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BILATERAL DIAPHRAGMATIC HERNIA WITH HERNIATION OF RIGHT KIDNEY AND SPLENIC FLEXURE ON LEFT: A RARE CASE OF MALROTATED KIDNEY WITH PELVIS-URETERIC JUNCTION OBSTRUCTION

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ABSTRACT Bilateral diaphragmatic hernias in adults represent an uncommon and diagnostically challenging entity, with even fewer cases demonstrating visceral transposition involving renal and colonic structures. We report an exceptional case of bilateral diaphragmatic hernia with right-sided herniation of a malrotated kidney complicated by pelvis-ureteric junction obstruction and left-sided herniation of the splenic flexure of colon. This case underscores the importance of comprehensive preoperative imaging and multidisciplinary management in complex diaphragmatic hernia repairs associated with visceral malrotation. It contributes to the limited body of literature regarding bilateral diaphragmatic hernias with renal involvement and emphasizes early diagnosis to prevent long-term complications. Further studies are warranted to elucidate the embryologic mechanisms and optimal therapeutic strategies in similar rare presentations.

KEYWORDS : Bilateral diaphragmatic hernia, malrotated kidney, pelvis-ureteric junction obstruction, splenic flexure herniation.

INTRODUCTION

Diaphragmatic hernia, particularly of congenital origin, is most commonly diagnosed in neonates but may remain undetected until adulthood, where they occasionally present with atypical symptoms and complex anatomical alterations. Bilateral diaphragmatic hernias are exceedingly rare in the adult population, with the majority of reported cases occurring unilaterally. The involvement of the right kidney, particularly when malrotated and associated with an obstructed pelvis-ureteric junction, further complicates the clinical picture. Similarly, herniation of the splenic flexure through a left-sided diaphragmatic defect is sporadically documented, making the coexistence of these anomalies a unique finding [1,2].

In this report, we present a detailed account of a patient with a bilateral diaphragmatic hernia involving the herniation of the right kidney and left-sided splenic flexure. We discuss the clinical presentation, diagnostic challenges, and the surgical management approach, along with a review of the relevant literature. This report aims to contribute to the limited existing data on such rare cases and to underscore the significance of early detection and multidisciplinary treatment planning.

Case Presentation

A 75-year-old male with no significant past surgical history presented with dyspepsia, episodic chest discomfort, and abdominal bloating over the preceding six months. The patient denied any history of trauma, weight loss, or chronic respiratory disease. Physical examination revealed diminished breath sounds at the lung bases and mild tenderness in the left upper quadrant. Laboratory investigations, including renal function tests, were unremarkable.

Imaging And Diagnostic Work-Up

A chest radiograph demonstrated bilateral basal opacities suggestive of possible diaphragmatic compromise. This finding prompted further evaluation with contrast-enhanced CT imaging of the thorax and abdomen. The CT scan revealed two discrete diaphragmatic defects: a right-sided defect permitting the herniation of upper pole of a malrotated right kidney into the thoracic cavity. The kidney itself showed dilated pelvicalyceal system with abrupt tapering at the level of the pelvis-ureteric junction. This was suggestive of hydronephrosis secondary to PUJ obstruction. The patient later underwent intravenous urography and DTPA scan that confirmed the PUJ obstruction. Also noted was a left-sided defect through which the splenic flexure of colon had herniated. There was no evidence of large or small bowel obstruction. The imaging also excluded the presence of additional intra-abdominal pathology.

Preoperative Assessment And Planning

Given the complexity of the case, a multidisciplinary team comprising thoracic surgeons, urologists, and radiologists convened to establish an optimal therapeutic approach. Comprehensive preoperative planning included renal scintigraphy to assess the functional impact of the pelviureteric obstruction and evaluate the differential function of the kidney, which demonstrated preserved but compromised function on the affected side. Based on imaging and functional assessments, the decision was made to proceed with right side DJ stenting and keep the patient on follow up. A combined thoracoabdominal repair would be too complicated surgery for this geriatric age group.

DISCUSSION

Bilateral diaphragmatic hernias presenting in adulthood are rare, with most cases of congenital diaphragmatic hernias being diagnosed during the neonatal period. The diagnosis in adults is often delayed owing to non-specific symptoms and a high index of suspicion required to establish the diagnosis. In our case, the combination of a malrotated kidney with pelvis-ureteric junction obstruction and left-sided splenic flexure herniation represents a particularly rare and complex presentation [3].

Embryologic Considerations

Diaphragmatic hernias arise from incomplete fusion of the pleuroperitoneal membranes during embryonic development. The malrotation of the kidney further suggests a disruption in the normal ascent and rotation processes that occur during fetal development. The association of these anomalies may be coincidental; however, it also points towards a possible shared embryologic disruption affecting both diaphragmatic and renal formation [4]. In this patient, whether the PUJ obstruction was a de novo problem or happened as a consequence of diaphragmatic hernia, remains to be concluded.

Diagnostic Approach

Modern imaging techniques such as CT and MRI are invaluable for delineating the anatomical specifics in such complex cases. CT imaging, with its high spatial resolution, remains the modality of choice for initial assessment and surgical planning, while MRI offers superior soft tissue contrast that aids in characterizing organ orientation and associated complications like hydronephrosis [5]. The role of renal scintigraphy in evaluating functional compromise is critical when addressing renal involvement in diaphragmatic hernias, ensuring that surgical intervention does not compromise renal function. In addition, CT abdominal angiography is useful to detail the vascular variant anatomy if surgical repair is planned.

