Brucellosis presenting as hemorrhagic fever: a rare presentation in the Middle East - a case report

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ABSTRACT

Background: Zoonoses are infectious diseases, transmittable from vertebrate animals to humans. Hemorrhagic fevers are acute zoonotic diseases that can cause mild to life-threatening illnesses characterized by fever and bleeding disorders, while Brucellosis, also an infectious zoonotic disease, typically presents with high fever, muscle and joint pain, and malaise.

Case Presentation: This case report discusses a 33-year-old male patient who presented with a febrile illness, accompanied by bleeding from various orifices, mimicking hemorrhagic fever, which after investigation turned out to be an unusual presentation of Brucellosis.

Conclusion: This case emphasizes the importance of considering a broad differential diagnosis in patients with fever and hemorrhagic manifestations, not only in or near regions where Brucellosis is endemic, but also due to increasing international travel and globalization, also in regions where it is not.

Keywords: Brucellosis, hemorrhagic fever, Middle East.

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Background

Hemorrhagic fevers are a group of infectious diseases (IDs) characterized by fever and bleeding, posing a significant challenge in healthcare settings. Depending on the type of disease, part of the management may pose significant logistics challenges in healthcare settings, i.e., isolating the patient in a negative-pressure room, limiting staff and other patient exposure, initiating contact tracing, and raising the case to public health officials, such as the Ministry of Health. Outbreaks of viral hemorrhagic fevers (VHFs), such as Ebola and Lassa fever, have been frequently reported in regions of Sub-Saharan Africa and Southeast Asia. Although VHFs are not endemic to Saudi Arabia, they are not unknown. With global travel and increasing interactions between humans and animals, whether domestic or agricultural, cases of hemorrhagic fevers are on the rise within the Arabian Peninsula, particularly in the southwestern region [1].

This case report discusses a 33-year-old male patient who presented with a febrile illness and spontaneous bleeding mimicking hemorrhagic fever. During the in-depth history, the patient revealed that he had recently returned from visiting Sudan in Africa. Simultaneous testing was considered vital since test results for each of the several VHFs can often take 2 days or more. Brucellosis, also a zoonotic disease, was not immediately considered as it typically presents flu-like symptoms, including fever, weakness, malaise, and weight loss.

Case Presentation

A 33-year-old male patient was sent to our emergency department from an urgent care clinic after he presented with fever and spontaneous bleeding from various orifices. He reported having had a rash on his hands for the 2 weeks prior, followed by fatigue and body aches during the previous 6–7 days. These were followed by intermittent fevers and a headache for 3 days. On the day of presentation to the urgent care clinic, he developed bleeding from his gums, hematuria, and hematochezia.

Initial laboratory tests revealed several abnormalities, including a D-dimer of 1.42 mcg/ml FEU, a fibrinogen level of 2.24 gm/l, a platelet count of 2 × 10^9/l, a hemoglobin level of 6.4 gm/l, and a white blood cell count of 4.8 × 10^9/l. The INR and PT were mildly elevated, peaking at 1.3- and 16.6-seconds HI, respectively. The APTT peaked at 41.3 seconds on day 5. Urinalysis showed 3+ blood, 2+ protein, and an RBC count of 1,114. The patient's LDH, AST, ALT, and albumin levels were also altered.

Due to his recent stay in Africa, Ebola and other VHFs were a major initial concern and tested for. The patient had no history of anticoagulant use or bleeding disorders to explain the spontaneous bleeding from multiple sites. An extensive history was taken and during his inpatient stay, simultaneous testing over several days was ordered, since Ebola testing alone takes 2 days. ID and Hematology were brought in on the case; they recommended other investigations, including a peripheral smear, haptoglobin, reticulocyte count, Coombs test, autoimmune testing, ADAMTS13, bone marrow biopsy, as well as testing for Marburg, dengue, syphilis, malaria, bilharzia, among other tests.

Early in his course, he was managed supportively with analgesics, antipyretics, proton pump inhibitors, and blood and platelet transfusions. On day 2, he was started on IV steroids and IV immunoglobulin daily for 2 days for possible idiopathic thrombocytopenic purpura.

On day 5 of his admission, Brucellosis returned strongly positive and he was started on rifampin and doxycycline. Steroids were discontinued and over the following week all the patient's symptoms resolved, and cell lines recovered and maintained.

Case Presentation

Our patient's clinical course closely resembled a case reported by Metin et al. [2] in 2015, in which Brucellosis mimicked Crimean-Congo Hemorrhagic Fever, highlighting the diagnostic challenges associated with Brucellosis.

Another case report by Aon and Al-Enezi [3] in 2018 is of a 20-year-old male who presented to an emergency room in Kuwait with a history of fever associated with malaise and arthralgia for 7 days. Initially, there was severe isolated thrombocytopenia, but no spontaneous bleeding. He refused hospital admission and left against medical advice. Two days later, he returned to the emergency room complaining of epistaxis, gingival bleeding, and hematuria. A considered diagnosis of brucellosis with immune thrombocytopenic purpura aligned with what was observed in our patient [3].

