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Case Report

An unusual cause of biliary obstruction: a case report

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ABSTRACT

Abdominal aortic aneurysms are considered as an unusual cause of extraductal biliary obstruction with less than 30 case studies found within the literature. This case report will discuss an 81-year-old female with an incidental initially asymptomatic finding of extrahepatic biliary obstruction and gallbladder distension secondary to an abdominal aortic aneurysm in routine computed tomography staging scan. Extraductal biliary obstructions can require alternative or additional interventions to that of treatment for intraductal obstruction. Subsequently, the aetiology of biliary obstruction is important for clinicians to consider and recognise, to allow for the implementation of appropriate and timely management.

Keywords: Biliary obstruction, Compression, Abdominal aortic aneurysm

INTRODUCTION

Biliary obstruction is a common presentation with either complete or partial blockage of the biliary ducts disrupting the flow of bile into the duodenum. Biliary obstruction typically presents with a combination of jaundice, abdominal pain, and deranged serum liver function. Stasis of bile secondary to biliary obstruction without intervention maintains the potential of cholangitis, which without timely intervention can result in significant morbidity and mortality.[1] The causes of biliary obstruction vary and can be divided into intraductal and extraductal groups. Intraductal pathology accounts for up to 98% of biliary obstructions, making extraductal biliary obstruction considerably less common. Abdominal aortic aneurysms are considered as an unusual cause of extraductal biliary obstruction. As for the aorta to cause compression and obstruction of the biliary ducts it must cross the midline to apply sustained pressure to the biliary ducts. Consequently, management often involves intervention of the abdominal aortic aneurysm in addition to the biliary tree itself. Whilst extraductal obstruction is uncommon, the prompt consideration and recognition of possible extraductal aetiology is essential to facilitate implementation of appropriate and timely management.

CASE REPORT

An 81-year-old female with known metastatic small cell lung cancer on immunotherapy presented to the medical oncology outpatient department for assessment of treatment progress. To assess the response to immunotherapy a routine staging computed tomography (CT) scan of the chest, abdomen, and pelvis was performed. The CT scan demonstrated an incidental finding of interval dilation of intrahepatic biliary ducts with marked dilation of the common bile duct measuring 20.6 mm and a distended gallbladder. Additionally, an infrarenal abdominal aortic aneurysm measuring approximately 40.00 mm with an extramural thrombosis extending across the midline causing proximal compression of the common bile duct was present.

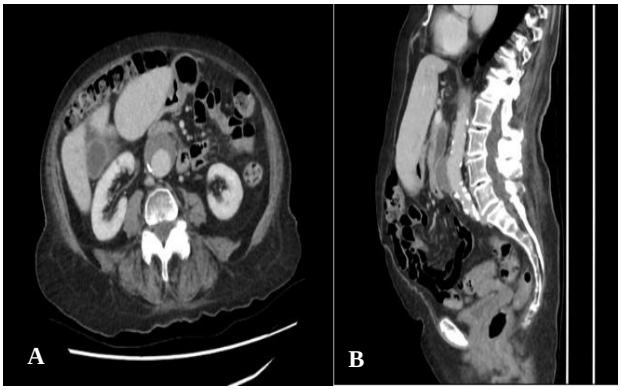

Figure 1 (A and B): CT chest, abdomen, and pelvis: proximal common bile duct dilation secondary to extramural thrombus of abdominal aortic aneurysm.

A physical examination performed was routine without features of clinical jaundice or abdominal pain. Normal serum liver functions were initially observed. However, after six weeks serum alkaline phosphate and serum gamma-glutamyl transferase were found to be persistently elevated between 130 to 150 U/L and 46 to 79 U/L. An abdominal ultrasound again revealed intrahepatic duct prominence, a distended common bile duct measuring 12.4 mm, sludge in the gallbladder, and an abdominal aortic aneurysm measuring 40mm. There was no evidence of choledocholithiasis or masses (other than the abdominal aortic aneurysm) responsible for biliary duct obstruction.

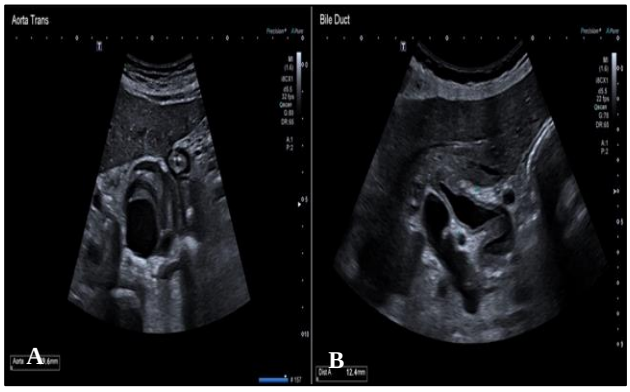

Figure 2 (A and B): Abdominal ultrasound: dilation of common bile duct secondary to abdominal aortic aneurysm.

