



# Spleen rupture due to brucellosis

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## ABSTRACT

Brucellosis is a common zoonotic infection worldwide; it is caused by infection with the bacterial species *Brucella* and leads to severe diseases in humans and animals. In Turkey, this bacterial species has not been completely eradicated and is commonly found in animals (such as goats or sheep). Brucellosis can lead to various symptoms, affect multiple systems, and cause splenomegaly in the case of spleen involvement. In contrast to traumatic spleen ruptures, spontaneous spleen ruptures are rare and most commonly occur because of infectious causes. A 52-year-old man was treated at our infectious diseases clinic for *Brucella* endocarditis. Due to sudden abdominal pain, nausea, vomiting, and vertigo, the patient was evaluated by our team of doctors at the same clinic. The patient had widespread sensitivity in the abdominal region, as well as defense and rebound symptoms. Emergency abdominal tomography revealed a ruptured spleen and widespread hemorrhagic fluid in the abdomen. Exploration revealed multiple ruptures in the spleen capsule. The patient underwent splenectomy and did not experience any complications during the postoperative period. Spontaneous spleen rupture is a rare clinical condition that should be considered in patients who are hospitalized at internal medicine clinics for infectious, hematogenic, and metabolic causes, as well as in those who have sudden abdominal pain and hypovolemia.

**Keywords:** *Brucella*, spontaneous spleen rupture, hemorrhagic shock

## INTRODUCTION

Brucellosis, caused by infection with the bacterial species *Brucella*, is a common zoonosis worldwide that can cause severe diseases in humans and animals. Brucellosis can lead to various symptoms, affect multiple systems, and cause splenomegaly in the case of spleen involvement. Due to multiple system involvement, the symptoms and manifestations of brucellosis are generally nonspecific. However, non-specific symptoms, including fever, fatigue, and sweating are common, and hepatosplenomegaly is frequently seen.

The spleen is an immunological organ affected by hematological and non-hematological diseases. Spleen rupture usually occurs because of blunt abdominal trauma. In contrast to traumatic spleen ruptures, spontaneous spleen ruptures are rare and most commonly occur due to infectious causes. Mortality can occur in this patient group due to a delay in diagnosis and treatment (1).

This paper aimed to present a case of spontaneous spleen rupture that occurred secondary to brucellosis but is rarely reported in the literature.

## CASE REPORT

A 52-year-old man was treated at our infectious diseases clinic for *Brucella* endocarditis. Due to sudden abdominal pain, nausea, vomiting, and vertigo, the patient was evaluated by our team of doctors at the same clinic. The patient had no history of trauma. First evaluation revealed that his blood pressure was 70/50 mmHg and his heart rate was 112 beats/minute. The patient had widespread sensitivity in the abdominal region, and defense and rebound symptoms. Hemoglobin level was 8.6 g/dl, and other laboratory parameters were normal. Emergency abdominal tomography revealed a ruptured spleen and widespread hemorrhagic fluid in the abdomen (Figures 1 and 2). The patient underwent emergency surgery. A median incision was used to enter the abdomen. Exploration revealed multiple ruptures in

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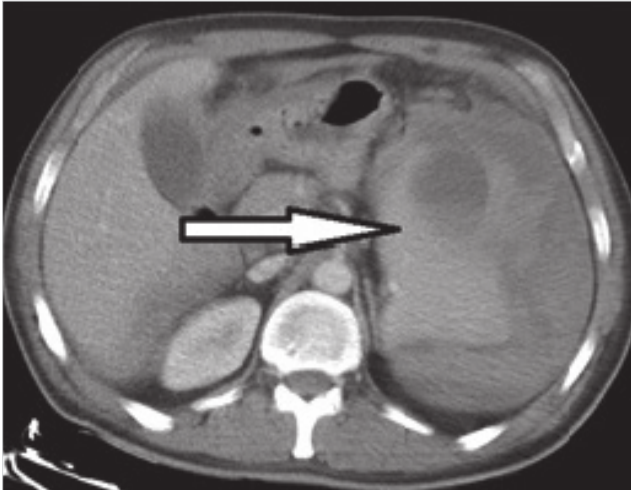
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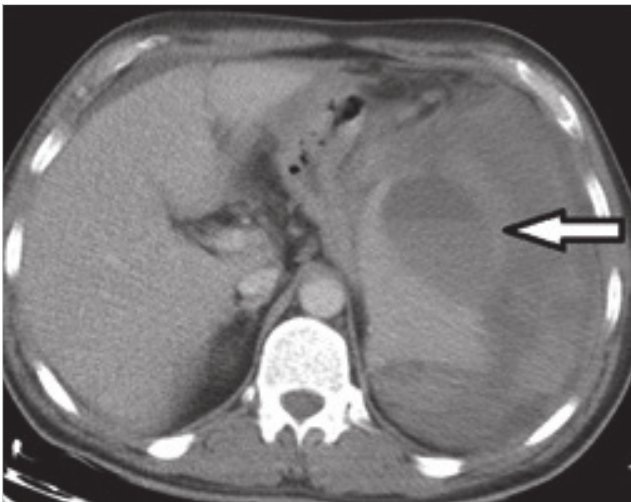
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**Figure 1.** Ruptured spleen (white arrow).



**Figure 2.** Hemorrhagic fluid (White arrow).

the spleen capsule and approximately 1000 cc of hemorrhagic fluid. The patient underwent splenectomy and experienced no complications during the postoperative period. The patient was then transferred to the infectious diseases department to continue medical treatment.