Because Brucellosis can manifest in various ways, it can be a diagnostic challenge, possibly leading to an increase in mortality and morbidity. Common clinical features include fever, malaise, and musculoskeletal symptoms, which initially make it difficult to distinguish from other more common illnesses with the same symptoms. However, in some cases, especially when the disease becomes severe or complicated, as in our patient's case, Brucellosis can present with hematological abnormalities, such as thrombocytopenia, which may mimic other conditions such as ITP [4]. The spectrum of Brucellosis presentations underscores the importance of considering it as a differential diagnosis.

The treatment of the patient in our emergency department began with broad-spectrum antibiotics, given the concern for a bacterial infection, and corticosteroids for possible autoimmune pathology. After 8 days in the hospital, his clinical status significantly improved; his bleeding and symptoms had resolved. He was scheduled for a bone marrow biopsy but left the hospital against medical advice and was lost to follow up.

There are relatively few cases of hemorrhagic fever in the Middle East; they are not nearly as prevalent as in other regions, such as Sub-Saharan Africa and Southeast Asia, where outbreaks of hemorrhagic fevers such as Ebola and Lassa fever have been much more frequently reported. Nevertheless, due to the global nature of travel and the potential for imported cases, healthcare professionals in the Middle East need to remain vigilant. This case emphasizes how Brucellosis can mimic hemorrhagic fever, thus complicating immediate treatment of the disease.

The Middle East region, encompassing countries in Western Asia and parts of North Africa, has had limited instances of hemorrhagic fever outbreaks. Nevertheless, healthcare systems in the region have been proactive in monitoring and managing such diseases to prevent their spread and to safeguard public health. This includes strengthening observation, early detection, and containment efforts in the event of a suspected case.

Brucellosis is a zoonotic ID caused by various species of *Brucella* bacteria. It primarily affects animals, especially domestic livestock, such as cattle, goats, and sheep. Humans can contract Brucellosis through direct contact with infected animals or consumption of unpasteurized dairy products. This disease is endemic in several parts of the world where it remains a significant public health concern.

The clinical presentation of Brucellosis in humans can vary widely. While it often presents as an undulating fever accompanied by malaise, diaphoresis, and musculoskeletal pain, it can also manifest with various atypical symptoms and complications, as seen in our patients. These manifestations may include neurological symptoms, respiratory symptoms, and hematological abnormalities, such as thrombocytopenia.

It is important to recognize and be alert for atypical presentations of Brucellosis, especially in regions where the disease is endemic, as a failure to do so can lead to delayed diagnosis and treatment, with potentially serious consequences.

Conclusion

This case report serves as a reminder of the diverse clinical presentations of zoonotic diseases and the diagnostic challenges they pose. Brucellosis, often thought of as a disease of animals, can have a wide range of clinical manifestations in humans, including severe thrombocytopenia and bleeding disorders, which may mimic other conditions, such as hemorrhagic fever or ITP.

The rarity of Brucellosis-induced severe thrombocytopenia and its resemblance to hemorrhagic fever reinforces the need for prompt recognition and appropriate management. Such measures are essential to limit the occurrence of the disease, to prevent complications, and to improve patient outcomes. Moreover, awareness of this atypical presentation can aid in the early diagnosis and treatment of Brucellosis, ultimately benefiting patients who live in or who have visited endemic areas.

While hemorrhagic fevers are relatively rare in the Middle East, the potential for imported cases underscores the importance of maintaining vigilance and preparedness for any occurrence of these diseases. Early detection, isolation, and infection control measures remain crucial, even in regions with lower reported incidence rates.

In conclusion, this case highlights the significance of maintaining a wide-ranging differential diagnosis for patients with fever and hemorrhagic manifestations. It underscores the importance of considering Brucellosis as a potential cause to ensure timely diagnosis and appropriate treatment, ultimately benefiting patients and public health alike.

What is new?

In endemic areas, Brucellosis can present with symptoms and signs highly suggestive of hemorrhagic fever. A high index of suspicion is needed to ensure appropriate treatment of the underlying illness early on.

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List of Abbreviations

ALT	Alanine aminotransferase
AST	Aspartate aminotransferase
FEU	Fibrinogen equivalent units
ID	Infectious disease
INR	International normalized ratio
ITP	Immune thrombocytopenic purpura
IV	Intravenous
LDH	Lactate dehydrogenase
PT	Prothrombin time
VHF	Viral hemorrhagic fever

Conflict of interests

The author declares that there is no conflict of interest regarding the publication of this article.

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Consent for publication

A request for waiver of consent was submitted to the Institutional Review Board (IRB) and was granted.

Ethical approval

Ethical approval is not required at our institution to publish an anonymous case report. However, an 'Exemption status' was determined in the non-formal ethical review process.

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Summary of the case

1	**Patient (gender/age)**	33 years, male
2	**Final diagnosis**	Brucellosis with severe thrombocytopenia
3	**Symptoms**	Viral symptoms and bleeding from multiple orifices
4	**Medications**	Antibiotics and blood product transfusions
5	**Clinical procedure**	None
6	**Specialty**	Emergency medicine, ID