>1</sup>, Mohammad Farahbakhsh<sup>2</sup>, Mehrdad Haghighi<sup>1</sup>, Fahimeh Hadavand<sup>1</sup>

1- Department of Infectious Diseases, Clinical Research and Development Center, Imam Hossein Hospital, Shahid Beheshti University of Medical Sciences, Tehran, Iran

2- Infectious Diseases and Tropical Medicine Research Center, School of Medicine, Shahid Beheshti University of Medical Sciences, Tehran, Iran

Received: 24 August 2016

Revised: 29 September 2016

Accepted: 3 October 2016

### ARTICLE INFO

Corresponding author:  
Simin Dokht Shoaie

Email:  
drsimin2@yahoo.com

Keywords:  
Brucellosis;  
Neurobrucellosis;  
Meningitis;  
Seizure

### ABSTRACT

Neurologic involvement occurs in approximately 10% cases of brucellosis and is a serious complication. It manifests with unique and some rare manifestations. We present the first patient with seizures in *Brucella* meningitis without encephalitis, space-occupying lesion, or vascular involvement. The patient is a 23-year-old man with complaint of seizure. He had generalized weakness for 2 weeks before. In 1<sup>st</sup> day of admission, he had the second convulsion. Cerebrospinal fluid (CSF) on admission showed lymphocytic pleocytosis and high protein. Brain magnetic resonance imaging and computed tomography scan were normal. Further evaluations resulted a positive Wright, Coombs' Wright, and 2-mercaptoethanol (2ME) tests. Specific regimen with rifampin, doxycycline, and ceftriaxone in the 1<sup>st</sup> month then the first two with trimethoprim-sulfamethoxazole (TMP-SMX) for 5 months administered. 6 months after completion of treatment in follow-up he has no seizure, systemic or localized symptoms.

**Citation:** Shoaie S, Farahbakhsh M, Haghighi M, Hadavand F. **Epileptic Seizure: An Atypical Presentation in Brucellosis.** Case Rep Clin Pract 2016; 1(3): 85-8.

### Introduction

**B**rucellosis, caused by a *G-Bacillus* named *Brucella* is the most frequently encountered worldwide zoonotic disease, which can be transmitted from sheep, goat, cattle, swine, and other

animals to human (1). Each year half a million new human brucellosis cases cause serious consequences on health and socioeconomic issues, particularly in underdeveloped countries. In Iran, 50-100 cases/100,000 in general population (2) and in

new Sub-national studies 0.73-141.60 cases of brucellosis per 100,000 population were reported. The disease is under control in developed countries (3). The disease is frequently transmitted with unsterilized milk and dairy products (4). Systemic brucellosis is the most common clinical form with fever, arthralgia, sweating, weight loss, and hepatosplenomegaly. Local involvement in any system can be seen with nonspecific and sometimes atypical manifestation, including nervous system in 5-10% patients. Any part of the nervous system, central and peripheral, can be involved as acute meningitis, meningoencephalitis, chronic peripheral form, and chronic central nervous system (CNS) infection (1). Here, we report a rare case of brucellosis with convulsion in brucellar meningitis without encephalitis, local brain involvement, and vascular involvement.

### Case Report

The patient was a 23-year-old man, an engineer student, admitted to the Emergency Department, in Imam Hussein Medical Center, Shahid Beheshti University of Medical Sciences, Tehran, Iran, with complaint of seizure 1 hour ago. Convulsion was generalized, tonic, clonic lasting 3 minutes with urinary incontinence and postictal confusion. He had aggressive mood and restlessness from 4 days before and generalized weakness in last 2 weeks. He had no complaint of fever, chills, nausea, vomiting, headache and blurred vision, respiratory, gastrointestinal, urogenital and musculoskeletal system. Patient was under insulin therapy for diabetes mellitus (DM) Type I. General physical examination was normal for every systems, specially no neurologic clinical manifestations with normal vital signs as blood pressure = 120/80 mm/Hg, pulse rate = 90/min, respiratory rate = 14/min, and Oral temperature (OT) = 36.6° C. Laboratory examinations showed a normal complete blood count: Hg = 14.4 mg/dl, platelet = 228.000/ $\mu$ l, white blood cell (WBC) = 7500/ml [polymorphonuclear

