Case Report

Thoracic Kidney Associated with Partially Intrathoracic Spleen: CT and MRI Findings

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INTRODUCTION

Thoracic kidney is an extremely rare and usually asymptomatic type of renal ectopia. Most cases are discovered as a mass on chest radiography or at thoracotomy. Intravenous urography, ultrasonography, computed tomography (CT) or magnetic resonance imaging (MRI) enable differentiation from other juxtadiaphragmatic masses. We present the CT and MRI findings of this rare anomaly.

CASE REPORT

A 51-year-old man was admitted to our hospital with intermittent fever and fatigue. Clinical examination revealed liver cirrhosis and splenomegaly. Helical CT of thorax was performed to investigate an elevated left hemidiaphragm and a functioning left ectopic kidney was discovered (Fig. 1). MRI in multiple planes was performed with fast imaging with steady-state precession (FISP) to delineate the exact size and extent of the defect. On CT and MR images the left kidney showed a rotation abnormality and was situated completely above the diaphragm (Fig. 2). Its size, parenchymal thickness and collecting system were normal. The origin of the left renal artery from the abdominal aorta was at the normal level and the renal vessels were elongated (Fig. 3). The posterior part of the enlarged spleen was also above the diaphragm (Fig. 4). The left adrenal gland was in its normal location. The patient had no history of trauma and his renal function tests were normal.

DISCUSSION

Thoracic kidney is a rare type of renal ectopia accounting for less than 5% of all renal ectopias and is identified at 1/13,000–1/15,000 autopsies [1,2]. It is more common in men, and on the left side. Although most cases are assumed to be congenital, acquired cases after trauma causing diaphragmatic rupture have been reported [3]. The congenital type is usually asymptomatic and discovered during the evaluation of a mass seen on a chest radiography. The kidneys, formed early in the fifth gestational week in the pelvis, migrate cranially, such that by the third month they are at the level of L2 and meet the suprarenal glands. Thoracic ectopic kidney may develop secondary to delayed closure of the diaphragm or accelerated ascent of the kidney during the embryologic period.

A previously normal chest radiograph does not exclude the possibility of thoracic kidney, since delayed appearance is possible [4]. Fleischner et al. [5] suggested that the diaphragmatic malformation might be caused by delay in the disappearance of the mesonephros during development, leading to a diaphragmatic defect that later could be occupied by the kidney. There may or may not be fibrous tissue over the ectopic kidney protruding through the diaphragmatic defect [6]. The renal artery origin can be anomalously high or at the normal level [7,8]. The ureter is elongated. The adrenal gland is in its normal location in the majority of cases, but can be in a high ectopic position [9].

Acquired ectopic thoracic kidney develops secondary to rupture of the diaphragm, and can be seen shortly or years after trauma. Both the congenital and the acquired types can be associated with diaphragmatic hernia containing abdominal viscera.

The importance of ectopic thoracic kidney is to differentiate it from other thoracic masses. The incidence of complications such as calculi or infection is not increased unlike other types of renal ectopia. The patients are usually asymptomatic and no intervention is needed. Few cases of thoracic kidney associated with superior ectopic spleen have been reported [10,11].
REFERENCES