

Case report

Unusual acute liver failure from small cell carcinoma of the lung

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Abstract

A 75-year-old woman with a 50-pack-year history of tobacco abuse presented with abdominal pain, encephalopathy and elevated liver enzymes. Serologic evaluation for viral hepatitis, drug levels and chronic liver disease panel was negative. Computed tomography (CT) scan of the abdomen showed hepatomegaly and a large area of decreased attenuation in the lateral segment of the left lobe of the liver which was also demonstrated on the magnetic resonance cholangiopancreatography. CT of the chest was significant for a 1.4 cm left peripheral lingular nodule. Hepatic mass biopsy revealed small cell carcinoma (SCC), favoring lung primary. She had persistent liver failure with encephalopathy, coagulopathy and elevated liver enzymes during her hospital stay. Acute liver failure (ALF) is characterized by liver damage, encephalopathy and coagulopathy in patients without any prior history of liver disease. Although malignant infiltration has been described as a cause of ALF, SCC of the lung is an uncommon etiology.

Key words: acute liver failure, small cell carcinoma, small cell cancer.

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Introduction

Acute liver failure (ALF) is characterized by liver damage along with encephalopathy and coagulopathy in patients without any prior history of liver disease [1]. It is most commonly associated with acetaminophen hepatotoxicity, viral hepatitis or ischemic injury [2, 3]. Malignant infiltration has also been described as a cause of ALF, but small cell carcinoma (SCC) of the lung is an uncommon etiology [4-8]. Here, we describe a patient who was admitted with ALF and was revealed to have SCC of the lung.

Case presentation

A 75-year-old woman with a 50-pack-year history of tobacco abuse who had undergone elective laparoscopic cholecystectomy three weeks previously for symptomatic cholelithiasis presented with encephalopathy, abdominal pain and abnormal liver enzymes.

Her medications included immediate-release oxycodone for post-operative pain and omega-3 fatty acids (fish oil). Laboratory work was significant for hemoglobin 13.2 g/dl (reference range [ref] 12.3-15.3 g/dl), white blood cell count 10.68 k/mcl (ref 4.45-11.3 k/mcl), platelets 159 k/mcl (ref 145-445 k/mcl), serum creatinine 0.82 mg/dl (ref 0.7-1.5 mg/dl), aspartate aminotransferase (AST) 118 U/l (ref 14-36 U/l), alanine aminotransferase (ALT) 79 U/l (ref 9-52 U/l), alkaline phosphatase 260 U/l (ref 35-140 U/l), total bilirubin (TB) 3.8 mg/dl (ref 0.2-1.2 mg/dl), direct bilirubin 2.8 mg/dl and INR 1.7 (ref 0.9-1.1). Serologic evaluation of liver dysfunction was unremarkable including viral hepatitis testing, drug levels, infectious workup, and chronic liver disease panel.

Abdominal Doppler demonstrated normal directional flow and patency of portal veins as well as hepatic veins. The resistive index of the main hepatic artery was normal at 0.74 and ascites was not observed. Hepatobiliary scintigraphy was negative for any ob-

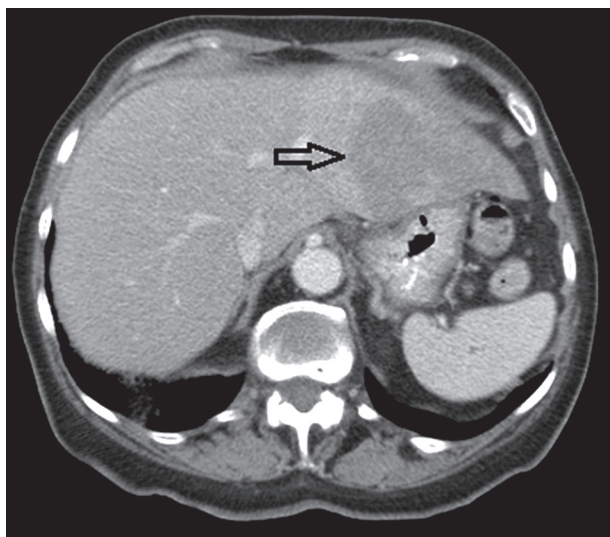


Fig. 1. Large vague area of decreased attenuation (arrow) in the lateral segment of the left lobe of the liver on CT scan

