Case Report

Isolated depression revealing acute brucellosis without neurological involvement

Abstract

The clinical presentation of brucellosis is highly polymorphic including neurological, cardiac, ocular, cutaneous, digestive, and renal manifestations, some of which are considered unusual or atypical. Isolated psychiatric manifestations are uncommon in human brucellosis and often associated with the specific neurological involvement of this infection (neurobrucellosis). The inaugural psychiatric presentations of this disease are exceptional and represent a real diagnostic challenge for clinicians. We report an original observation of depression as an isolated manifestation revealing acute brucellosis without neurobrucellosis in a 38-year-old woman with favorable outcome under adapted antibiotherapy. As rare as it is, this clinical presentation of brucellosis deserves to be known by healthcare professional and brucellosis must be considered in the differential diagnosis of psychiatric symptoms in endemic countries for this infection.

Keywords: depression, brucellosis, neurobrucellosis, behavior disorders

Volume 15 Issue 1 - 2025

Salem Bouomrani, Ons Mansouri, Houcine Mrad
Department of Internal medicine, Sfax Faculty of Medicine, University of Sfax, Tunisia

Correspondence: Salem Bouomrani, Department of Internal medicine, Military Polyclinic of Kasserine, Kasserine 1200, Tunisia, Tel +00216 98977555

Received: November 17, 2025 | **Published:** December 05, 2025

Introduction

Brucellosis, also known as Malta fever, undulating fever or Mediterranean fever, is a widespread zoonotic disease.[1,2] It was first clinically described in 1851 by Dr. Jeffrey Alan Marston in British soldiers participating in the Crimean war and stationed in Malta (Malta fever), and its causative agent (*Micrococcus melitensis*) was identified by Dr. David Bruce in 1887.[3] Brucellosis is the most common zoonotic disease. In humans, it remains endemic in several countries of the Mediterranean basin, the Middle East, West Asia, Africa, and Latin America, with an estimated global average annual incidence of 500,000 new cases.[1,2] In some of these countries, the prevalence can reach as high as 203 cases per 100,000 inhabitants.[4] Human brucellosis is further characterized by significant clinical polymorphism, justifying its designation as great imitator and making its diagnosis a real challenge for clinicians particularly those in primary care.[5,6] We report an original observation of depression as an isolated manifestation revealing acute brucellosis without neurological involvement.

Case report

A 38-year-old woman was admitted to our department for fever and polyarthritis evolving for three days. In her medical history she was treated by psychiatrist for moderate depression according to the CIM-10. The main symptoms were headache, insomnia, decreased self-care, and sadness of the mood. Anti-depressant treatment was prescribed for two months but without any improvement despite of well-observed therapy at optimal doses. The current symptoms (fever and polyarthritis) started two months after the depression diagnosis. Somatic examination at admission noted fever at 39°C, bilateral and symmetrical arthritis with synovitis of hands, wrists, knees, elbows, and ankles without morning stiffness.

Biology showed marked biological inflammatory syndrome with an erythrocyte sedimentation rate at 106 mm/H1, C-reactive protein at 46 mg/l, and polyclonal hypergammaglobulinemia at 32 g/l, hyperleukocytosis at 18,500 cells/mm^3 with 90% of neutrophils, and moderate normocytic anemia with hemoglobin at 11 g/dl. No other biological abnormalities were noted (platelets, creatinine, glycemia, uric acid, plasma ionogram, muscle enzymes, calcemia, transaminases, lipid parameters, urinalysis, and thyroid hormones). Chest X-ray was normal. Hand X-rays showed no erosions of the carpal bones. Anti-Cyclic Citrullinated Peptide (anti-CCP) and antinuclear autoantibodies were negative. Blood cultures were negative. Cerebral computed tomography (CT), brain, and spine magnetic resonance imaging (MRI) were without abnormalities. Given the patient's rural background and close contact with animals, brucellosis was suspected, and Wright's serodiagnosis was significantly positive with a title of 1/1240. Given the absence of neurological signs and the normality of the brain and spinal cord imaging, the lumbar puncture was not performed.

