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CASE REPORT

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Superior ectopic thoracic kidney

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Abstract A 9-month-old boy with a respiratory tract infection was found to have a mass in the left chest posteriorly. This proved to be a superior ectopic thoracic kidney, which was easily identifiable on ultrasonography. The case is reported to stress the importance of recognizing thoracic kidneys in order to avoid unnecessary invasive investigations and/or thoracotomy.

Key words Thoracic mass · Ectopic kidney

Introduction

Congenital ectopic kidneys are usually encountered in a position inferior to the normal kidney in the lower lumbar or pelvic region. Rarely, the kidney may be located more cranially, when it is best described as a superior ectopic kidney. When such a kidney lies entirely above the respective hemidiaphragm, the term superior ectopic thoracic kidney (SETK) is the most appropriate [5].

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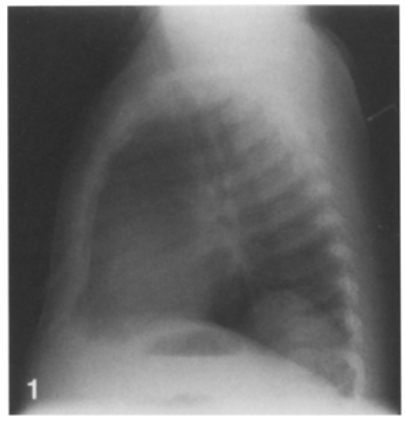

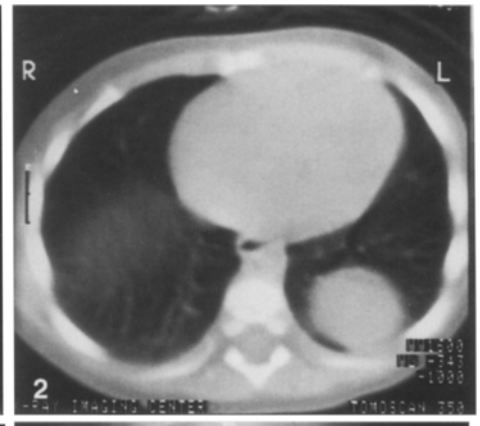

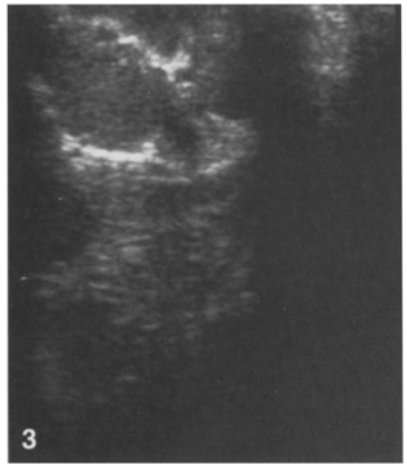

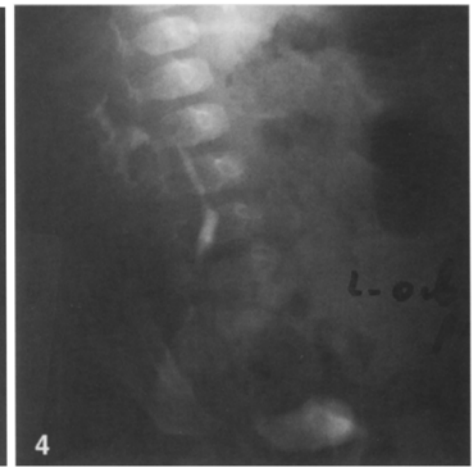

Case report

A 9-month-old boy presented with a history of upper respiratory tract infection; a chest X-ray film showed a mass in the left chest posteriorly (Fig. 1). Computerized tomography (CT) and intravenous urography (IVU) were performed at the referring hospital and an intrathoracic kidney diagnosed (Figs. 2, 3). This was confirmed on ultrasonography (US) of the chest and abdomen (Fig. 4). The thoracic kidney was essentially an incidental finding

Fig. 1 Lateral chest X-ray film showing mass in lower left thoracic cavity

Fig. 2 Computerized tomogram showing superior ectopic thoracic kidney

Fig. 3 IV urogram showing superior ectopic thoracic kidney

Fig. 4 Ultrasonography of abdomen and chest showing no kidney in left renal fossa but a typical kidney in left thoracic cavity

and not related to the child's hyperreactive airway disease. Specific therapy for the kidney abnormality was not indicated.

Discussion

Superior ectopic kidneys are rare and may be classified into four sub-types: superior thoracic (normal diaphragm below kidney), transdiaphragmatic, infra-diaphragmatic, and those associated with Bochdalek hernias [5]. SETKs account for about 5% of all ectopic kidneys, Campbell having reported only one case in a series of 15,919 autopsies [1, 2]. Whereas inferior ectopic kidneys are due to failure of normal ascent, superior ectopic kidneys are due to "overshooting" of the ascent – an active and intrinsic kidney phenomenon that precedes the development of the diaphragm [5]. The suprarenal gland may remain in its normal anatomical position or may be behind or above the ectopic kidney [5]. We do not know the position of the suprarenal gland in our patient, and this was not relevant to the management.

SETKs, though rare, should be included in the differential diagnosis of chest masses in adults and children. Failure to do so may result in unnecessary thoracotomies [4]. In children, the differential diagnosis includes neural crest tumors. The presence of the mass may be noted on a routine X-ray film in asymptomatic patients or patients with respiratory symptoms. US examination of the abdomen and chest may confirm the diagnosis without necessitating other, more invasive investigations [7]. Alternative investigations include IVU, radionuclide renography, and CT [8]. Renal angiography, although previously reported, is not necessary. The radiological criteria for SETK include high renal position, rotation anomaly, long ureter, high derivation of the renal vessels, and medial deviation of the lower pole [3, 6]. The importance of recognizing that a chest mass may be an ectopic kidney cannot be overemphasized, as failure to do so may result in unnecessary invasive investigations and/or thoracotomy.

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