

Brucellosis Mimicking Crimean-Congo Hemorrhagic Fever in a Child: A Case Report

Kırım-Kongo Kanamalı Ateşini Taklit Eden Bruselloz: Bir Olgu Sunumu

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ABSTRACT

Brucellosis is a zoonotic infection caused by *Brucella* species and may present with a broad spectrum of clinical manifestations. Crimean-Congo hemorrhagic fever (CCHF) is a tick-borne viral disease associated with high mortality. Both diseases are endemic in Türkiye and may present with fever, thrombocytopenia, leukopenia, and elevated liver enzymes, leading to diagnostic confusion. Herein, we report a 5-year-old boy who was initially evaluated for CCHF because of fever, fatigue, thrombocytopenia, elevated transaminases, prolonged coagulation times, and a history of tick exposure. However, detailed history revealed consumption of unpasteurized dairy products and residence in a rural endemic area for brucellosis. *Brucella* serology was positive, whereas CCHF polymerase chain reaction and enzyme-linked immunosorbent assay tests were negative. The patient responded rapidly to anti-brucellar therapy and recovered completely. This case highlights the importance of considering brucellosis in the differential diagnosis of suspected cases of CCHF in endemic regions.

Keywords: Brucellosis, Crimean-Congo hemorrhagic fever, thrombocytopenia, child

ÖZ

Bruselloz, *Brucella* türlerinin neden olduğu zoonotik bir enfeksiyon olup geniş bir klinik bulgu yelpazesi ile seyredebilir. Kırım-Kongo kanamalı ateşi (KKKA), kenelerle bulaşan ve yüksek mortalite ile ilişkili viral bir hastalıktır. Her iki hastalık da Türkiye’de endemik olup ateş, trombositopeni, lökopeni ve karaciğer enzim yüksekliği gibi benzer klinik ve laboratuvar bulguları ile ortaya çıkabildiğinden tanısal karışıklığa yol açabilmektedir. Bu olgu sunumunda; ateş, halsizlik, trombositopeni, transaminaz yüksekliği, uzamış koagülasyon parametreleri ve kene teması öyküsü nedeniyle başlangıçta KKKA ön tanısıyla değerlendirilen 5 yaşındaki bir erkek çocuk sunulmaktadır. Ancak ayrıntılı anamnezde pastörize edilmemiş süt ve süt ürünleri tüketimi ile bruselloz açısından endemik kırsal bir bölgede yaşadığı öğrenilmiştir. *Brucella* serolojisi pozitif saptanırken, KKKA polimeraz zincir reaksiyonu ve enzim bağlantılı immünosorbent analiz testleri negatif bulunmuştur. Hastada anti-brucella tedavisine hızlı klinik yanıt alındı ve tam iyileşme sağlanmıştır. Bu olgu, endemik bölgelerde KKKA düşünülen hastaların ayırıcı tanısında brusellozun mutlaka göz önünde bulundurulması gerektiğini vurgulamaktadır.

Anahtar kelimeler: Bruselloz, Kırım-Kongo kanamalı ateşi, trombositopeni, çocuk

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INTRODUCTION

Brucellosis is a zoonotic infection caused by *Brucella* species and remains an important public health problem in endemic regions such as Türkiye. The disease may involve multiple organ systems, including musculoskeletal, hematologic, hepatobiliary, cardiovascular, and central nervous systems. Due to its highly variable clinical manifestations, brucellosis is often referred to as “the great imitator”⁽¹⁾.

Crimean-Congo hemorrhagic fever (CCHF) is a tick-borne viral hemorrhagic disease associated with substantial morbidity and mortality. Early manifestations of CCHF include fever, malaise, thrombocytopenia, leukopenia, and elevated transaminase levels⁽²⁾. Because both diseases share several overlapping clinical and laboratory findings, differentiation may be challenging, particularly in endemic areas.

