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When the Spleen Breaks: A Rare Case of Spontaneous Splenic Rupture and the Diagnostic Significance of CT Scan

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Abstract **Case Report**

***Purpose*:** This case report aims to discuss the rare occurrence of spontaneous splenic rupture and the utility of CT scans in its diagnosis and management. ***Presentation of Case*:** A 58-year-old chronic smoker presented to the emergency department with sudden-onset abdominal pain. He was diagnosed with splenic rupture based on clinical presentation and imaging findings, including an enlarged spleen and abdominal fluid on CT scan. The patient underwent splenectomy, with histological examination confirming the diagnosis. ***Discussion*:** CT scan is a commonly used imaging technique in the diagnosis of splenic masses, providing a high resolution, cross-sectional view of the spleen and surrounding structures. The use of contrast agents enhances the differentiation between vascular and non-vascular lesions and improves the accuracy of diagnosis. Other imaging techniques such as ultrasound, MRI, and PET-CT may also be used. The treatment of splenic masses depends on the underlying etiology and the clinical status of the patient. ***Conclusion*:** The CT scan findings in this case suggest a splenic mass, which was confirmed to be a decapsulated spleen on histological examination after splenectomy. The use of imaging techniques such as CT scan is important in the diagnosis and management of splenic masses, aiding in preoperative planning and postoperative monitoring. Postoperative management of splenic rupture typically involves pain control, antibiotic therapy, and lifelong prophylactic antibiotics and vaccinations to reduce the risk of infection. This case report discusses a rare case of spontaneous splenic rupture and highlights the diagnostic and management utility of CT scans. The patient, a 58-year-old chronic smoker.

Keywords: Spontaneous splenic rupture, CT scan, Diagnosis, Imaging, Treatment, Splenectomy.

INTRODUCTION

Spontaneous splenic rupture is a very rare condition that can occur without any apparent injury or trauma to the spleen. It is often associated with underlying medical conditions, such as an enlarged spleen or certain blood disorders [1, 2].

This condition can be life-threatening and requires immediate medical attention. Diagnosis involves physical examination and imaging studies such as ultrasound or CT scan [3, 4].

Treatment may involve surgical removal of the ruptured spleen, blood transfusions, and supportive care. Radiological imaging is an important diagnostic tool for identifying the cause and extent of spontaneous splenic rupture [5].

PRESENTATION OF THE CASE:

A 58-year-old man with a history of chronic smoking presented to the emergency department with sudden-onset abdominal pain. On arrival, his blood pressure was 88/57 mmHg, pulse rate was 99/min, he appeared pale and had abdominal guarding. His hemoglobin level was 8 g/dL, WBC count was 1440/mm3, the C reactive protein was at 29.

After intensive care measures and transfusion of 2 units of red blood cells, a CT scan showed evidence of a heterogeneous formation, measuring approximately 80x73 mm, spontaneously hyperdense in some areas, and poorly enhanced after the injection of contrast medium.

Fig 1: Abdominal CT scan (axial section) after injection of contrast medium (arterial phase): a heterodense formation has been observed in the upper pole of the spleen with hemoperitoneum

Fig 2: Coronal section of the abdominal CT scan showing the splenic rupture with the deformities and the hemoperitoneum

Fig 3: Sagittal view of the splenic rupture and hemoperitoneum

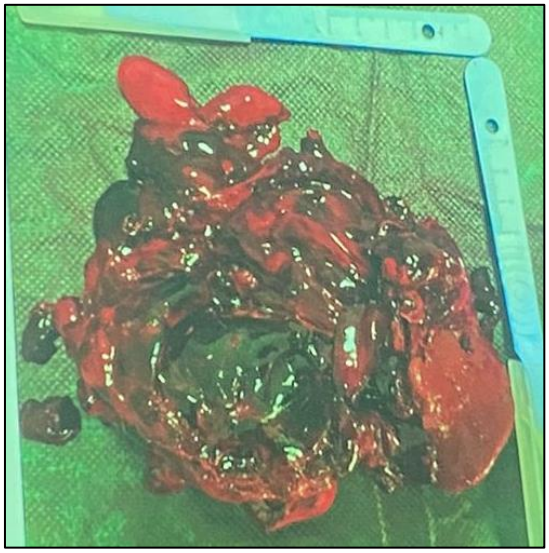

Fig 4: The surgical specimen of the ruptured spleen

The formation was located near the greater curvature of the stomach and appeared to involve the upper pole of the spleen, which was enlarged and deformed at this level.