(PMN) = 47%, L = 41%, mixed = 12%], normal renal and hepatic function tests, normal serum electrolytes (Na, K, Mg, Ca, P) and arterial blood gas, but Blood sugar (BS) = 549 mg/dl, hemoglobin A1c = 14.3: Poorly controlled DM, U/A: Glucose = 3+, ketone = 2+, blood = 1<sup>+</sup> with normal other urinary parameters. Serum toxic panel for amphetamine, methamphetamine, tramadol, tricyclic agents was negative. CSF was colorless with clear appearance, protein = 134 mg/dl, sugar = 276 mg/dl, sugar = 549 mg/dl, red blood cell (RBC) = 36/ml, WBC = 216/ml (PMN = 10%, Mono = 90%), negative smear for usual bacteria. Treatment for acute meningitis and encephalitis was started with vancomycin, ceftriaxone, acyclovir, and phenytoin. Patient transferred to infectious ward and was worked up for meningitis with lymphocytic pleocytosis. Again one time generalized, tonic, clonic seizure repeated in the 1<sup>st</sup> day of admission. Further evaluations of CSF as Zeil–Nelson stained smear for BK, BK-polymerase chain reaction (PCR), fungal smear and culture, venereal disease research laboratory, and herpes simplex virus-PCR were negative with angiotensin-converting enzyme = 1, adenosine deaminase = 66. Serum viral markers of HIV-antibody (Ab), hepatitis C virus-Ab, and hepatitis B surface (HBs) antigen were all negative with positive HBs-Ab (58 IU) due to previous hepatitis B virus vaccination. Serum tests of lipase = 25 (Nor: Up to 35), C3 = 150 (Nor: 70-170), C4 = 22 (Nor: 15-55), CH50 = 162 (70-150), rheumatoid factor and lupus anticoagulant: Negative, antiphospholipid: Immunoglobulin G (IgG) = 1 (Nor: Up to 12), IgM = 1.2 (Nor: Up to 12.1), antinuclear antibody IgG: 0.5 (Nor: Up to 0.88), anti-DNA: 2 (Nor: Up to 12), anti-neutrophil cytoplasm antibodies: 2.3 (Nor : Up to 12), anti-cyclic citrullinated peptide: 4 (Nor: Up to 20) showed no abnormality. All images of chest X-ray, abdominal ultrasonography, brain computed tomography scan, brain magnetic resonance imaging (MRI), and electroencephalogram were normal. Next CSF analysis after 7 day of

treatment had no improvement with rise of WBCs despite the fine condition of patient as colorless, clear, with protein = 132 mg/dl, sugar = 263 mg/dl, RBC = 100, WBC = 350 (PMN = 10%, Mono = 90%), smear and culture of usual bacteria = Negative. Same time BS was 499 mg/dl.

In repeated exact history taking, he mentioned about his travel to Ardabil, a *Brucella* endemic area, with high consumption of unpasteurized dairy products 2 months ago. Serologic evaluation for Brucellosis resulted Wright = 1/2560 and 2ME = 1/1250. At 8<sup>th</sup> day of treatment vancomycin and acyclovir were discontinued, rifampin, doxycycline, and ceftriaxone were administered for 1 month, then rifampin + doxycycline + TMP-SMX for 5 months with 1 month phenytoin. Along treatment and 6 months after end of the treatment he was well without any complaint, convulsion, pathologic physical finding and drug side effect with negative Wright and 2ME tests.

## Discussion

Brucellosis, a zoonotic disease is endemic in many areas of the globe including Iran (2). Due to the lack of specificity of symptoms and signs, it can be diagnosed with delay. Considering patient's history and clinical suspicion meticulously conducted to diagnosis in this case. Seizure was the most important clinical feature of the patient. Convulsion can be seen in encephalitis or local involvement of CNS (1).