Herein, we present a pediatric case of brucellosis initially suspected as CCHF because of a history of tick exposure and compatible clinical and laboratory findings.

CASE REPORT

A previously healthy 5-year-old boy with complaints of fever, fatigue, and a history of tick bite was referred to our hospital in September for a preliminary diagnosis of CCHF due to elevated transaminases, an increased international normalized ratio (INR), and thrombocytopenia as revealed by laboratory tests. Five days before admission, he presented to the local hospital with fever, and a tick was noticed on his nape and subsequently removed. However, detailed history revealed that his fever had started approximately 10 days before the tick was noticed. Our patient was living in a rural area, and his family was engaged in animal husbandry.

On physical examination, he appeared remarkably fatigued. He had fever (39.6 °C) and tachycardia (110/min, in sinus rhythm); other vital signs were within normal limits. The spleen was palpable 3 cm below the left costal margin, and the liver was palpable 2 cm below the right costal margin. There was no petechiae, purpura, mucosal bleeding, or lymphadenopathy.

Laboratory test results were as follows: Hemoglobin: 11.06 g/dL, white blood cell count: $3.45 \times 10^3/\mu\text{L}$, absolute neutrophil count: $2.02 \times 10^3/\mu\text{L}$, absolute lymphocyte count: $1.23 \times 10^3/\mu\text{L}$, platelet count: $133 \times 10^3/\mu\text{L}$, erythrocyte sedimentation rate: 12 mm/h, C-reactive protein: 6.4 mg/L (0-5 mg/L), ferritin: 1332 ng/mL, alanine aminotransferase (ALT): 242 U/L, aspartate aminotransferase (AST): 334 U/L, lactate dehydrogenase (LDH): 863 U/L, Na: 131mEq/L, and albumin: 3.4 g/dL. The prothrombin time (PT) was 14.9 s (11-14s), INR was 1.33 (0.8-1.2), and activated partial thromboplastin time (aPTT) was 20.5 s (22.1-28.1s). A peripheral blood smear revealed no atypia or blast cells.

The patient came from Hakkari, Türkiye. Although Hakkari is not among the regions with the highest incidence of CCHF in Türkiye, the patient's epidemiological history and laboratory findings raised suspicion for CCHF. Therefore, a serum sample was sent to the Public Health Institution of Türkiye for CCHF polymerase chain reaction (PCR) and ELISA testing. Supportive treatment, including intravenous hydration and vitamin K administration, was initiated. Empirical cefepime therapy was started because bacterial sepsis could not be ruled out initially.

Our patient lived in a village where brucellosis was endemic. He used to ingest unpasteurized dairy products. In light of these findings in the anamnesis, brucellosis was considered as one of the primary differential diagnoses,

and the patient was evaluated accordingly. The Brucella rose bengal test was positive. Brucella tube agglutination test was positive at a titer of 1/320 and Brucella tube agglutination test with the Coombs method was also positive at a titer of 1/320. No growth was detected in the blood culture. CCHF PCR and ELISA tests yielded negative results.

The patient was treated with rifampin (20 mg/kg/d, p.o.), sulfamethoxazole-trimethoprim (8 mg/kg/d, p.o.), and gentamicin (7.5 mg/kg/d, i.v.). The patient's fever decreased on the second day after initiating anti-brucellar antibiotherapy. A rapid clinical improvement was observed. His thrombocytopenia and leukopenia resolved, and transaminases returned to their normal levels. Gentamicin was administered for 14 days, while treatment with rifampin and trimethoprim-sulfamethoxazole lasted for a total of six weeks. The patient completed the six-week treatment course without complications.

Informed consent was obtained from the patient's parents for the publication of this case report.