Thus, the diagnosis of acute brucellosis was confirmed, and antibiotic therapy combining doxycycline (200 mg/day) and rifampicin (600 mg/day) was initiated. The outcome was favorable, with a rapid and complete regression of clinical complaints and progressive normalization of biological tests. Similarly, all signs of depressive syndrome disappeared rapidly after the brucellosis resolved. The patient had not been taking any antidepressant medication for over four years, and no recurrence of depressive disorder has been noted. The final diagnosis was acute brucellosis presenting as an isolated depressive syndrome without neurological involvement specific to the disease (neurobrucellosis).

Discussion

The clinical presentation of brucellosis is highly polymorphic and can include neurological, cardiac, ocular, cutaneous, digestive, and renal manifestations. Some of these manifestations are considered unusual or atypical.[7–11] Isolated psychiatric manifestations are uncommon in brucellosis.[12,13] Indeed, in the study by Shoaei SD and Bidi N, systematic screening for brucellosis using Wright and 2-mercaptoethanol (2ME) serological tests was positive in three of the 500 patients hospitalized for psychiatric disorders, representing 0.3%.[12] Psychiatric disorders are often associated with the specific neurological involvement of this infection (neurobrucellosis).[14–17] These manifestations can include behavioral changes, impaired mode, agitation, psychosis, nightmares, euphoria, personality disorders, anxiety, excitability, and depression.[14–17] Exceptionally these symptoms can reveal neurobrucellosis.[18–20]

Even in patients with neurobrucellosis, depression remains rare. Indeed, in the Turkish pooled analysis by Gul HC et al, encompassing 35 studies on brucellosis with 185 cases of neurological involvement, depression was noted in only 5% of cases.[21] Depression associated with neurobrucellosis can be severe,[14] and may remain the only manifestation of this condition.[22] In Moogahi S et al series, only one of the sixteen patients with major depressive disorder was tested positive for brucellosis, representing 6.25%.[23]

The exact mechanism of brucellosis-induced psychiatric manifestation remains unclear.[20] In forms associated with neurobrucellosis, psychiatric manifestations are thought to be related to alterations in various neurological pathways secondary to: downregulation of major histocompatibility complex 1 in microglia, necrotic death of macrophages, alteration of microglial apoptosis, production of metalloproteinase 9 (MMP-9) by infected astrocytes in the central nervous system inhibiting synaptic glutamic N-methyl-D-aspartic acid receptors, and direct destruction of certain brain regions, particularly the hippocampus.[20] In isolated cases, psychiatric symptoms would probably be due to the intensity of the systemic immune-inflammatory response and the significant production of pro-inflammatory cytokines by *Micrococcus melitensis*.[14,20]

Psychiatric disorders associated with brucellosis respond very favorably to appropriate antibiotic treatment but not to antipsychotic or antidepressant medications.[12,13,20,24] Most often, there is no indication for psychiatric treatment when brucellosis is diagnosed and treated promptly.[20,24] Thus, for several authors, brucellosis deserves to be seriously considered in the differential diagnosis of psychiatric symptoms in endemic countries for this infection.[12,13,17,25]

Conclusion

As rare as it is, brucellosis-induced psychiatric symptoms deserve to be recognized by all healthcare professionals, and brucellosis should be considered in the differential diagnosis of depression in countries where this infection is still endemic. The course of this form of depression is usually favorable after recovery from brucellosis. Our observation is distinguished by the isolated and inaugural character of the depression, as well as by the absence of associated neurobrucellosis.

Acknowledgments

None.

Conflicts of interest

None.