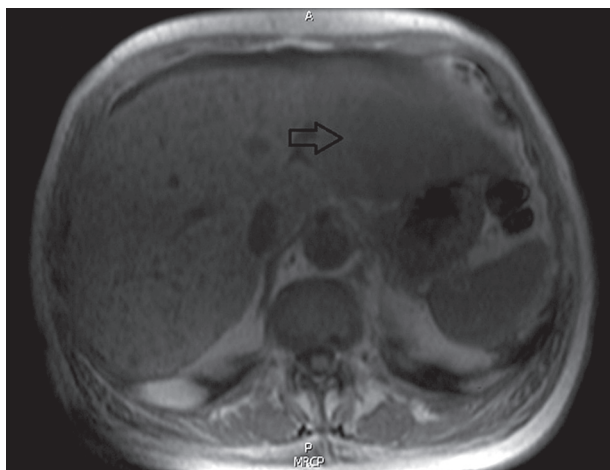


Fig. 2. Signal abnormality in the lateral segment of the left lobe of the liver on MRCP (arrow)

struction or leak. Computed tomography (CT) scan of the abdomen and pelvis with contrast showed hepatomegaly with a large area of decreased attenuation in the lateral segment of the left lobe of the liver (Fig. 1). Hepatomegaly with a mottled appearing liver as well as geographic infiltrative signal abnormality in the lateral segment of the left lobe of the liver (Fig. 2) was demonstrated on magnetic resonance cholangiopancreatography (MRCP). Subsequent endoscopic retrograde cholangiopancreatography (ERCP) revealed sludge in the common bile duct (CBD) that was removed, and a plastic stent was placed in the CBD.

Additional investigations included erythrocyte sedimentation rate 32 mm/h (ref 0-24 mm/h), C-reactive protein 9.8 mg/dl (ref < 0.80 mg/dl), D-dimer 11.43 μ g/ml (ref 0.00-0.50 μ g/ml), lactate dehydrogenase 483 U/l (ref 110-216 U/l), activated partial

thromboplastin time (APTT) 73 seconds (ref 23-34 seconds), fibrinogen 334 mg/dl (ref 212-479 mg/dl), fibrin degradation products (FDPs) 20-40 mcg/ml (ref < 5.0 mcg/ml), α -fetoprotein 1.5 ng/ml (ref < 15 ng/ml) and ammonia 81 μ mol/l (ref 10-33 μ mol/l). She developed refractory encephalopathy despite utilization of lactulose.

Visualization of infiltrative signal abnormality on imaging was initially concerning for a possible traumatic finding or focal infarction as a complication of cholecystectomy but malignancy was also considered. Ultrasound-guided hepatic mass biopsy was subsequently performed. Immunohistochemical (IHC) staining was positive for CAM5.2, chromogranin, TTF-1, CD56 and 70% of tumor nuclei staining for MIB-1 while CD45 and synaptophysin were negative. These findings revealed SCC, favoring lung primary. Subsequent CT of the chest showed a 1.4 cm left peripheral lingular nodule, but no pulmonary emboli were seen. Gallbladder pathology after the surgery had been consistent with chronic cholecystitis and cholelithiasis with a small focus of intestinal metaplasia as well as mild nuclear stratification and atypia suggestive of low-grade dysplasia. AST and ALT remained elevated and serum bilirubin progressively continued to rise with a TB of 7.2 mg/dl despite the ERCP and stent placement. INR was also persistently increased at 2.5 despite multiple doses of intravenous vitamin K. Repeat CT of the abdomen showed patent stent and pneumobilia. Given her poor performance status and liver failure, she was deemed not a candidate for chemotherapy, and hospice care was pursued; she ultimately died 10 days after admission.

Discussion

Malignant infiltration of the liver from SCC of the lung has been described due to its aggressive nature to metastasize to other organs, but it is unusual for SCC to manifest as ALF [9, 10]. Prompt liver biopsy with rapid immunostaining is essential to establish a diagnosis so that chemotherapy may be started [11]. In our patient, evaluation for other causes of ALF was negative, making malignant infiltration from SCC the likely etiology.

A chest X-ray prior to her cholecystectomy did not show a lung nodule and only revealed fibrotic scarring in both lung bases. Chest CT that indicated a 1.4 cm lingular nodule was prompted after the biopsy and IHC results showed SCC favoring lung primary.

Our case is distinct from prior reports of ALF due to SCC of the lung in that it did not reveal significantly elevated aminotransferase levels but had other

hallmark features of ALF including elevated bilirubin, INR and encephalopathy [11-14]. The patency of the stent with its positioning and pneumobilia ruled out cholestasis as the etiology of this patient's acute liver failure. Normal fibrinogen levels and only mildly elevated FDPs ruled out disseminated intravascular coagulation (DIC). Abdominal Doppler revealed patent vessels, making Budd-Chiari syndrome unlikely. Chronic liver disease work-up was also unremarkable. All this, in combination with positive biopsy findings, shows that malignant infiltration was the likely culprit of this patient's ALF. Additionally, the temporal relation to the recent cholecystectomy prompted testing for surgical complications and questioning whether the initial presentation was indeed secondary to symptomatic cholelithiasis. This case demonstrates that malignancy, particularly SCC of the lung, should be considered in patients with ALF.

Acknowledgements

This case was presented as a poster presentation at the World Congress of Gastroenterology 2017, Orlando, Florida, United States of America.

Informed consent

Verbal consent was obtained from the family.

Disclosure

Authors report no conflict of interest.

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