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CASE REPORT

Intrathoracic Kidney with Diaphragmatic Eventration: A Case Report

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Abstract

Intrathoracic ectopic kidney is the rarest form of ectopic kidneys. Intrathoracic kidneys do not seem to be associated with an increased risk of complications, such as renal stone formation, infection, or reduced renal function, and most cases are asymptomatic. It should be kept in mind when renal tissue cannot be observed in the renal fossa or pelvic area in ultrasonography. Asymptomatic cases with eventration usually do not require any surgical intervention and follow-up is appropriate. We aimed to present a case of an intrathoracic kidney with diaphragmatic eventration, diagnosed by imaging performed in a patient presenting with bilateral flank pain.

Keywords: Asymptomatic condition; diaphragm eventration; rare disease; renal ectopia.

The intrathoracic kidney is a partial or complete displacement of the kidney above the hemidiaphragm into the mediastinal compartment of the thorax.[1] It is a rare clinical condition and accounts for 5% of all renal ectopias.[1,2] It is usually asymptomatic and diagnosed incidentally.[3] It does not seem to be associated with an increased risk of complications, such as renal stone formation, infection, or reduced renal function, and doesn't require any intervention in asymptomatic cases when detected incidentally.[4] We present a case of an intrathoracic kidney with diaphragm eventration, diagnosed by imaging performed in a patient presenting with bilateral flank pain.

Case Report

A 17-year-old male patient was admitted to the urology outpatient clinic with complaints of bilateral flank pain for one month. There wasn't any history of trauma. The creatinine value of the patient was 0.89 mg/dl. Urinalysis didn't show any abnormalities. Urinary ultrasonography (USG) examination revealed that the long axis of the right kidney was 114 mm and the parenchyma thickness was 14 mm. There was no hydronephrosis or renal stone formation in the right kidney. The left kidney couldn't be observed in the USG examination. The left intrathoracic kidney was diagnosed with non-contrast computed tomography (CT) but CT couldn't describe its association with the diaphragm. So magnetic resonance imaging (MRI) urography was performed. The left kidney was observed in a subdiaphragmatic position with MRI urography. Minimal hydronephrosis was observed in the left kidney. Focal eventration was observed posterior of the left diaphragm and adipose tissue of the left kidney was indicated towards the thorax (Fig. 1). His follow-up examination in the first year showed that he was asymptomatic and had an

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uncomplicated and normally functioning left intrathoracic kidney. As the patient was asymptomatic, no intervention was performed on him.

Discussion

Intrathoracic ectopic kidney is the rarest form of ectopic kidneys.[2] Approximately 200 cases were identified after the first case was described by Wolfromm in 1940.[1] It is more common in males (63%) and on the left side (62%).[3,5] The accelerated ascent of the kidney to its normal localization before diaphragmatic closure (8th gestational week) is thought to cause thoracic or subdiaphragmatic dislocation.[6] Four types of thoracic ectopic kidneys have been described. These are ectopic kidneys associated with the normal diaphragm, observed with diaphragmatic eventration, associated with a diaphragmatic hernia (most commonly Bochdalek hernia), and observed in traumas that cause diaphragmatic rupture.[5] In congenital intrathoracic ectopic kidneys and ectopia observed with diaphragmatic eventration, the superior pole of the kidney is surrounded by a thin membrane, unlike cases observed with traumatic diaphragmatic rupture and associated with diaphragmatic herniation.[7] In our case, the intrathoracic kidney is observed with diaphragmatic eventration.

Rotation and deviation anomalies can be observed in the intrathoracic kidney.[5,8] While in some intrathoracic kidneys, renal vascular structures originate from a normal level of the aorta and reach the kidney with longer structures, in others, they originate from a higher point of the aorta than usual.[7-9] In our case, the left renal artery is in the normal position (Fig. 2). The ureter is usually elongated but opens into the bladder at its normal localization.[5,8] Intrathoracic kidneys are usually asymptomatic, as in our case, and are diagnosed incidentally.[3] They do not appear to be associated with complications such as stone formation, decreased renal function, and infection, which are seen in other types of renal ectopias.[4] No complications have been observed in our case. Usually, the diagnosis of an intrathoracic kidney is made by observing a slightly elevated diaphragm on routine chest radiography or by ultrasonography.[2] Computed tomography and MRI urography are useful in confirming the diagnosis and revealing the diaphragmatic defect.[2,4] Surgical exploration is not required for asymptomatic intrathoracic kidneys. There are published articles recommending surgical exploration in symptomatic cases with diaphragmatic eventration.[2,8] Surgical exploration is recommended in cases with Bochdalek hernia or posttraumatic diaphragmatic hernias.[8] In our case, it was thought that the symptoms at presentation were not related to the