An ultrasound examination revealed echogenic peritoneal effusion with a hypoechogenic mass in the left hypochondrium. The patient remained hemodynamically unstable and underwent an exploratory laparotomy, which revealed hemoperitoneum due to complete decapsulation of the spleen. A decision was made to proceed with splenectomy, and histological examination confirmed a non-pathological aspect of a decapsulated spleen. The patient's postoperative course was unremarkable, and he received pneumococcal, meningococcal, and

Haemophilus vaccinations with life-long penicillin prophylaxis.

DISCUSSION

This patient likely has splenic rupture based on the clinical presentation and imaging findings, which include abdominal pain, hemoperitoneum, and an enlarged spleen with distorted contours on CT scan. Splenic rupture is a serious and potentially life-threatening condition that typically requires splenectomy [6, 7].

Although splenic rupture is most commonly caused by blunt abdominal trauma, it can also occur spontaneously or as a result of an underlying medical condition such as a splenic cyst or tumor. Chronic smoking is not typically associated with an increased risk of splenic rupture, but can contribute to other medical conditions that may increase the risk [8, 9].

The CT scan revealed an 80x73 mm heterogeneously enhancing mass in the left upper quadrant of the abdomen, which seemed to be arising from the superior pole of the spleen. This finding is suggestive of a splenic tumor, possibly a lymphoma or cystic lesion, but other malignant or benign tumors cannot be excluded [10, 11].

CT scan is a commonly used imaging technique in the diagnosis of splenic masses, providing a high resolution, cross-sectional view of the spleen and surrounding structures. The use of contrast agents enhances the differentiation between vascular and non-vascular lesions and improves the accuracy of diagnosis. Other imaging techniques such as ultrasound, MRI, and PET-CT may also be used [12-14].

The treatment of splenic masses depends on the underlying etiology and the clinical status of the patient. Surgical excision of the mass or splenectomy is typically recommended for malignant or symptomatic lesions, while benign or asymptomatic lesions may be managed conservatively with regular follow-up and surveillance. The use of imaging techniques such as CT scan can aid in the preoperative planning and postoperative monitoring of patients with splenic masses [15, 16].

Spontaneous splenic rupture is a rare condition, and there is limited literature available specifically on the CT scan findings of this condition. However, in the few cases reported in the literature, the CT scan findings have generally been consistent with those of traumatic splenic rupture, which is the more common form of splenic rupture. These findings may include an enlarged spleen with distorted contours, the presence of free fluid in the abdominal cavity, and occasionally, a mass or lesion within the spleen [17, 18].

In some cases of spontaneous splenic rupture, the CT scan may show evidence of a splenic infarction, which can occur as a result of the disruption of blood flow to the spleen. This may manifest as a low-attenuation area within the spleen on CT imaging [19, 20].

It is important to note that while the CT scan can be a useful tool in the diagnosis of spontaneous splenic rupture, a definitive diagnosis often requires histological examination of the spleen, which is typically obtained through splenectomy.

CONCLUSION

The CT scan findings in this case suggest a splenic mass, which was confirmed to be a decapsulated spleen on histological examination after splenectomy. The use of imaging techniques such as CT scan is important in the diagnosis and management of splenic masses, allowing for accurate localization and characterization of the lesion and helping in preoperative planning and postoperative monitoring. Postoperative management of splenic rupture typically involves pain control, antibiotic therapy, and lifelong prophylactic antibiotics and vaccinations to reduce the risk of infection.

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