

Relato de Caso

Thoracic ectopic kidney*

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Thoracic ectopic kidney is a rare anomaly, the rarest of all renal ectopia types ($p = 0.005\%$). Herein, we describe a case of thoracic ectopic kidney in an 83-year-old black man who, upon seeking medical attention, presented a clinical profile consistent with pulmonary emphysema. A chest X-ray was ordered, and the results showed evidence of a mass, which was then diagnosed (through computed tomography) as renal ectopia. The majority of thoracic ectopic kidney cases present as an intrathoracic tumor seen on chest X-rays ordered for reasons other than suspicion of this anomaly and do not require special treatment.

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INTRODUCTION

Thoracic kidney is a rare anomaly, the rarest of all renal ectopias ($p = 0.005\%$)⁽¹⁻⁵⁾.

Thoracic kidney is an ectopia which is more commonly found in males than in females, by a ratio of 2:1. It has been more frequently reported in the left hemithorax⁽⁶⁻⁷⁾. In most cases, its structure and functioning are totally normal⁽⁸⁻⁹⁾, and it has occasionally been identified on chest X-rays⁽¹⁰⁾.

CASE REPORT

An 83-year-old male patient sought treatment for fatigue at the outpatient clinic of the Pulmonology Department of the Samuel Libânio Clínicas Hospital. The patient had been a smoker for 60 years (20 cigarettes a day) and reported the onset of progressive dyspnea upon exertion approximately one year prior, with worsening of the profile for a month.

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The patient reported rest as a factor for improvement and alcohol consumption as a factor for worsening of the profile. No trauma or any prior complaint of respiratory or urologic illnesses was reported. The patient was apparently well hydrated, presenting normal skin color and breathing normally. He presented no cyanosis, jaundice or fever. Upon physical exam of the chest, increased anterior-posterior diameter (barrel-shaped thorax) was found, as well as reduced chest expansion and hollow sounds in both lung bases, consistent with pulmonary emphysema. We requested chest X-rays in the posterior-anterior and lateral position. The X-rays showed a well-delimited, radiopaque oval-shaped mass at the base of the left hemithorax and in apparent contact with the diaphragmatic wall (Figure 1). Subsequently, we requested a computed tomography of the chest, where an oval-shaped area of extreme density was found at the base of the left hemithorax and was diagnosed as renal ectopia (Figure 2).

DISCUSSION

Thoracic ectopic kidney is a rare anomaly. Grenadir & Larsen reported 85 cases before 1983 and only 9 additional cases by 1987. Prior to 1940, all cases of thoracic kidney were diagnosed upon autopsy⁽³⁾. Campbell found 22 cases of ectopic kidney, of which only one was thoracic⁽⁴⁾. The first case of thoracic kidney reported in a living individual was that of a 43-year-old woman, diagnosed by Wollfromm using retrograde pyelography⁽³⁾.

A normal kidney originates opposite the twenty-eighth dermatome, at the level of the fourth lumbar vertebra, where the urethra is caudally joined. In a full-term fetus, the kidney has already ascended to the level of the first lumbar vertebra or even to that of the twelfth thoracic vertebra⁽²⁰⁾. This ascension of the kidney is caused not only by true cephalic migration but also by the differential growth in the caudal region of the body⁽¹⁻²⁾.

During the initial period of ascension (seventh to ninth week), the kidney slides over the bifurcation of the aorta and turns 90 degrees. Its convex edge is laterally rather than dorsally directed. The ascension proceeds more slowly until the kidney reaches its final position⁽¹¹⁻¹²⁾. The diaphragm is completely formed by the ninth week and the continuous ascension of the kidney



Figure 1. Posterior-anterior chest X-ray, showing a well-delimited, oval-shaped, radiopaque mass at the base of the left hemithorax, in apparent contact with diaphragmatic wall

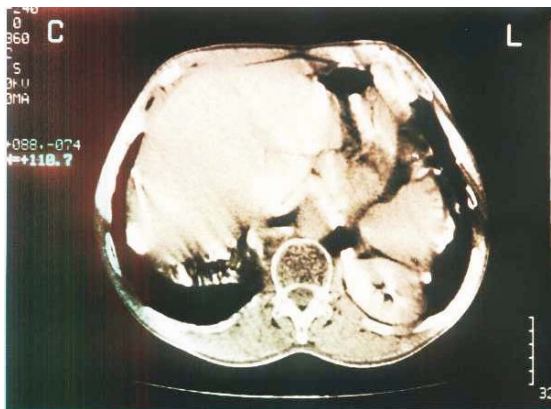


Figure 2. Computed tomography of the chest, showing the thoracic kidney

produces its umbilication in the presence of the incompletely formed diaphragm⁽¹³⁾.