Uncontrolled seizures were reported in cerebral venous sinus thrombosis (CVST) complicating previously diagnosed neurobrucellosis in one patient. This symptom might have occurred as a result of administration of high dose of epileptic drugs especially carbamazepine or due to the occurrence of brucellosis as a febrile infectious disease and CVST accompanied by hemorrhagic focus and peripheral edema. Owing to the presence of hemorrhagic lesion, CSF sampling was not conducted (5). Al Ayed

(6) reported a 7-year-old boy, presented with a history of fever on and off for 6 weeks, associated with acute deterioration of the level of consciousness, weakness, and generalized tonic-clonic convulsions. He had meningoencephalitis with drowsiness, abnormal CSF, and positive culture for *Brucella*. Another patient suffering brucellosis had generalized tonic-clonic seizures accompanying facial paralysis and left hemiparesis. He had abnormal CSF as pleocytosis (lymphocytes, 90%), high protein, and low glucose levels. Cranial MRI demonstrated intracerebral vasculitis, basal ganglia infarction, and granulomas (7). Sohn et al. (8) also reported a 26-year-old man with periorbital pain, headache and generalized tonic-clonic seizure and positive serology for *Brucella*. He had 3 cm × 3 cm left frontal lobe mass with positive culture of *Brucella* spp. in granuloma.

All reported convulsions in neurobrucellosis were accompanied with encephalitis, space occupying lesion as granulomas, vasculitis, basal ganglia infarction and/or CVST. This patient is noteworthy because of having none of aforementioned conditions except meningitis. Brucellosis can be easily misdiagnosed, followed by CNS sequelae and even death.

In this case definite diagnosis of brucellosis was based on laboratory results. In patients from endemic areas and in any with a history of travel to endemic areas with lymphocytic pleocytosis of CSF accompanying any neurologic symptoms neurobrucellosis should be in differential diagnosis.

## Conclusion

Neurobrucellosis, a rare complication of human brucellosis, can present with a variety of CNS symptoms such as convulsion. Its diagnosis could be challenging and should always be suspected in patients presenting with CNS manifestations with or without abnormalities on brain imaging especially in *Brucella* endemic areas or a history of travel to this regions.

### Conflict of Interests

Authors have no conflict of interests.

### Acknowledgments

We sincerely thank our coworkers, who were involved in managing this patient.

### References

1. Bennett JE, Dolin R, Blaser MJ. Mandell, Douglas, and Bennett's principles and practice of infectious diseases. Philadelphia, PA: Saunders; 2015.
2. Pappas G, Papadimitriou P, Akritidis N, Christou L, Tsianos EV. The new global map of human brucellosis. *Lancet Infect Dis* 2006; 6(2): 91-9.
3. Dean AS, Crump L, Greter H, Schelling E, Zinsstag J. Global burden of human brucellosis: a systematic review of disease frequency. *PLoS Negl Trop Dis* 2012; 6(10): e1865.
4. Singh K. Laboratory-acquired infections. *Clin Infect Dis* 2009; 49(1): 142-7.
5. Faraji F, Didgar F, Talaie-Zanjani A, Mohammadbeigi A. Uncontrolled seizures resulting from cerebral venous sinus thrombosis complicating neurobrucellosis. *J Neurosci Rural Pract* 2013; 4(3): 313-6.
6. Al Ayed MS. Neurobrucellosis in children, a report of 2 cases. *Int J Health Sci (Qassim)* 2011; 5(1): 81-4.
7. Inan AS, Ceran N, Erdem I, Engin DO, Senbayrak S, Ozyurek SC, et al. Neurobrucellosis with transient ischemic attack, vasculopathic changes, intracerebral granulomas and basal ganglia infarction: a case report. *J Med Case Rep* 2010; 4: 340.
8. Sohn AH, Probert WS, Glaser CA, Gupta N, Bollen AW, Wong JD, et al. Human neurobrucellosis with intracerebral granuloma caused by a marine mammal *Brucella* spp. *Emerg Infect Dis* 2003; 9(4): 485-8.