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A Rare Case of Atraumatic Splenic Rupture Following Cocaine Use

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ABSTRACT: Cocaine abuse is common among patients presenting to the emergency department. While the cardiovascular complications of cocaine are well recognized by clinicians, awareness of its abdominal complications—such as bowel ischemia and splenic rupture—remains limited. We report the case of a 52-year-old male with a history of cocaine use who presented with sudden-onset left upper quadrant abdominal pain. Imaging revealed an atraumatic splenic rupture with associated hemoperitoneum. After excluding other possible causes, particularly neoplastic and infectious etiologies, a conservative management approach was adopted. Prompt recognition of splenic rupture is critical, as it may be difficult to diagnose clinically and can be life-threatening. Physicians should maintain a high index of suspicion and consider imaging when evaluating cocaine users with acute abdominal symptoms.

KEYWORDS: Cocaine, atraumatic splenic rupture, spontaneous splenic rupture**.**

INTRODUCTION

Cocaine intoxication presents with diverse clinical features and can affect multiple organ systems. While its cardiovascular and neurological effects are well documented, abdominal complications are often under-recognized. Acute abdominal pain in a cocaine user may indicate a potentially fatal condition such as bowel ischemia, perforation, or splenic rupture. We present a rare case of atraumatic splenic rupture (ASR) associated with cocaine use, managed successfully without surgical intervention.

AIM OF THE ARTICLE

Atraumatic splenic rupture (ASR) is an uncommon but potentially fatal condition. Although most ASRs are associated with neoplastic or viral etiologies, they can also occur secondary to certain drug exposures, including cocaine. Drug-induced ASR is rare, with an estimated prevalence of approximately 7.2% (Renzulli et al., 2009a). This case highlights the possibility of cocaine-related ASR and discusses its diagnosis and non-operative management.

CASE PRESENTATION

A 52-year-old man with a history of occasional cocaine use presented to the emergency department with sudden-onset pain in the left upper abdomen. There was no history of trauma, gastrointestinal bleeding, obstruction, weight loss, or altered bowel habits. On examination, the patient was tachycardic (110 bpm), pale, but normotensive. Abdominal examination revealed tenderness in the left upper quadrant.

An abdominal ultrasound revealed a 49 mm subcapsular splenic hematoma and a large amount of anechoic free fluid suggestive of hemoperitoneum. A contrast-enhanced CT scan confirmed a 43 mm subcapsular hematoma with architectural distortion of the spleen and evidence of active bleeding (contrast extravasation). Hemoperitoneum was observed in the perihepatic and perimesenteric regions (Figure 1).

