



(CASE REPORT)



ATRAUMATIC SPLENIC RUPTURE AS THE INITIAL PRESENTATION OF PRIMARY EPSTEIN-BARR VIRUS INFECTION IN AN ADULT: A CASE REPORT

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ABSTRACT

Atraumatic splenic rupture is rare, but missing the diagnosis can have serious consequences. Epstein-Barr virus (EBV) infection is one of its uncommon infectious causes, and in some patients the splenic complication is the first sign of the illness. A previously healthy 34-year-old man presented with 10 days of epigastric and left upper-quadrant pain, fever, fatigue, and loss of appetite. He denied abdominal trauma and remained hemodynamically stable. His hemoglobin was 12.4 g/dL, leukocyte count $9 \times 10^9/L$, and platelet count $875 \times 10^9/L$. Liver tests showed both hepatocellular and cholestatic abnormalities. Contrast-enhanced computed tomography revealed a 20-mm-thick subcapsular splenic hematoma extending over 105 mm, together with a small hemoperitoneum, despite a spleen of normal size. Initial EBV serology showed positive viral capsid antigen (VCA) IgM, negative VCA IgG, and negative Epstein-Barr nuclear antigen (EBNA) IgG, with positive EBV polymerase chain reaction. Repeat serology demonstrated VCA IgG seroconversion 15 days after symptom onset, strongly supporting acute primary EBV infection. Because the patient was stable and there was no evidence of significant ongoing bleeding, we chose nonoperative management with close observation. The follow-up scan was reassuring, and he was discharged in good condition after five days. This case shows that an EBV-related splenic injury may occur without splenomegaly and that conservative treatment can be successful when the patient is carefully selected and closely monitored.

Keywords: Epstein-Barr Virus; Infectious Mononucleosis; Atraumatic Splenic Rupture; Subcapsular Splenic Hematoma; Conservative Management; Case Report

1 INTRODUCTION

Atraumatic splenic rupture (ASR) refers to splenic rupture without a preceding traumatic event. It is uncommon and may therefore be overlooked, particularly in a stable patient with nonspecific abdominal pain. Delay matters, however, because bleeding can progress rapidly. In a systematic review of 845 cases, most ruptures occurred in a diseased spleen; neoplastic, infectious, inflammatory, and treatment-related conditions were the main underlying categories [1].

EBV most often presents as infectious mononucleosis in adolescents and young adults. Splenic involvement is clinically important because it can lead to infarction, subcapsular hematoma, or rupture. A 2023 systematic review gathered 186

published cases of splenic rupture associated with EBV mononucleosis. Most occurred during the first three weeks of symptoms, and mortality was 4.8% [2]. Importantly, the splenic complication may precede the more familiar features of mononucleosis. We report an adult whose subcapsular hematoma and small hemoperitoneum revealed a probable early primary EBV infection, even though his spleen was not enlarged. He recovered with conservative management.

2 CASE PRESENTATION

A 34-year-old man with no significant medical history came to the emergency department because of persistent epigastric and left upper-quadrant pain. The symptoms had begun 10 days earlier and were accompanied by fever, marked fatigue, and loss of appetite. He did not recall any abdominal trauma. On arrival, his hemodynamic status was stable. Examination disclosed tenderness over the epigastrium and left hypochondrium, without guarding or a palpable abdominal mass.

Initial laboratory tests showed a hemoglobin concentration of 12.4 g/dL and a normal leukocyte count of 9×10^9 /L. The platelet count was strikingly elevated at 875×10^9 /L. Liver biochemistry was clearly abnormal: aspartate aminotransferase was 519 IU/L, alanine aminotransferase 277 IU/L, gamma-glutamyl transferase 385 IU/L, and alkaline phosphatase 361 IU/L. Total bilirubin was 10.9 mg/dL, of which 7 mg/dL was conjugated. Serum lipase was normal (Table 1).

Table 1: Laboratory findings at admission

Laboratory test	Result	Interpretation
Hemoglobin	12.4 g/dL	Mildly decreased
Leukocytes	9×10^9 /L	Within usual adult range
Platelets	875×10^9 /L	Marked thrombocytosis
AST	519 IU/L	Elevated
ALT	277 IU/L	Elevated
GGT	385 IU/L	Elevated
Alkaline phosphatase	361 IU/L	Elevated
Total bilirubin	10.9 mg/dL	Elevated
Conjugated bilirubin	7 mg/dL	Elevated
Lipase	Normal	No biochemical pancreatitis

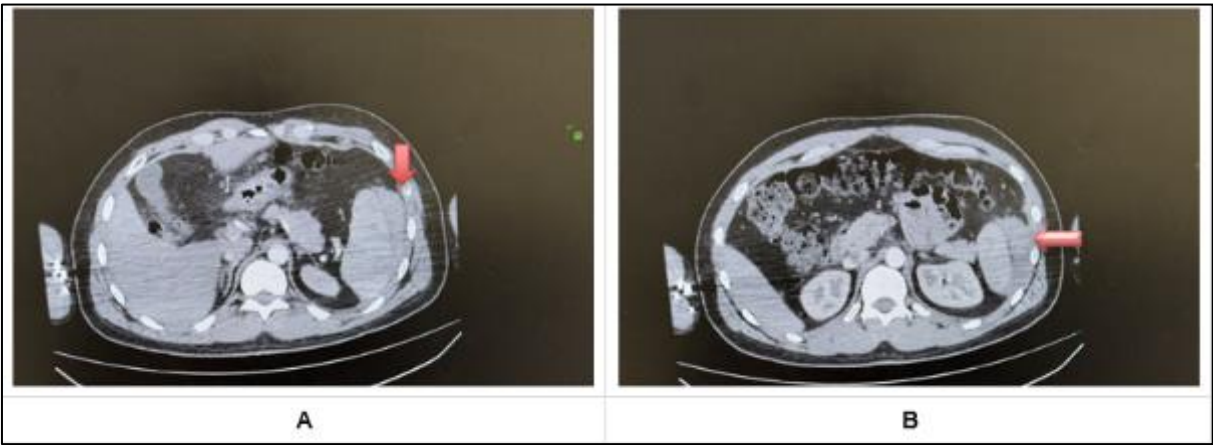


Figure 1: Axial contrast-enhanced CT images at two splenic levels showing a crescentic hypoattenuating subcapsular collection along the lateral splenic surface, compatible with a subcapsular hematoma. The complete CT examination also demonstrated a small-volume hemoperitoneum.