References

1. Khurana SK, Sehrawat A, Tiwari R, et al. Bovine brucellosis - a comprehensive review. *Vet Q*. 2021;41(1):61–88.
2. Shakir R. Brucellosis. *J Neurol Sci*. 2021;420:117280.
3. Wyatt HV. Lessons from the history of brucellosis. *Rev Sci Tech*. 2013;32(1):17–25.
4. Wang XH, Jiang H. Global prevalence of human brucellosis. *Zhonghua Liu Xing Bing Xue Za Zhi*. 2020;41(10):1717–1722.
5. Franco MP, Mulder M, Gilman RH, et al. Human brucellosis. *Lancet Infect Dis*. 2007;7(12):775–786.
6. Ulu-Kilic A, Metan G, Alp E. Clinical presentations and diagnosis of brucellosis. *Recent Pat Antiinfect Drug Discov*. 2013;8(1):34–41.
7. Bouomrani S, Belgacem N, Ben Hamad M, et al. Bilateral Panuveitis Revealing Acute Septicemic Brucellosis. *EC Ophthalmology*. 2018;9.6:437–441.
8. Bouomrani S, Dey M, Ahmed A. Acute Renal Failure Complicating Septicemic Brucellosis. *J Pathol Infect Dis*. 2019;2(2):1–2.
9. Bouomrani S, Mrad H, Ben Teber S. Cutaneous leuckocytoclastic vasculitis revealing acute brucellosis. *American Journal of Medical Case Reports*. 2021;9(6):335–338.
10. Mrad H, Besleï W, Mahdhaoui W, et al. Isolated Acute Pericarditis Revealing Brucellosis. *AJMCR*. 2021;9(12):675–677.
11. Trabelsi S, Khfifi S, Ben Amor R, et al. Isolated subacromial-deltoid bursitis as first manifestation of Brucellosis. *MOJ Orthop Rheumatol*. 2022;14(4):97–99.
12. Shoaei SD, Bidi N. Serologic evaluation of brucellosis in patients with psychiatric disorders. *Caspian J Intern Med*. 2012;3(4):557–558.
13. Pourmontaseri H, Rismani M, Karami B, et al. A rare case report of neuro-brucellosis with concurrence of depression, visual impairment, bilateral sensorineural hearing loss, and paraplegia. *PLoS Negl Trop Dis*. 2025;19(7):e0012824.
14. *Ince LU, Kavuran NA, Ozcan A, et al. Severe major depression: A case of neurobrucellosis. Med Science*. 2017;6(1):178–179.
15. Naderi H, Sheybani F, Parsa A, et al. Neurobrucellosis: report of 54 cases. *Trop Med Health*. 2022;50(1):77.
16. Raina S, Sharma A, Sharma R, et al. Neurobrucellosis: A Case Report from Himachal Pradesh, India, and Review of the Literature. *Case Rep Infect Dis*. 2016;2016:2019535.
17. Eini P, Keramat F, Hasanzadehhoseinabadi M. Epidemiologic, clinical and laboratory findings of patients with brucellosis in Hamadan, west of Iran. *J Res Health Sci*. 2012;12(2):105–108.
18. Feki I, Abbes W, Sakka S, et al. A psychiatric disorder reveals a neurobrucellosis. *Presse Med*. 2016;45(12 Pt 1):1197–1200.
19. Kanjo MA, Ahmed HM, Alnahari EA. Unusual presentation of neurobrucellosis in Jeddah, Kingdom of Saudi Arabia. *Neurosciences (Riyadh)*. 2021;26(4):385–388.
20. Obuaya CC, Gangatharan GT, Karra E. Brucella-Induced Acute Psychosis: A Novel Cause of Acute Psychosis. *Case Rep Infect Dis*. 2021;2021:6649717.
21. Gul HC, Erdem H, Bek S. Overview of neurobrucellosis: a pooled analysis of 187 cases. *Int J Infect Dis*. 2009;13(6):e339–43.
22. Tekin-Koruk S, Duygu F, Gursoy B, et al. A rare case of seronegative neurobrucellosis. *Ann Saudi Med*. 2010;30(5):412–414.
23. Moogahi S, Rostami H, Salmanzadeh S, et al. Undiagnosed Brucellosis in Psychiatric Patients: A Cross-Sectional Study. *Arch Clin Infect Dis*. 2023;18(2):e136729.
24. Eren S, Bayam G, Ergönül O, et al. Cognitive and emotional changes in neurobrucellosis. *J Infect*. 2006;53(3):184–189.
25. Ates MA, Algül A, Geçç Ö, et al. Acute psychosis due to neurobrucellosis: a case report. *Anatolian J psychiatry*. 2008;9(3):188–190.