

Intrathoracic Kidney Presented With Chest Pain

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Intrathoracic kidney is a rare congenital anomaly, with only about 50 cases reported in the literature to date. It comprises less than 5% of all ectopic kidney disorders. However, it should be included in the differential diagnosis of posterior mediastinal masses as confirmation of the diagnosis obviates the need for further clinical studies, further treatment, or unnecessary surgical operation. Chest computed tomography is an important and efficient tool in confirming the diagnosis. We report a case of a 72-year-old woman who suffered from nonspecific chest pain for 3 years. Chest radiography revealed a left posterior mediastinal mass which was later confirmed by chest computed tomography to be a congenital intrathoracic kidney.

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INTRODUCTION

Intrathoracic kidney is a rare developmental anomaly representing less than 5% of all ectopic kidneys.^{1,2} To date, about 50 cases of intrathoracic kidney have reported in the literature.³ It is generally asymptomatic and observed as an incidental finding on chest radiography. However, it should be included in the differential diagnosis of posterior mediastinal masses.⁴⁻⁶ We present a patient with nonspecific chest pain who was diagnosed with intrathoracic kidney.

CASE REPORT

A 72-year-old woman with asthma for 50 years presented with nonspecific chest pain. She had this pain from 2 years earlier that had worsened recently. The pain was localized in the left hemithorax, pleuritic, and positional without any combination with activity. She noted that radiation of pain to the neck and the left ear. She had undergone cardiac workup that had revealed no evidence of cardiac origin for the pain.

On physical examination, heart rate was 75/min, respiratory rate was 16/min, blood pressure was 135/85 mm Hg, and oral temperature was 36.7°C. Percussion revealed dullness on chest examination. Tactile fremitus and transmitted sound were absent.

The breathing sounds were absent in the lower third of the left hemithorax. A basilar inspiratory fine crackle was auscultated.



Figure 1. Chest radiography showed an ill-defined homogenous consolidation in the lower third of the left hemithorax.



Figure 2. Axial computed tomography scan at the cardiac level demonstrates the intrathoracic kidney in the left hemithorax.

Chest radiography revealed an ill-defined homogenous consolidation in the lower third of the left hemithorax (Figure 1). The main differential diagnoses were intrathoracic or mediastinal mass and pleural effusion. Computed tomography (CT) demonstrated a left ectopic kidney with mild-to-moderate pleural effusion (Figure 2). Pleural fluid was transudative with no abnormality on the analysis. Intravenous urography demonstrated a well-functioning urinary tract system. Diethylenetriamine pentaacetic acid renal scintigraphy showed normal cortical function in the ectopic kidney. Serum creatinine level was 0.6 mg/dL and blood urea nitrogen was 14 mg/dL. Echocardiography was done and the ejection fraction was 35%. Treatment of heart failure was started on. The pleuritic chest pain was assumed to be due to pleural effusion as a result of heart failure. She was discharged then and the 10-month follow-up was uneventful.

DISCUSSION

Ectopic kidney is found in approximately 1 in 1000 births, but only 1 in 10 of these are ever diagnosed.⁵ Intrathoracic kidney is a rare form of ectopic kidney that can be congenital or associated with a diaphragmatic hernia secondary to trauma or delayed closure of the pleuroperitoneal fold. It is an unusual abnormality representing less than 5% of renal ectopia.^{6,7}

In 1940, Wolffromm reported the first case of clinically diagnosed intrathoracic kidney.⁸ In 1987,

Donat and Donat reviewed cases reported in the literature between 1922 and 1986 and found the abnormality to occur more commonly on the left (62%) than on the right side.² Two percent of the patients had bilateral intrathoracic kidneys. In addition, this anomaly had been observed with higher frequency in men (63%) than in women (37%). In all of the reported cases, the kidney is located within the thoracic cavity and not in the pleural space.^{3,9}

Intrathoracic kidney is usually functioning and does not exhibit dysplasia, contralateral hypertrophy, or obstruction of the lower urinary tract.^{2,10} Anatomically, the features of intrathoracic kidney are rotational anomalies such as the hilus facing anteriorly, long urethra, high origin of the renal vessels, and occasionally, medial deviation of the lower pole of the kidney.¹¹ Most of them are asymptomatic and have a benign course, but 2 cases were reported with nonspecific chest pain.³ Our patient also presented with nonspecific left hemithorax chest pain.

Various methods have been used to diagnose intrathoracic kidney and to differentiate it from other intrathoracic mediastinal masses. Plain chest radiography usually reveals a paravertebral mass in the posterior mediastinum. In almost all reported cases, intravenous urography was used as a routine method of diagnosis, but recently, ultrasonography and computed tomography are also used to diagnose and confirm lesions of the renal pelvis and calyces.^{1,12}

Treatment of ectopic kidney is only necessary if obstruction or vesicoureteral reflux is present.^{5,13} Otherwise, this anomaly does not require any specific treatment.¹⁴

CONFLICT OF INTEREST

None declared.

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