

Extensive saponification following acute pancreatitis mimicking peritoneal carcinomatosis and liver metastasis

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Introduction

Saponification of intra-abdominal fat is a well-known manifestation of acute pancreatitis. Lipolytic enzymes released from the damaged pancreas autodigests the pancreatic parenchyma and fat tissues in the vicinity of pancreas.

General distribution of the fat necrosis involves peripancreatic retroperitoneum, omentum and mesentery. However, radiological finding of fat necrosis in unusual abdominal and extra abdominal locations have been documented less frequently in the literature. Such lesions tend to mimic pathologies particular to those sites. Therefore, misinterpretation of radiological investigations is possible if the clinical assessment is not correlated with the image findings.

Case report

A 34-year-old male patient with a background history of alcohol consumption, had been diagnosed with acute pancreatitis based on the pain characteristics and hyperamylasemia at a local hospital. Contrast enhanced computerized tomography (CECT) of abdomen had been performed on fourth day of illness since the symptoms were persistent.

CECT demonstrated a low-density cystic lesion (4.5x4.1 cm) in the tail of the pancreas (Figure 1). In addition, there was a subcapsular enhancing lesion (2.4x1.3 cm) in the segment VIII of the liver and multiple small focal enhancing lesions (3-5mm) seen diffusely in the peritoneal cavity (Figure 2a and 2b). A pancreatic neoplasm with liver metastasis and peritoneal carcinomatosis had been suspected. A diagnostic

laparoscopy had been performed and demonstrated multiple friable, pale nodules on the peritoneum, omentum, mesentery and serosal surface of bowel. Biopsy had been obtained from the peritoneal and subcapsular liver lesions which demonstrated fat necrosis rather than malignant cells.

Patient had been referred to us for specialized hepato-pancreatico-biliary (HPB) opinion. Patient was asymptomatic by the time of our assessment. He denied a preceding history of similar episodes, poor appetite or loss of weight. Other than alcohol consumption and smoking, he was devoid of risk factors for the development of pancreatic malignancy.

HPB multidisciplinary team meeting revised the diagnosis as alcohol induced acute pancreatitis complicated with peripancreatic fluid collection and multiple deposits of fat saponification. Currently, the patient abstains from alcohol consumption. The peripancreatic fluid collection is being managed conservatively as the patient is symptom free.

Discussion

Acute pancreatitis is a well-known cause for intra-abdominal fat necrosis among the other causes including epiploic ap-

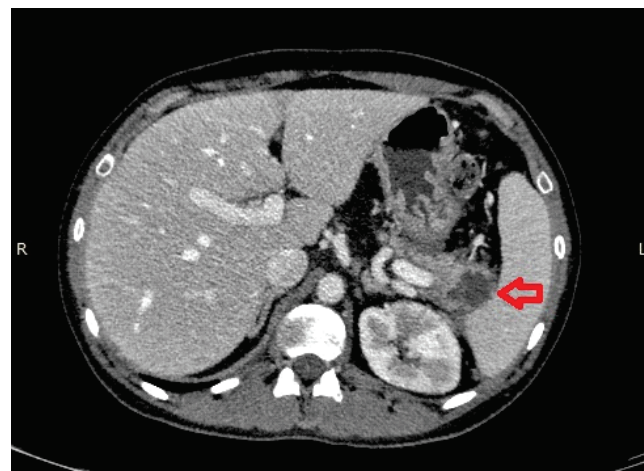



Figure 1. Computed tomography showing a cystic lesion in the tail of the pancreas