Contrast-enhanced computed tomography of the chest, abdomen, and pelvis provided the key diagnostic finding. Although the spleen was normal in size, it was bordered by a subcapsular hematoma measuring 20 mm at its greatest

thickness and extending 105 mm craniocaudally. A small-volume hemoperitoneum was also visible. With no history of trauma, the appearance was consistent with atraumatic splenic injury (Figure 1).

The subsequent viral workup supported acute primary EBV infection. Initial testing showed positive viral capsid antigen (VCA) IgM, negative VCA IgG, negative Epstein-Barr nuclear antigen (EBNA) IgG, and positive EBV polymerase chain reaction. Repeat serology at 15 days after symptom onset demonstrated VCA IgG seroconversion, providing strong evidence of recent primary EBV infection.

As the patient remained hemodynamically stable and there were no signs of major ongoing hemorrhage, we opted for close clinical and laboratory surveillance rather than immediate intervention. Neither splenic embolization nor surgery became necessary. His condition remained stable, and follow-up contrast-enhanced computed tomography showed a favorable course without progression of the bleeding. He left the hospital after five days in good general condition.

3 DISCUSSION

Two aspects of this case initially made the diagnosis less obvious: the patient was stable, and the spleen was not enlarged. Nevertheless, the combination of left upper-quadrant pain, a subcapsular hematoma with hemoperitoneum, no trauma, and markers of acute EBV infection offered a coherent explanation. The initial virologic profile of positive VCA IgM, negative VCA IgG, negative EBNA IgG, and positive EBV PCR was compatible with very early primary infection. Subsequent VCA IgG seroconversion, documented 15 days after symptom onset, provided strong additional evidence of acute primary EBV infection.

ASR is a broad entity. It includes rupture of an apparently normal spleen as well as rupture related to an underlying splenic or systemic disorder. In the review by Renzulli et al., infections accounted for 27.3% of pathologic cases [1]. EBV-related rupture is rare when compared with the overall incidence of infectious mononucleosis. Its clinical importance lies in its presentation: abdominal pain and bleeding may dominate the picture before pharyngitis, lymphadenopathy, or atypical lymphocytosis has suggested EBV. Similar presentations have been described in other adult case reports [3,4].

The timing in our patient is also typical of the cases summarized by Toti et al., in which splenic rupture or infarction occurred mainly in young adults and early in the symptomatic course [2]. He presented on day 10. The associated hepatocellular and cholestatic abnormalities were an additional clue to a systemic viral illness. By contrast, the normal leukocyte count and absence of splenomegaly could easily have been falsely reassuring. This case is a reminder that splenic size alone does not reflect capsular fragility and should not determine whether imaging is obtained.

Contrast-enhanced CT was decisive in this case. Beyond confirming the hematoma, it showed the amount of intraperitoneal blood and provided the information needed to choose a management strategy. In a stable patient, the scan must be interpreted together with repeated clinical examination, hemodynamics, and hemoglobin measurements. Deterioration, ongoing blood loss, or active hemorrhage may require embolization or surgery. When these features are absent, observation is reasonable, provided that rapid intervention remains available if the situation changes.

In our patient, the limited hemoperitoneum, stable hemodynamics, and absence of progressive bleeding made spleen-preserving treatment possible. His course supports this option in similarly selected patients, but it should not be interpreted as a rule. The decision remains individual and depends on the imaging appearance, hemoglobin trend, comorbidities, local expertise, and the ability to move quickly to embolization or surgery if observation fails.

Discharge counselling is part of this conservative approach. Patients should avoid contact sports, heavy lifting, and activities that could expose the abdomen to impact until recovery has been confirmed clinically and, when needed, radiologically. They should also know which symptoms require an urgent return. Our report is limited by the absence of detailed serial hemoglobin values; however, primary EBV infection was strongly supported by the documented VCA IgG seroconversion and positive EBV PCR. Even with these limitations, the case adds a useful clinical message: EBV-associated splenic injury can occur without splenomegaly, and a stable patient may recover without an invasive procedure when surveillance is rigorous.

4 CONCLUSION

Atraumatic splenic rupture belongs in the differential diagnosis of unexplained epigastric or left upper-quadrant pain, even when there is no trauma, splenomegaly, or hemodynamic instability. In a younger patient with fever and abnormal liver tests, EBV should be considered early. Contrast-enhanced CT confirms the splenic lesion and helps determine whether observation, embolization, or surgery is appropriate. Our patient's recovery shows that conservative management can preserve the spleen when clinical stability is sustained and monitoring is close.

STATEMENTS ON COMPLIANCE WITH ETHICAL STANDARDS

Disclosure of conflict of interest

The authors declare that they have no conflicts of interest

Statement of ethical approval

This case report was approved by the Ethics Committee of Mohammed V Military Teaching Hospital, Rabat, Morocco.

Statement of informed consent

Written informed consent for publication of the clinical details and images was obtained from the patient.

Data availability

De-identified data supporting this case are available from the corresponding author on reasonable request, subject to institutional and patient-consent restrictions.

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