

Case Report

Massive splenic infarction in a patient with acute calculous cholecystitis: a case report and literature review

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ABSTRACT

Massive splenic infarction (MSI) is a rare cause of acute abdominal pain and is attributed to compromised blood flow to more than half of the spleen. It may be due to hematological, non-hematological, or rarely spontaneous. Symptoms and signs are non-specific. Diagnosis is based mainly on radiological investigations. The treatment is splenectomy if complications occur. We reported a case of a 50-year-Saudi lady, who was presented with a picture of acute calculous cholecystitis that was treated conservatively. Then 48 hours later, pain improved significantly, then shortly she suddenly developed a left upper quadrant pain. Computerized tomography of the abdomen diagnosed the situation as MSI. She underwent open cholecystectomy and splenectomy as conservative treatment failed and she developed a splenic abscess. She made uneventful recovery and discharged in a good condition. Hematological, cardiology, and rheumatology services diagnosed the situation as a spontaneous MSI. She was seen in surgery outpatient free of complaints.

Keywords: Massive splenic infarction, Spontaneous, Splenectomy

INTRODUCTION

Massive splenic infarction (MSI) is characterized by vessel occlusion, parenchymal ischemia and subsequent tissue necrosis, affecting more than half of the spleen. Hematological causes include: Sickle cell disease and Sickle cell variants, coagulopathies, hematological malignancies, while non-hematological causes include: therapeutic embolization of a splenic injury, sarcoidosis, organ transplant, or infection.¹

Moreover, MSI may be due to Gaucher disease, pancreatitis, splenic artery aneurysm, septic emboli in endocarditis, or collagen vascular diseases.² Spontaneous MSI, as in our case, is extremely rare reported in literature.³

CASE REPORT

A 50-year-Saudi lady, who was medically free except for Controlled type-2 diabetes mellitus with oral medications and admitted through the emergency room with right upper quadrant abdominal pain radiating to the right shoulder, fatty dyspepsia and frequent vomiting. Clinically, her vital signs were stable, but she looked in pain. Her abdomen was soft and lax with positive Murphy's sign. Lab works showed mild leukocytosis with mild raised liver function tests. Abdominal Ultrasonography (USS) (Figure 1) confirmed the picture of acute calculous cholecystitis with moderately enlarged spleen.

Patient was treated conservatively. 48 hours later, pain improved significantly, then suddenly, she developed a left upper quadrant pain on the next day. An urgent USS was arranged and came to be unremarkable and a contrast enhanced computed tomographic abdominal scan (CECT) was obtained (Figure 2) and the case was diagnosed as MSI in a huge spleen with evidence of splenic artery thrombosis. Conservative treatment continued over the following 72 hours with referral to hematological, cardiology, and rheumatological services for full work up and diagnosed the case as a spontaneous MSI with unclear etiology. She developed fever with worsening of left sided pain. The situation was discussed with her and was consented for open possible simultaneous cholecystectomy and splenectomy.



Figure 1: Abdominal ultrasonography showing an inflamed gall bladder containing a large impacted stone at the neck (red arrow) with large acoustic shadow (blue arrow).



Figure 2: CECT of the abdomen showing massively infarcted huge spleen (blue arrows) with a saved small vascularized area supplied by the short gastric vessels (red arrow).

Through a midline incision, the abdomen was accessed. Splenectomy and cholecystectomy were accomplished, despite the presence of dense adhesions between the spleen and surrounding viscera, diaphragm, and the peritoneum. Unfortunately, the spleen ruptured during the initial exploration as it looked as a bag of infected hematoma with very thin wall.

Thorough saline lavage was done and drains were left at both Morrison's pouch and the splenic bed.

She was kept in a high dependency unit and shifted 48 hours later to a common room. She made an uneventful recovery and was discharged in a good general condition. She was seen in surgery outpatient clinic free of complaints.

DISCUSSION

Generally, few case reports of MSI, which were due to either hematological or nonhematological causes, have been published in literature.¹⁻⁸ The case presented here is particularly significant because it the rare occurrence of a spontaneous MSI for which the definitive cause of infarction was unclear. Moreover, up to the best of our knowledge, this is the first case in literature of MSI occurring in a patient with acute cholecystitis.

Spontaneous MSI is an extremely rare condition.^{3,12} Focal splenic infarcts are common in patients with Sickle cell anemia (SCA), but these are usually small and recurrent and finally lead to auto-splenectomy. Yet, few cases of MSI can still occur in SCA.³⁻⁶ Splenic infarction in acute pancreatitis is about 7% and mostly due to splenic vein thrombosis², which account for up to 2% of cases of acute pancreatitis. Other causes of MSI include septic shock, polycythemia vera, splenic arterial dissection, factor V Leiden mutation, and sarcoidosis. The mechanism of MSI in these cases was unknown.^{2,8-10} Hiatal hernia may be associated with MSI may be due to hypo-perfusion as the herniated gastric and splenic vascular pedicles can be a probable hypothesis for cause of MSI. The presentation of MSI is variable, but the majority of cases, such as in our case, present with sudden onset of severe left upper quadrant abdomen pain.¹ Associated nonspecific symptoms may be present, such as nausea, vomiting, fever and chills.³ Rarely, diffuse abdominal pain may occur in some cases of MSI if infarction ruptured.¹¹ As in our case, the abdominal ultrasonography was less sensitive for diagnosis of, whereas CECT of the abdomen was the best diagnostic modality.² However, sonography is a first useful imaging technique for the initial assessment and subsequent follow-up of suspected splenic infarcts.¹² Focal splenic infarcts are seen as multiple triangular or wedge-shaped hypoechoic areas that were identified at the periphery of the splenic parenchyma in initial phase and echogenic as fibrosis occurs. Color Doppler imaging may show hypoperfusion.¹²⁻¹⁸

The role of splenectomy in the setting of MSI remains unclear.¹ Due to the risk of fatal, post-splenectomy sepsis, splenic preservation is preferable.¹⁶ The indications that warrant surgical intervention for any type of splenic infarction are reserved for patients with persistent symptoms, mainly abdominal pain, or the presence of complications, including: splenic hemorrhage, abscess, or persistent pseudocyst.¹⁷ Our patient had significantly

worsening abdominal pain due to abscess formation which are major indications for splenectomy. The choice between medical and surgical management can be carefully considered based on clinical findings, and imaging. Splenectomy does not always hasten recovery, especially if the cause of MSI is unclear.¹⁸⁻²¹

CONCLUSION

MSI is a rare cause of acute abdomen. Diagnosis is based mainly on radiological investigations as the clinical symptoms and signs are often nonspecific. Treatment is based primarily on the underlying disease. Non-infectious splenic infarct may be treated medically. Dangerous complications may include pseudocyst formation, abscess, hemorrhage, splenic rupture, aneurysm, or hemorrhagic transformation, which complications warrant emergent surgical consideration.

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