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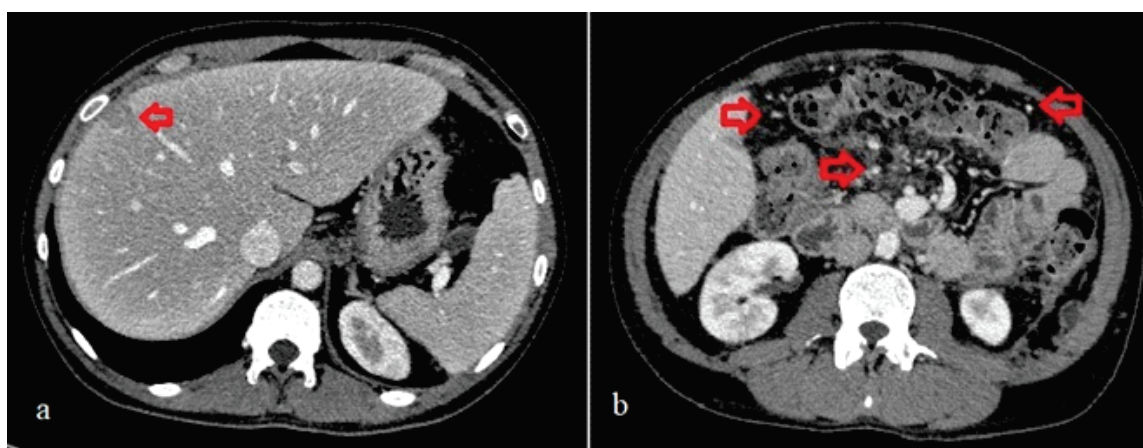


Figure 1. Computerized tomography showing (a). a subcapsular lesion at segment VIII of liver mimicking liver metastasis (b). multiple focal enhancing lesions of fat necrosis mimicking peritoneal carcinomatosis.

pendagitis, infarction of the omentum, mesenteric panniculitis, and rarely trauma [1]. In acute pancreatitis, abnormal release of lipolytic enzymes autodigests the pancreatic parenchyma as well as the peripancreatic fat tissues. When the plasma membranes of fat cells are broken down by pancreatic phospholipases and proteases, triglycerides are released and hydrolyzed, producing free fatty acids. They in turn, combine with serum calcium and precipitate producing saponification [2]. The usual distribution of pancreatic fat necrosis is in the vicinity of the pancreas including peripancreatic retroperitoneum, omentum, mesenteric root, and transverse mesocolon [3]. Unusual distributions of fat saponification have been documented scarcely in the literature which include extensive peritoneal distribution mimicking carcinomatosis and extra-abdominal distant locations such as subcutaneous tissue and periarticular tissue [1-4]. However, none of the authors describe large subcapsular fat necrosis of the liver that mimics liver metastasis as we encountered in our patient.

In addition to the lipolysis, damaged adipocytes induce an inflammatory response including activation of macrophages. Contrast enhancement observed in these lesions may be explained by the slow diffusion of contrast material through small capillaries in granulation tissue formed as a result of the inflammatory process occurring on the lesions [3]. Even so, the enhancement observed in fat saponification is heterogenous and of low attenuation compared to carcinomatosis [4].

Peritoneal carcinomatosis is a late manifestation of certain malignancies including gastric, colorectal and ovarian origin. They are contrast enhancing nodular lesions generally distributed over the peritoneum, mesentery and the omentum. Associated mild to moderate ascites is a common occurrence

in peritoneal carcinomatosis (not present in our patient) [5]. Considering the similarity of the appearance of peritoneal carcinomatosis and generalized fat saponification, clinical history is imperative when interpreting the CT findings. Our patient provided an acute onset symptom profile only for a short duration without preceding constitutional symptoms.

Conclusion

Fat saponification following acute pancreatitis can mimic peritoneal carcinomatosis and liver metastasis. It is imperative to follow the clinical history and examination when interpreting CT in the scenario of this sort to minimize misdiagnosis.

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Learning Points:

- Fat saponification following acute pancreatitis can mimic peritoneal carcinomatosis and liver metastasis.
- Clinical history and examination are imperative when interpreting radiological investigations to minimize misdiagnosis.
- In ambiguous cases, multidisciplinary discussions are invaluable.