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Incidental finding of a recurrent Bockdalek hernia with an intra-thoracic kidney

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ABSTRACT

Bockdalek hernia is a rare type of congenital diaphragmatic hernia which was firstly described by Vincent Alexander Bockdalek in 1848.[1] The hernia sac is more commonly located on the left due to protection of the right side of the diaphragm by the liver, and contents can include spleen, small bowel, liver, colon or kidney.[1] Bockdalek hernia with intra-thoracic kidney is extremely rare and the reported incidence is less than 0.25%.[2] During embryogenesis the developing kidney which is located in the pelvis migrates upwards to fuse with the adrenal glands. Sometimes, this upward migration of the developing kidney does not stop at its designated point and thus the kidney reaches into the thorax. [3] Treatment options for Bockdalek hernia may include open or laparoscopic surgical repair, which involve the reduction of the herniated organs and closure of diaphragmatic defect with or without prosthetic mesh.[4]

Herein we report a rare case of recurrent Bockdalek hernia including an intra-thoracic left kidney in a 59 year old lady with a past history of a Bockdalek hernia that was repaired at the age of 3, who presented to our hospital with severe lower abdominal pain and vomiting.

Keywords: Adult Bockdalek Hernia, Recurrent Bockdalek Hernia with intra-thoracic kidney

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INTRODUCTION

Bockdalek hernia is the most common type of congenital diaphragmatic hernia, comprising approximately 90% of all congenital diaphragmatic hernias and results from the failure of posterolateral diaphragmatic formation to fuse in utero.[5] Large Bockdalek hernias in adults are typically asymptomatic and are rarely reported with only 368 cases published in the literature for the period from 1955 to 2015.[6] In addition, the incidence of Bockdalek hernia with intra-thoracic kidney is less than 0.25% of the reported cases in literature and provides a unique discussion point about the requirement to repair these.[7]

CASE REPORT

A 59 year old lady presented to our emergency department with severe lower abdominal pain for one day, colicky in nature with no clear aggravating factors and associated with nausea and bilious vomiting. This was preceded by a two week history of mild lower abdominal pain, self-limiting, not requiring analgesia and not associated with other symptoms. She has past medical history of anxiety, hypertension. She had a past surgical history of a congenital Bockdalek hernia that was treated surgically at the age of 3 and a laparotomy and adhesiolysis for bowel obstruction 30 years ago. She is regularly on Sertraline 100mg OD. Lives with husband with history of occasional drinking of alcohol but no smoking.

On examination, she had normal vital observations. There was central and lower abdominal tenderness without guarding or focal peritonism. There was no abdominal distention or other sign of recurrent bowel obstruction.

Investigations

Investigations demonstrated a total white cell count of 11.5 x 10^9/L, neutrophils of 9 x 10^9/L, lactate of 2.5 mmol/L, urea 5.5 mmol/L and an eGFR > 90 mL/min/1.73m^2. An abdomino-pelvic computed tomography was performed, and this demonstrated an incidental large left hemi diaphragmatic hernia containing large bowel, pancreas and left kidney (Figures 1 and 2). There was no evidence of bowel obstruction. However, non-specific fluid-filled small bowel loops associated with apparent mural thickening and mucosal hyperenhancement consistent with enteritis were noted within the abdomen.

Treatment

The patient was diagnosed with enteritis and was admitted to the surgical ward for conservative management. The patient was discharged the next day. Given her lack of symptoms and normal renal function, expectant management was offered with outpatient follow-up for the incidental finding of a recurrent Bockdaleck hernia.

