Research Article

Thoracic kidney: a case Report

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Abstract

Intrathoracic kidney is rarest type of renal ectopia, which is usually found in males and at left side. Here kidney is situated within the thoracic cavity, not in the pleural space.It occurs due to accelerated ascent of the kidney or delayed closure or maldevelopment of the pleuroperitoneal membrane during intrauterine development of embryo.Intravenous Urography (IVU), ultrasonography, computed tomography (CT) or magnetic resonance imaging (MRI) are performed to confirm the diagnosis. Fortunately patients with this anomaly are generally asymptomatic. A case of 73 year woman is presented here having right thoracic kidney. Patient was having neither symptoms related to renal pathology nor abnormal renal function tests. Slides of Computed tomography study are presented here, which confirmed the diagnosis, with review of literature about intrathoracic kidney.

Key-words: Intra-thoracic kidney, Renalectopia, Thoracic kidney, Computed tomography.

Introduction

Renal ectopia is anomaly of urinary system found in 1 out of 900 patients [1,2]. intrathoracic kidney is rarest type of renal ectopia. Unlike other type of ectopia, thoracic kidney causes no symptoms [2,3]. Here kidney is situated within the thoracic cavity, not in the pleural space. Intravenous Urography (IVU), ultrasonography, computed tomography (CT) or magnetic resonance imaging (MRI) are performed to confirm the diagnosis.

Case-Report

A 73 yrs old female admitted in Surgery dept. of SRN Hospital in March, 2016 with complaint of pain in right hypochondrium for 15 days with h/o open cholecystectomy done 15 years back. On per abdomen examination she had tenderness and diffuse lump in right hypochondrium. We performed CECT abdomen which revealed malignancy in gall bladder fossa region with perforation of large bowel at hepatic flexure andan incidental finding “right intrathoracic kidney”. Her routine investigations were normal and Renal function test were WNL. Kidney had no structural abnormalities. No further investigations performed as RFT was normal.Film of CECT abdomen are given below showing intrathoracic kidney. Patient was discharged after work-up and referred to higher center for management of malignency.

Discussion

1 in 900 patientshave renal ectopia that is abnormally placed kidney. It may be pelvic, iliac, abdominal, thoracic, contra lateral, or crossed [1,2,4]. Thoracic kidney is a rarest type of renal ectopia(less than 5% of all renal ectopia)[1,2,5]. It has reported incidence of less than 5 per 1 million births [6]. Most cases are asymptomatic and discovered as incidental finding on radiographic investigation or at thoracotomy [1,5]. Intravenous Urography (IVU), ultrasonography, computed tomography (CT) or magnetic resonance imaging (MRI) are performed to confirm the diagnosis and to differentiate it from other juxta-diaphragmatic masses [1,7]. Fetal kidneys are developed in the fifth gestational week. Initially located in the pelvis, they ascend cranially. By the third month, they are at the

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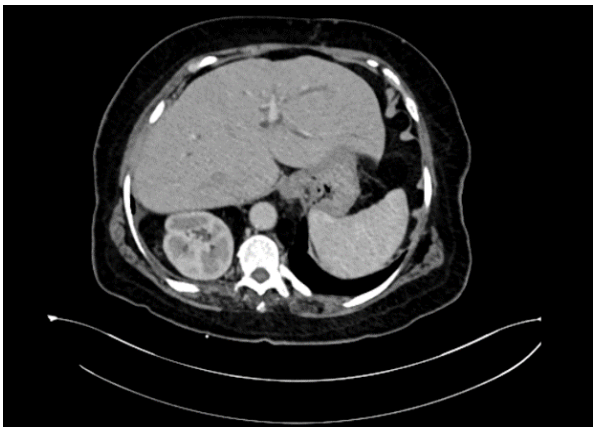

Figure 4: Axial view of CT Abdomen at T11 showing right intrathoracic kidney

Figure 2: Coronal view showing right kidney at higher level in thorax

level of L2 vertebra and meet the suprarenal glands [8]. Various mechanisms have been thought to be responsible for intrathoracic kidneys such as accelerated ascent of the kidney, delayed closure or maldevelopment of the pleuroperitoneal membrane, effect of the developing liver and adrenal glands, and the persistence of the nephrogenic cord [6].

The first case of thoracic kidney was reported by Wolfromm in 1940 and ~200 cases are reported [6].Intrathoracic kidney occur found more commonly on the left (62%) than on the right side (36%); 2% of the patients had bilateral intra-thoracic kidney. Also, this anomaly is found with higher frequency in males (63%) than in females (37%) [9]. The low frequency of right thoracic ectopia is explained by the early fusion of the pleura-peritoneal channel on the right side and by the presence of the liver as a physical barrier [10]. In all cases, the kidney is situatedwithin the thoracic cavity, not in the pleural space; the ipsilateral renal vessels and ureter typically exit the thoracic cavity through the foramen of Bochdalek and are usually longer than those in the normally positioned kidney [11].

Anatomic features of ectopic kidney are, 1) rotation anomaly, 2) ipsilateral long ureter, 3) high deviation of renal vessels, and 4) Medial deviation of lower pole of kidney [12].

Intrathoracic kidneys are classified into four sub-types according to concurrent defect and management approach: (a) closed diaphragm, (b) eventration of the diaphragm, (c) diaphragmatic hernia (congenital or acquired) and (d) traumatic rupture of the diaphragm [13].

Associated anomalies like uretero-pelvic junction (UPJ) obstruction, ureteral duplication, renal calculi, renal cyst, diaphragmatic hernia, wandering spleen, dextocardia and patent ductus arteriosus are extremely rare and not consistent [5,14]. The association of a Bochdalek hernia and an intrathoracic renal ectopia is very rare (less than 0.25%). This condition usually presents in the neonatal period with severe respiratory distress [9]. Renal cell carcinoma in a thoracic kidney has also been reported [14]. The incidence of complications such as calculi or infection is not increased unlike other types of renal ectopia [2,3].

So we can conclude that patients with thoracic kidney do well and in adult patient with no other associated anomaly, no investigation or intervention is needed.

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