Literature Context

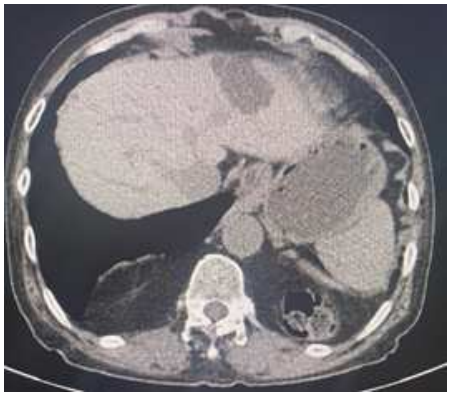
Despite the rarity of such cases, similar presentations have been sparsely documented in the literature. For instance, studies have highlighted the challenges in diagnosing and managing diaphragmatic hernias in adults, particularly when complicated by renal anomalies [1,7]. Moreover, reports discussing the embryologic basis for concurrent thoracic and abdominal malformations support the need for a multidisciplinary approach in these complex cases [4,8]. However, none of the cases have documented bilateral diaphragmatic hernias

with malrotated kidney with PUJ obstruction. The rarity of this combination merits presentation as a case report.

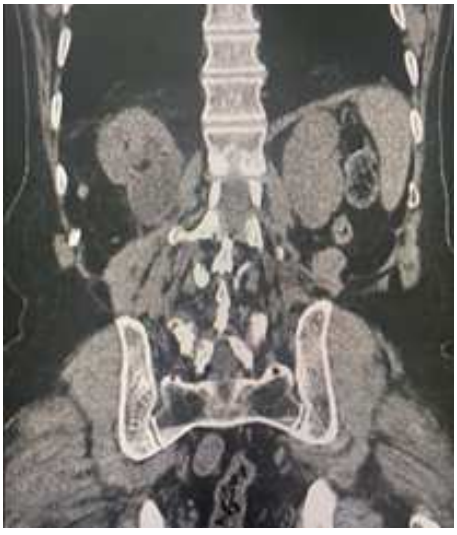
CONCLUSION

This case report illustrates the rare occurrence of bilateral diaphragmatic hernia with herniation of the right malrotated kidney and left splenic flexure, compounded by pelvis-ureteric junction obstruction. Comprehensive imaging, meticulous surgical planning, and a multidisciplinary approach were pivotal in achieving a successful outcome. Early diagnosis and prompt intervention play critical roles in preventing long-term morbidity in such rare presentations. Patient age and body habitus must be taken into consideration to plan a suitable approach. Further research is necessary to explore the underlying embryologic links and to optimize management strategies for similar complex cases.

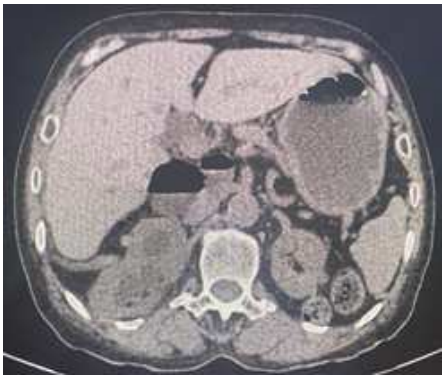
Legends For Images



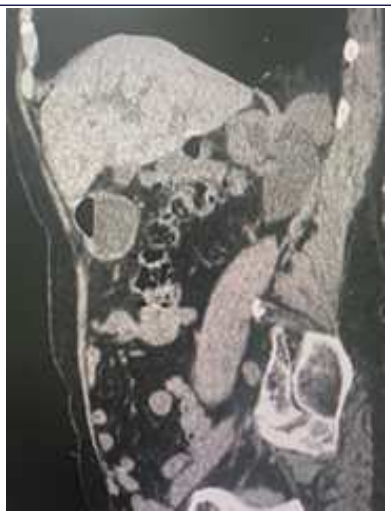
1. NCCT abdomen axial section showing omental fat herniation on right and splenic flexure of colon on left.



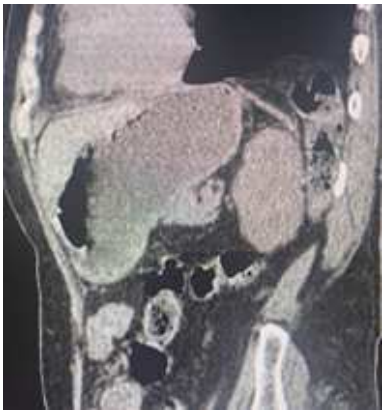
2. Coronal reformat of NCCT abdomen showing omental fat herniating into thorax



3. A. NCCT abdomen axial section showing diaphragmatic defect on right side



3. B. NCCT abdomen Sagittal reformat showing diaphragmatic defect on right and malrotated kidney with PUJ obstruction.



4. NCCT abdomen sagittal reformat showing diaphragmatic defect on left and herniation of splenic flexure of colon

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