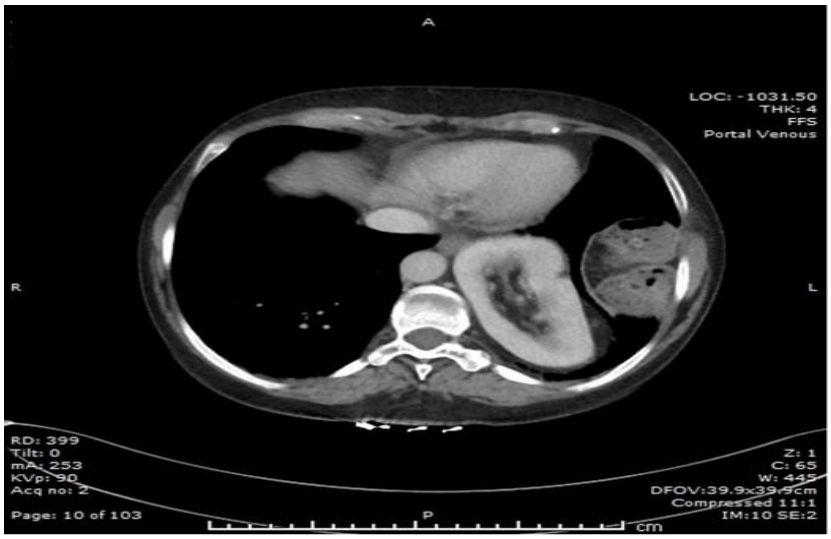

Figure 1: Axial CT scan illustrate the herniated abdominal organs into the left thorax

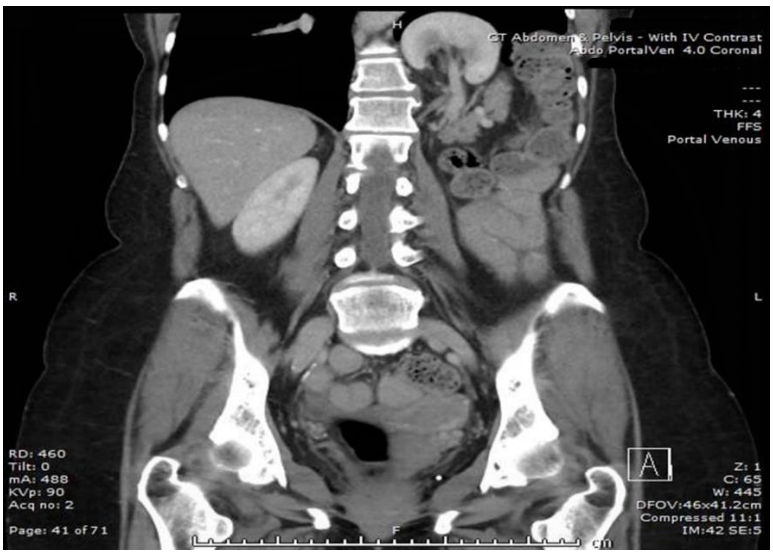

Figure 2: Coronal view CT scan showing the herniated large bowel into the left thorax

Outcome and follow up

The patient recovered well from the episode of enteritis. She remained asymptomatic from the recurrent Bockdalek hernia point of view at 12 months following her presentation.

DISCUSSION

According to the limited literature available, the intra-thoracic kidney is typically asymptomatic.[8] However, the standard recommended treatment of adult Bockdalek hernias is surgical repair regardless of symptoms.[9] This may be due to the abnormal anatomical characteristics of an intra-thoracic kidney that may predispose to the narrowing of vasculature or ureteric obstruction, with resultant loss of kidney function. These characteristics include abnormal rotation, elongation of ureters, longer length of renal blood vessels and medial deviation of the inferior pole of the kidney.[8] There is, however, a low rate of progression to symptoms and it has been shown that non-operative management of an intra-thoracic kidney may be safe.[8] This notion is supported by the findings of a long term follow up study of patients with isolated intra-thoracic kidney.[7] Absolute indications for surgical repair are ureteric obstruction, vesico-uretric reflux, expiratory dyspnoea and pulmonary complications such as collapse and/or consolidation.[2] An intra-thoracic kidney that is associated with significant intestinal herniation should undergo operative repair and nephropexy.[10]

In terms of surgical technique, minimally invasive approaches are preferred over open approaches.[11] A small hernia defect may be treated by suture repair. However, surgical mesh is generally required to reinforce the tension-free repair of larger defects (more than 20 to 30 cm^2) as the approximation of native tissue under tension can increase the risks of recurrence.[12] It has been recommended to use mesh in recurrent Bockdalek hernia repairs.[4] In addition, robotic surgery has shown to be successful in fixation of an intra-thoracic kidney and may be considered. However, further studies are required to investigate its utility in the management of diaphragmatic hernia repair.[11]

CONCLUSION

Bockdalek hernias containing intrathroacic kidenys are rare. Current literature suggests that patients with incidental Bockdalek hernias who are asymptomatic and who have normal renal function can be managed expectantly.

CONFLICT OF INTEREST

The authors declare no conflicts of interest regarding the publication of this paper.

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