## DISCUSSION

Brucellosis is a zoonotic infection that has not been completely eradicated, and it is commonly found in animals (such as goats or sheep) in Turkey. Transmission from animals to humans usually occurs by direct contact between the secretions of infected animals and the skin, the consumption of unpasteurized milk and dairy products, inhalation of infected aerosols, and conjunctival contact. Despite the common involvement of lymphoreticular system organs, particularly the liver, bone marrow, spleen, and lymph nodes, *Brucella* infections can also involve different organs and tissues, including the heart, genitourinary system, central nervous system, and joints (2,3).

Due to multiple system involvement, the symptoms and manifestations are generally nonspecific. However, non-specific symptoms, including fever, fatigue, and sweating are common, and hepatosplenomegaly is frequently seen.

Symptomatology studies in Turkey have revealed that the major complaints are fever (43-83%), sweating (65-78%), night sweating (69%), lower back pain (22-33%), headache (28-44%), lack of appetite (34-53%), joint pain (20-76%), muscle pain (56%), fatigue (14-81%), difficulty walking (11-18%), clouding of consciousness (6%), weight loss (2-36%), and numbness in the arms (2%) (4).

The first case of spontaneous spleen rupture was published by Atkinson in 1874 (5). Spontaneous spleen rupture constitutes 1% of all spleen ruptures (6). While the exact cause of spontaneous spleen rupture remains unknown, three mechanisms are considered to play a role in its disease pathogenesis: an increase in intrasplenic pressure due to congestion and hyperplasia of the cells; an increase in intra-abdominal pressure during physiological activities and compression of the spleen by the abdominal muscles; and blockage of vascular structures due to reticulo-endothelial hyperplasia (eg., thrombosis, infarction). Interstitial and subcapsular mechanisms can emerge depending on these mechanisms (7,8). Spontaneous spleen rupture can result from infectious causes (malaria, infectious mononucleosis, syphilis, and *Brucella* infection), hematological causes (anticoagulant treatment, lymphoma, and leukemia), metabolic causes (amyloidosis and sarcoidosis), local causes (splenic vein thrombosis and pancreatitis), and other causes (vomiting and coughing) (9).

Given the high mortality rate of spleen rupture, patients must be diagnosed and treated immediately. Initially, patients have pain in the left upper quadrant, which is followed by sensitivity, and rigidity. Vertigo, vomiting, hypotension, tachycardia, and oliguria can accompany abdominal symptoms, depending on the degree of hemorrhagic shock. Hemorrhagic shock can develop in more than half of patients, if there is no timely intervention (10).

Radiological examination (eg., ultrasonography) can reveal an enlarged, displaced, double-countered spleen, as well as intraperitoneal bleeding. Abdominal tomography can help achieve a definitive diagnosis and enable the detection of hypodense/hyperdense foci, together with intracapsular, perirenal, and intraperitoneal fluid. Additionally, computed tomography can be used to grade the rupture (11). Decisions about treatment depend on the hemodynamic stability of the patient, level of bleeding in the peritoneal space, blood transfusion, and organ damage score.

## CONCLUSION

Spontaneous spleen rupture is a rare clinical condition that should be considered in patients hospitalized in internal medicine clinics for infectious, hematogenic, and metabolic causes, and in those with sudden abdominal pain and hypovolemia.

**Informed Consent:** Written informed consent was obtained from patient who participated in this case.

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## OLGU SUNUMU-ÖZET

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## Bruselloza bağlı dalak rüptürü

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## ÖZET

Brusella, dünyada yaygın olarak görülen bir zoonoz olup, insanlarda ve hayvanlarda ciddi hastalık yapabilme kapasitesine sahiptir. Bruselloz dünyadan tam olarak eradike edilememiş, özellikle ülkemizde keçi ve koyun gibi hayvanlarda yaygın olarak bulunan zoonotik bir enfeksiyondur. Birçok sistemi etkileyebilen değişik semptom ve bulgulara sebep olan brusella, dalakta tutuluma bağlı olarak splenomegaliiye de neden olabilmektedir. Spontan dalak rüptürleri ise travma dalak rüptürlerinin aksine nadir görülüp, en sık enfeksiyöz nedenlere bağlı olarak gerçekleşmektedir. Elli iki yaşında erkek hasta brusella endokarditi tanısıyla enfeksiyon hastalıkları kliniğinde yatmakta iken, ani başlayan karın ağrısı, bulantı, kusma ve baş dönmesi şikayeti ile olması üzerine yattığı serviste tarafımızdan değerlendirildi. Karında yaygın hassasiyet, defans ve rebound bulguları mevcuttu. Hastaya acil olarak çekilen karın tomografisinde; dalağın rüptüre ve karın içinde yaygın hemorajik mayi olduğu görüldü. Eksplozasyonda dalak kapsülünde birden fazla alanda yırtık olduğu görüldü. Splenektomi uygulanan ve hastamız postoperatif dönemde sorunsuz takip edildi. Bizim olgumuzda olduğu gibi dahili kliniklerde enfeksiyöz, hematojenik ve metabolik sebeplerle yatan hastalarda ani gelişen karın ağrısı ve hipovolemi durumunda, spontan dalak rüptürü akıldan bulundurulması gereken ve nadir klinik bir durumdur.

**Anahtar Kelimeler:** Brusella, spontan dalak rüptürü, hemorajik şok

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