The low incidence of right renal ectopia is explained by the early fusion of the pleuroperitoneal channel on the right side and by the presence of the liver as a barrier⁽¹³⁾.

The anatomical profile of a thoracic kidney is characterized by rotation anomalies, elongated urethra, high origin of renal vases and medial deviation of the lower pole of the kidney⁽¹⁴⁻¹⁶⁻¹⁹⁾. Ptister-Goedek & Brunir classified thoracic kidney into four groups⁽¹⁹⁾: thoracic renal ectopia with closed diaphragm, eventration of the diaphragm (relaxation of the diaphragm); diaphragmatic hernia (subdivided into congenital diaphragmatic defects and acquired hernia such as Bochdalek hernia, with

a percentage lower than 0.25%); and traumatic rupture of the diaphragm with renal ectopia⁽¹⁷⁾.

Thoracic kidney is normally asymptomatic and most of the cases present thoracic tumors on chest X-rays requested for any reason other than the suspect of this anomaly⁽³⁻¹⁴⁾.

Prior to the advent of computed tomography, a diagnosis of thoracic kidney was confirmed, in most patients, through excretory urography⁽¹⁸⁾. The use of computed tomography as a diagnostic procedure was previously reported by Grenadir & Larsen, chosen for its image quality and ease of interpretation⁽¹⁾.

In the differential diagnosis of thoracic mass, thoracic kidney should be considered. It is normally asymptomatic and may be identified, such as in the case in question, through computed tomography of the chest. This entity requires no specific treatment.

REFERENCES

- Milovic IS, Oluic DI. Thoracic renal ectopia. *Br J Urol* 1988; 62:183-4.
- Langman J. *Medical Embriology. The Williamms and Wilkins*. 4th ed. London, 1981; 241.
- Wolfrohm G. Position of kidney in right diaphragmatic eventration. *Men Acad Chir* 1940;66: 41-7.
- Campbell MF. Embriology and anomalies of the urogenital tract. *Clinical Pediatric Urology* 1951;159-353.
- Vasquez J, Lupi HE, Ksep J. Riñon derecho com localización intratorácico de causa congénita. *Arch Inst Cardiol Mex* 1984;54:377-9.
- Seres CMV, Pérez, JLS, Juárez AS; Méndez FGR; Larrañaga FE; Olivares AM. Genesis of intrathoracic kidney, in relation to 2 cases. *Rev. Inst. Nac. Enfermedades Respir* 1992; 5:82-5.
- Jefferson KP, Persad RA. Thoracic kidney: a rare form of renal ectopia. *J Urol* 2001; 165: 504.
- Burioka N, Tomita K, Sasaki T. A case of left intrathoracic kidney with renal anomalies. *Nippon Kyobu Shikkan Kakkai Zasshi* 1991; 29: 921-4.
- Stein JP, Kurzrock EA, Freeman JA, Esrig D, Ginsberg DA, Grossfeld GD, Hardy BE. Right intrathoracic renal ectopia: a case report and review of the literature. *Tech Urol* 1999; 5:166-8.
- Marcano D, Aghilera S. Rinõn ectópico torácico: reporte de un caso. *Invest Clin* 1992; 33:95-100.
- Tanagho EA, McAninch JW. *Embriologia*. In: *Smith urologia geral*. 13 ed. Rio de Janeiro: Guanabara Koogan, 1994; 13-4.
- Barret NR. Right retroperitoneal diaphragmatic hernia. *Britt J Surg* 1945; 32: 421.
- Spillane RJ, Prather GC. Right diaphragmatic eventration whit renal displacement. *J Urol* 1952; 68: 804-6.
- Gondos B. High ectopy of left kidney. *Amer J Roentgenol* 1955; 74: 295.
- Hulks G, Cowan MD, Kerr JW. Asymptomatic renal thoracic ectopia, pulmonary hypoplasia, and Bochdalek hernia. *Thorax* 1990; 45: 635-6.
- Drop A, Czekajska-Chehab E, Maciejewski R, Staskiewicz GJ, Torres K. Thoracic ectopic kidney in adults. A report of 2 cases. *Folia Morphol (Warsz)* 2003; 62: 313-6.
- Crowe JK, Brown LR, Muhm JR. Computed tomography of the mediastinum. *Ibid* 1978; 128: 75.
- Buchwald J, Ackermann R. Etiology and diagnosis of thoracic kidney. *Thoraxchir Vask Chir* 1977; 25:20-4.
- Pfister-Goedeke L; Brunier E. Intrathoracic kidney in childhood with special reference to secondary renal transport in Bochdalek's hernia. *Helv Paediatr Acta* 1979; 34: 345-57.
- Fariña LA, Salles M, Vidal B. Solitary crossed renal ectopia and congenital vertebral anomalies. *Arch Esp Urol* 1997; 50: 918-20.