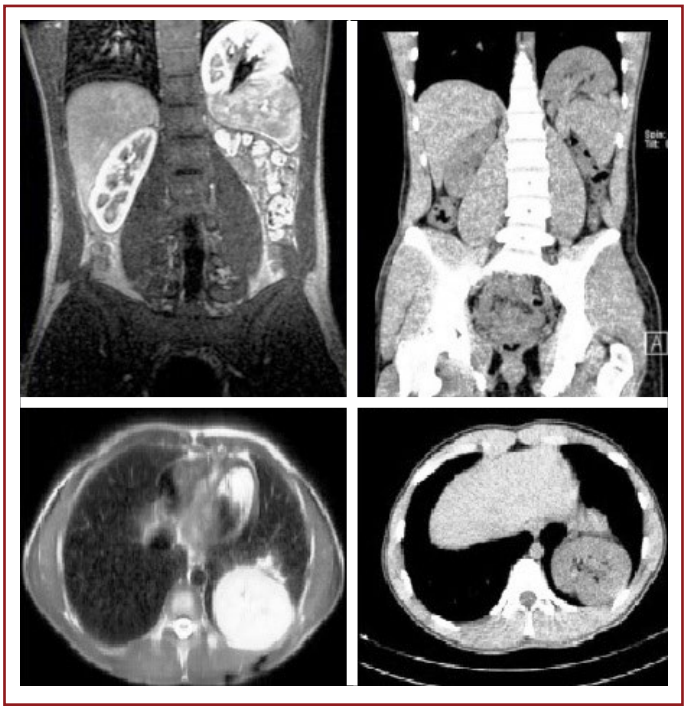

Figure 1. The left kidney is observed intrathoracically in computed tomography, with minimal hydronephrosis in the left kidney.

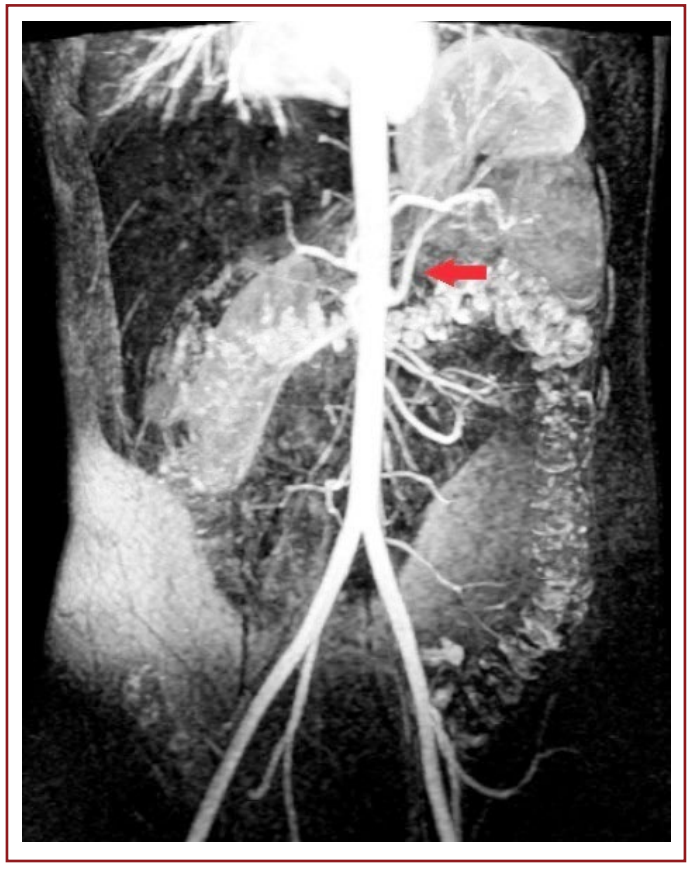

Figure 2. The left renal artery is in a normal position (Arrow).

intrathoracic kidney, and the patient was followed up. Our patient remains asymptomatic at the first-year follow-up.

Conclusion

Intrathoracic ectopic kidney is the rarest form of ectopic kidneys. It should be kept in mind when renal tissue cannot be observed in the renal fossa or pelvic area in ultrasonography. Computed tomography helps to confirm the diagnosis and reveal the concomitant diaphragmatic defect. Asymptomatic cases with eventration usually do not require any surgical intervention, and follow-up is appropriate.

Informed Consent: Written, informed consent was obtained from the patient's family for the publication of thís case report and the accompanying images.

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