DISCUSSION

CCHF is a tick-borne viral hemorrhagic disease caused by an enveloped negative-sense RNA virus from the genus Nairovirus in the family Bunyaviridae⁽²⁾. The disease can be transmitted through the infected tick bites or contact with the blood and secretions of infected animals or humans⁽³⁾. Laboratory findings in CCHF infection typically include thrombocytopenia, leukopenia, higher ALT and AST levels, prolonged prothrombin, and aPTT^(3,4). These laboratory findings first appear in the pre-hemorrhagic phase, alongside clinical symptoms such as fever and fatigue, and peak during the hemorrhagic phase⁽³⁾. CCHF virus-infected cases were first documented in Türkiye in 2002⁽⁵⁾. In Türkiye, CCHF is seen frequently in May, June, and July, especially in rural areas of central and eastern Anatolia and the Eastern Black Sea Region⁽⁶⁾. The fact that our patient lived in a rural area, had a history of tick exposure, fever, thrombocytopenia, elevated transaminases, and prolonged PT/INR, initially the diagnosis of CCHF was considered. However, this diagnosis was ruled out by negative PCR and ELISA results.

The laboratory characteristics of our patient, such as cytopenia, and higher LDH, AST, and ALT levels, may also be observed in brucellosis⁽¹⁾. Nevertheless, these laboratory findings are not conclusive for brucellosis. Previous reports from Türkiye have emphasized that brucellosis may mimic CCHF^(7,8). In a study conducted in 2015 in Türkiye, 9.5% of children hospitalized with

suspected CCHF ultimately received the diagnosis of brucellosis⁽⁷⁾. Similarly, Metin et al.⁽⁸⁾ described an 11-year-old girl initially treated for CCHF whose serological tests later confirmed the diagnosis of brucellosis. In this case, the diagnosis of CCHF was excluded because CCHF PCR and ELISA test results were negative. Similar to our case, Brucella tube agglutination test with the Coombs method was positive at a titer of 1/320, and the patient recovered completely after receiving antibiotherapy for brucellosis.

Concurrent brucellosis and CCHF infections have also been reported^(9,10). One of these cases was a 70-year-old woman who lived in a rural area and was engaged in animal husbandry, similar to our patient. At the time of admission, she had fever, fatigue, abdominal pain, thrombocytopenia, elevated transaminases, and splenomegaly⁽⁹⁾. The laboratory findings of this patient were as follows; Brucella tube agglutination test with the Coombs method was positive at a titer of 1/320, CCHF virus-specific immunoglobulin M was positive by immunofluorescence assay and viral RNA positivity by real-time PCR. This patient recovered completely after receiving specific antibiotherapy for the treatment of brucellosis and supportive care for CCHF⁽⁹⁾. In the study that investigated the incidence of brucellosis in patients diagnosed with CCHF from Türkiye, concurrent brucellosis was detected in 5 of 120 (4.16%) patients⁽¹⁰⁾. In this study, 2.3% of the patients initially misdiagnosed with CCHF were confirmed to have brucellosis based on laboratory findings⁽¹⁰⁾. The common characteristics shared by the patients in this study and our patient include living in rural areas, having fever, and thrombocytopenia. These findings indicated that zoonotic infections can coincide due to similar modes of transmission and that CCHF should not be ruled out in patients with brucellosis.

CONCLUSION

In conclusion, in regions where both brucellosis and CCHF are endemic, both of these diseases should be kept in mind in the differential diagnosis of cases presenting with fever, thrombocytopenia and elevated transaminases.

Ethics

Informed Consent: Informed consent was obtained from the patient's parents for the publication of this case report.

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Declaration of AI Use: For transparency, the authors note that an artificial intelligence-assisted language model (ChatGPT, OpenAI) was utilized to support language correction. This assistance was limited to linguistic refinement; all scientific content, critical analysis, and final editorial decisions were made exclusively by the authors.

Footnotes

Author Contributions

Surgical and Medical Practices: E.K., M.B., Concept: E.K., Design: E.K., Data Collection or Processing: E.K., Analysis or Interpretation: E.K., Literature Search: E.K., M.B., Writing: E.K., M.B.

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