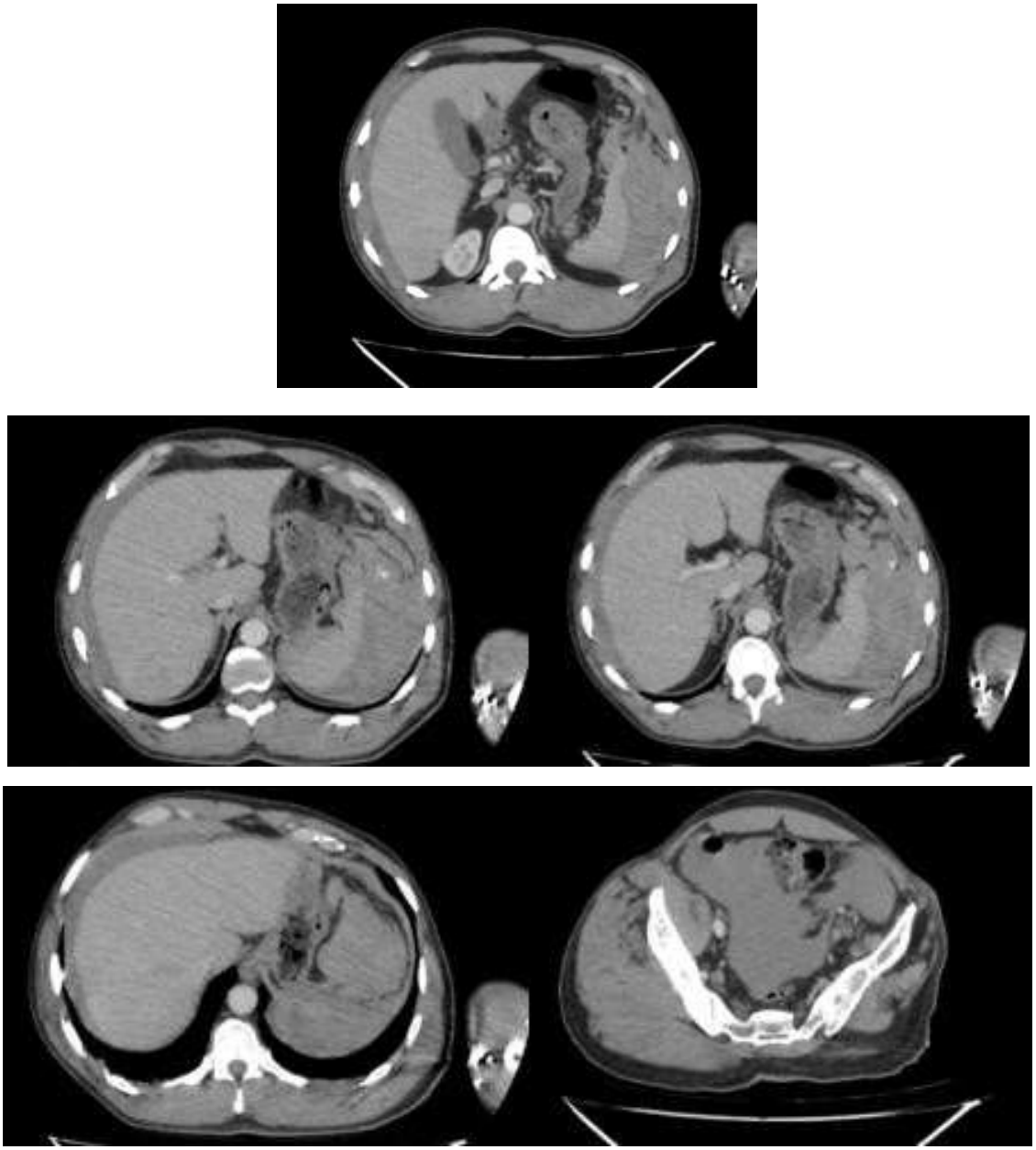

Figure 1: CT scan of the ASR at the admission of the patient.
(A) Subcapsular splenic hematom.
(B) Extravasation of contrast media testifying the active hemorrage.
(C) Hemoperitoneum periheaptic and perimesenteric.

Laboratory tests showed a hemoglobin level of 12.4 g/dL with otherwise normal blood counts. The patient was admitted to the intensive care unit for close monitoring. Extensive workup, including peripheral smear, bone marrow biopsy, and serological testing for HIV, hepatitis viruses, syphilis, and Epstein-Barr virus, was negative. With all other causes excluded, the splenic rupture was attributed to cocaine use.

The patient was managed conservatively without surgery. His condition remained stable, and he was discharged on day 8. At 3-month follow-up, he was asymptomatic. Repeat CT showed resolution of hemoperitoneum and regression of the splenic hematoma (Figure 2), with hemoglobin improved to
13.1 g/dL.

Figure 2*:* Subcapsular splenic hematoma three months after conservative treatment.

DISCUSSION

While most splenic ruptures are traumatic, ASRs can occur spontaneously or secondary to various pathological conditions. Renzulli et al. (2009a) classified ASRs into six categories:

1. Neoplastic (e.g., leukemia, lymphoma, metastatic cancer)
2. Infectious (e.g., EBV, HIV, endocarditis)
3. Inflammatory (e.g., pancreatitis, lupus)
4. Drug-induced (e.g., G-CSF, anticoagulants, cocaine)
5. Mechanical (e.g., pregnancy, splenomegaly)
6. Idiopathic

Cocaine is a potent sympathomimetic agent and triple reuptake inhibitor of dopamine, norepinephrine, and serotonin. Its vasoconstrictive effect is mediated by increased levels of circulating catecholamines and vasoconstrictor
peptides like endothelin. This can lead to tissue ischemia and vascular injury, potentially contributing to splenic infarction and rupture (Lee Ramos et al., 2019).

ASR typically presents with sudden abdominal pain, sometimes radiating to the left shoulder (Kehr's sign), along with signs of hypovolemia or shock. However, some patients—like ours—may remain hemodynamically stable. Ultrasound can detect free fluid and altered splenic echotexture, but CT is the gold standard for diagnosis, capable of identifying hematomas, active bleeding, and grading injury severity using the American Association for the Surgery of Trauma (AAST) scale.

Management of ASR depends on hemodynamic stability, the extent of injury, and underlying cause. Splenectomy is generally recommended in patients with ASR due to malignancy or compromised splenic function. However, in stable patients without underlying pathology, non-operative management is often successful and avoids the risks associated with splenectomy, such as overwhelming post-splenectomy infection (OPSI).

Although the causal relationship between cocaine uses and ASR remains presumptive, when all other etiologies are excluded, cocaine-induced vasospasm and vascular fragility should be considered potential mechanisms.

CONCLUSION

Atraumatic splenic rupture is a rare but serious condition that must be considered in cocaine users presenting with acute abdominal pain. Clinicians should be aware of this possibility, especially when other etiologies have been excluded. Early imaging and appropriate management—whether conservative or surgical—are essential for favorable outcomes. This case underscores the importance of considering abdominal complications in cocaine abuse, beyond the more familiar cardiovascular effect.

PROVENANCE AND PEER REVIEW

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As per international or university standards, written consent has been collected and preserved by the authors.

ETHICAL APPROVAL

As per international or university standards, written ethical approval has been collected and preserved by the authors

CONFLICTS OF INTEREST

The authors declare no competing interests

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