

Brucellosis Infection- A Leukaemia Mimic

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Dear Editor,

Brucellosis is multisystemic infection with varied clinical presentation. Haematological manifestation of *Brucella* includes, anaemia, thrombocytopenia and pancytopenia with hepatosplenomegaly, lymphadenopathy which can be misdiagnosed as leukaemia. A 65-year-old male patient, who has been complaining for a month of fever, nocturnal sweats, widespread weakness and abdominal pain. The patient was known to have hypertension and was on tablet amlodipine 5 mg once day for past three years. The family history was not significant.

A clinical examination revealed hepatosplenomegaly and anaemia (Hb 8.7 g/dL) (organs palpable 4 cm and 5 cm below the costal margins respectively) Leucopenia ($1 \times 10^9/L$) was detected in the laboratory tests (neutrophils 33%, lymphocytes 60%, monocytes 5%, eosinophils and basophils 0%). Human Immunodeficiency Virus (HIV) and hepatitis B and C were ruled out by serological assays (HIV). The Antinuclear Antibody (ANA), anti-double stranded Deoxyribonucleic Acid (anti-dsDNA), direct and indirect Coombs tests returned negative results. Epstein-Barr virus and Cytomegalovirus (CMV) serological tests came out negative. The serological test for enteric fever came back negative, A bone marrow aspiration was done because of his ongoing cytopenia and fever, and the results revealed trilineage hyperplasia with the left shift. Due to the persistent clinical symptoms (mainly fever), the patient was interviewed again and then his profession was revealed to be a sheep herder. Thus, a provisional diagnosis of brucellosis was considered. The serological test for brucellosis sent. *Brucella abortus* and *Brucella melitensis* both had titers of $>1:640$ and C-reactive protein was >6 mg/mL. The blood cultures showed gram-negative cocci growth and after 15 days confirmed the abortus, melitensis. Thus, a diagnosis of *Brucella* infection was finalised.

The World Health Organisation (WHO) suggests a six week course of doxycycline and rifampin medication for six weeks, as in present case, patient had treatment with doxycycline 100 mg BD and rifampicin 600 mg OD [1]. The patient was admitted for one week in our ward, and his hemogram showed improvement with treatment. After one month of treatment, his counts became normal, showing White Blood Cells (WBC) $6.5 \times 10^9/L$, haemoglobin (Hb) 12.5 g/dL, Mean Corpuscular Volume (MCV) 90 fL, platelets $213 \times 10^9/L$, and the size of his spleen and liver shrank. The fever went away and his follow-up was still positive.

The most prevalent zoonotic disease worldwide is human brucellosis. The gram-negative coccobacillus *Brucella* is the culprit. In the Middle East, sub-Saharan Africa, India, and Central and South America, brucellosis is a major cause of morbidity and mortality [2,3]. Humans in endemic nations are typically exposed to the disease through eating tainted meats and unpasteurised dairy products. It primarily presents as an occupational danger in wealthy nations. Night sweats, myalgia, malaise, protracted, undulating fevers and hepatosplenomegaly are all symptoms of brucellosis [4,5]. It primarily affects the reticuloendothelial system more than other tissues. The infection also affects other organ, heart, central nervous system, kidneys, genitourinary, cardiovascular, gastrointestinal and cardiovascular system. In one of Turkish study of 484 cases of brucellosis, anaemia, thrombocytopenia and leucopenia seen in 21.5%, 18.8%, 14.5% respectively. Pancytopenia observed in 2-14% patients. Lymphadenopathies are found in 10-20% patients of brucellosis and cervical lymph node is commonly affected [4,5]. There are no disease specific findings to differentiate between brucellosis induced cytopenia from non infectious causes and therefore, brucellosis infection misdiagnosed as leukaemia, lymphoma [5,6]. All these cytopenia and lymphadenopathy due to brucellosis infection responds very well to treatment.

In an endemic location, a thorough patient history aids in the early identification and treatment of the patient. When a patient exhibits hepatosplenomegaly, pancytopenia and fever, it is important to consider the differential diagnosis of brucellosis.

REFERENCES

- [1] World Health Organisation: Brucellosis; <https://www.who.int/news-room/fact-sheets/detail/brucellosis>.
- [2] Chang C, Beutler BD, Ulanja MB, Uche C, Zdrnja M. Brucellosis presenting with febrile pancytopenia: An atypical presentation of a common disease and review of Brucellosis. Case Rep Infect Dis. 2021;2021:2067570. <https://doi.org/10.1155/2021/2067570>
- [3] Pappas G, Papadimitriou P, Akritidis N, Christou L, Tsianos EV. The new global map of human brucellosis. Lancet Infect Dis. 2006;6(2):91-99.
- [4] Uluğ M, Yaman Y, Yapici F, Can-Uluğ N. Clinical and laboratory features, complications and treatment outcome of brucellosis in childhood and review of the literature. Turk J Pediatr. 2011;53(4):413-24.
- [5] Kaya S, Elaldi N, Deveci O, Eskazan AE, Bekcibasi M, Hosoglu S. Cytopenia in adult brucellosis patients. Indian J Med Res. 2018;147(1):73-80.
- [6] Massoud M, Kerbage F, Antoun L, Merhi R, Hallit S, Hallit R. Brucellosis: A lymphoma-like presentation. Asian Pac J Trop Med. 2017;10(8):833-34.

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