

Intrathoracic Kidney – A Case Report and Literature Review

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Author's contribution

The sole author designed, analysed, interpreted and prepared the manuscript.

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Case Study

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ABSTRACT

Introduction: Intrathoracic kidneys are the most uncommon type of renal ectopia, accounting for less than 5% of all cases of renal ectopia, with a reported incidence of less than 5 per 1 million. We describe a case of an incidental left intrathoracic kidney and a literature review on the cases reported thus far.

Results: A left infra-diaphragmatic intrathoracic kidney was incidentally detected in a 65-year old male on imaging. It has the characteristic features of a high origin for its renal vessels, malrotation of the kidney, and a long ureter.

Discussion: Unlike some of the cases in published literature, it was not associated with a congenital diaphragmatic defect (Bochdalek hernia).

Most patients with asymptomatic intrathoracic kidneys do not require intervention. However, some of the cases in published literature have been associated with pelviureterojunction obstruction (PUJO), renal pelvis stone formation, as well as malignancy.

Keywords: Intrathoracic kidney; renal ectopia; malignancy; pelviureterojunction obstruction.

1. INTRODUCTION

Intrathoracic kidneys were first clinically diagnosed by Wolfromm in 1940 [1] and are an uncommon form of renal ectopia. They have a

reported incidence of less than 5 per 1 million births [2]. They are more common on the left compared to the right [4-6], and can be bilateral [3] as well. There is a higher propensity in males compared to females (2:1) [4-6]. They may also

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be associated with congenital diaphragmatic defects. Majority of the cases described in published literature are often discovered in the paediatric age group [3-14] as mediastinal masses detected incidentally on imaging [3], or at autopsy [8,17].

2. CASE PRESENTATION

A 65-year old gentleman with a known history of hypertension, diabetes mellitus and hyperlipidaemia presented with a one-week

history of lower urinary tract obstructive symptoms associated with fever. He subsequently developed acute retention of urine and was admitted to hospital.

A chest X-ray performed as part of the septic workup revealed a faint kidney shadow in the left intra-thoracic region (see Fig. 1).

A Computed Tomography (CT) scan performed confirmed the presence of a left intrathoracic kidney (see Figs. 2 to 4).

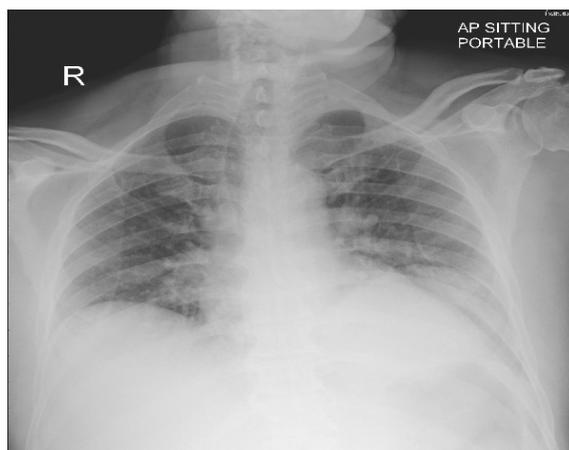


Fig. 1. Chest X-ray with kidney shadow in left thoracic region



Fig. 2. Computed Tomography (CT) confirming left intrathoracic kidney in the coronal plane, which demonstrates an intact diaphragm with classical features of an intrathoracic kidney - A high origin of the renal vasculature and malrotation of the kidney



Fig. 3. Sagittal view on CT imaging

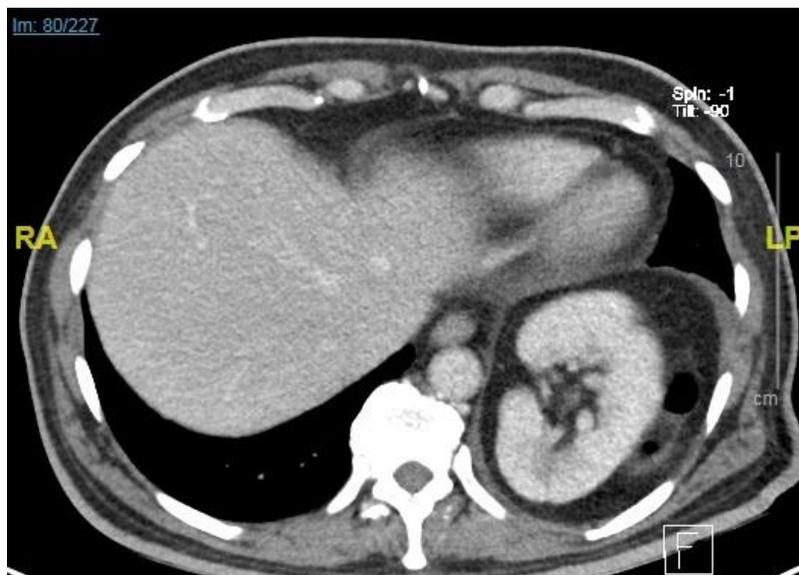


Fig. 4. Axial view on CT imaging

3. DISCUSSION

The characteristics of intrathoracic kidneys are [9,10]:

- 1) High origin of renal hilar vasculature
- 2) Kidney malrotation
- 3) Long ureter
- 4) Medial deviation of the lower pole of the kidney

The anatomical basis of intrathoracic kidney has been postulated to be related to the anomalous origin of the renal artery, and migration of the kidney to superior locations independent of diaphragm development [11]. In those associated with diaphragmatic defects, the kidney can either be supradiaphragmatic or infra-diaphragmatic. In supra-diaphragmatic kidneys, concomitant intra-abdominal organs such as the bowel, liver (on the right) or the spleen (on the left) may herniate into the intrathoracic region as well. In the infra-diaphragmatic kidneys, only a thin membranous layer of the diaphragm overlies the kidney [9-16].

Most cases are asymptomatic with no pulmonary symptoms [16], and do not require any intervention [13,18]; however, the occurrence of pelviureterojunction obstruction (PUJO) requiring intervention has been described [18,19]. Colic due to a 1-cm right pelviureterojunction stone requiring percutaneous nephrolithotripsy has been reported as well [20,21]. Rarely, renal cell carcinoma has been detected as well, with an incidental enhancing renal mass within the right intrathoracic kidney [22].

4. CONCLUSION

Intrathoracic kidneys are commonly asymptomatic and often occur as incidental findings on imaging. The majority do not require treatment unless concurrent pathology is present e.g. PUJO, urolithiasis or malignancy.

CONSENT

The author declares that written informed consent was obtained from the patient for publication of this case report and accompanying images.

ETHICAL APPROVAL

It is not applicable.

COMPETING INTERESTS

Author has declared that no competing interests exist.

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