The extrahepatic biliary obstruction was discussed in the gastroenterology cancer multidisciplinary team meeting, for which the common bile duct was deemed not amenable to stenting due to its close proximity to the abdominal aortic aneurysm. The patient agreed she did not want surgical intervention and subsequently conservative management was pursued. A three month interval CT scan demonstrated stable intrahepatic biliary duct and common bile duct dilation, elevated but stable serum liver function tests, and the patient remained asymptomatic. Subsequently, conservative management was continued.

DISCUSSION

The aetiology of biliary obstruction is important to consider and recognise to allow for implementation of appropriate management. Stasis of bile secondary to biliary obstruction without intervention holds the potential to eventuate to cholangitis, which can result in significant morbidity and mortality.[1] Biliary obstruction is defined as either complete or partial blockage of the biliary ducts disrupting the flow of bile into the duodenum.[2] Obstruction of the biliary ducts typically presents with a combination of jaundice, abdominal pain, and deranged serum liver function levels.[2] The causes of biliary obstruction vary and can be divided into intraductal and extraductal groups.[3] Intraductal biliary obstruction is frequently resultant of choledocholithiasis (up to 70%) and biliary duct strictures (up to 28%).[2,4] Whereas extraductal biliary obstruction is observed in pathology exhibiting external compression to the biliary duct, such as malignancy and less commonly vascular structures.[2,4] The literature describes both splanchnic artery aneurysms and abdominal aortic aneurysms as vascular causes of biliary obstruction.[5]

Abdominal aortic aneurysms are considered as an unusual cause of extraductal biliary obstruction with less than 30 case reports identified within the literature since first described in 1891.[1] This is largely due to the anatomical position of the abdominal aorta, which is situated left to the midline and is not normally in direct contact with the biliary duct.[1] Abdominal aortic aneurysms have a prevalence of 1.4% with incidence increasing after 60 years of age.[6] As abdominal aortic aneurysms increase in size symptoms secondary to intraabdominal compression can develop.[1,3,8] These symptoms can include mass effect on the ureters, gastrointestinal vasculature, gastrointestinal organs, and nerves.[1,3,8] Subsequently, for the aorta to cause compression and obstruction of the biliary ducts it must cross the midline to apply sustained pressure to the biliary ducts.[1]

The common bile duct obstruction in this case is unique as it is resultant of an abdominal aortic aneurysm and presented as an incidental finding. Of the identified cases within the literature extension of the abdominal aortic aneurysm across the midline to produce biliary obstruction was observed secondary to chronic abdominal aortic aneurysm rupture, abdominal aortic aneurysm extramural leakage, abdominal aortic aneurysm with chronic periaortitis, traumatic abdominal aortic pseudoaneurysm, and abrupt angulation of abdominal aortic aneurysm.[3,7,8] In this case the abdominal aortic aneurysm achieved proximal compression of the common bile duct secondary to extension of the abdominal aortic aneurysm transmural thrombosis anteriorly and across the midline.

Additionally, a significant proportion of identified cases of biliary obstruction secondary to abdominal aortic aneurysm initially demonstrated at least one of the following abdominal pain, fever, clinical jaundice, or deranged serum liver function levels.[1,3,8] The incidental findings of this case included that of an abdominal aortic aneurysm and Courvoisier's sign without painless jaundice, fever, clinical jaundice, or deranged serum liver function levels. Although this case is missing the jaundice component of Courvoisier's sign, distension of the gallbladder and common bile duct dilation alone should prompt consideration of as unusual bile duct obstruction aetiology other than choledocholithiasis.[9]

The management of extrahepatic bile duct obstruction secondary to abdominal aortic aneurysm consists of surgical intervention, endoscopic, endovascular intervention, and conservative management.[1] Factors dictating management included patient co-morbidities, patient management preference, the common bile ducts anatomical position and its proximity to the abdominal aorta, and if the abdominal aortic aneurysm is amenable to intervention.[1] In this case conversative management was pursued, despite endoscopic, endovascular, and surgical intervention being considered. Endoscopic intervention was not pursued as the common bile duct was deemed not amenable to stenting due to its proximity to the abdominal aortic aneurysm and risk of perforation to the bile duct and abdominal aorta. Additionally, endovascular and surgical intervention were not pursued due to the patient's preference in context of being asymptomatic, no clinical jaundice, and patient co-morbidities.

CONCLUSION

Abdominal aortic aneurysms are an unusual cause of biliary obstruction predominately due to anatomical location. Clinicians should be mindful that an incidental finding of biliary dilation or Courvoisier's sign should lead to prompt consideration of as unusual bile duct obstruction aetiology. Early recognition of anatomy and patient factors in biliary obstruction secondary to abdominal aortic aneurysm is essential as this defines appropriate intervention and guides necessary treatment.

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