Renal epidermoid cyst: A case report

Rina Barrios Barreto\textsuperscript{a,}\textsuperscript{*}, Liney Mendoza Suarez\textsuperscript{b}, Astrid Del Valle Pestana\textsuperscript{b}, Carlos Silvera Redondo\textsuperscript{a}

\textsuperscript{a} División Ciencias de la Salud, Universidad Del Norte, Km 5 antigua Vía Puerto Colombia, 81001, Barranquilla, Colombia
\textsuperscript{b} UPC Unit of Clinical Pathology Dr. Alex Tejada, Cl. 5 #6-47, 130001, Cartagena, Colombia

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ABSTRACT

A 56-year-old male patient with no significant clinical history manifested lumbar pain, macroscopic hematuria and dysuria. Radiology images found a renal mass in the upper right pole at the pyelocaliceal level. A partial nephrectomy was performed to resect the tumor, and histology revealed the diagnosis of a renal epidermoid cyst, which is an infrequent lesion with a benign biological behavior. Its etiology is still controversial, but its clinical course is satisfactory after complete resection of the lesion.

Introduction

Renal epidermoid cysts are infrequent benign tumor lesions, with only 11 cases described in the scientific literature.\textsuperscript{1,2} The histological presentation is similar to epidermoid cysts that occur on the skin but they have a different etiology. Their imaging appearance and squamous metaplastic changes can simulate other types of benign and malignant renal neoplasms, including teratomas, dermoid cysts and teratoid variants of Wilms tumor,\textsuperscript{1,2} making presurgical diagnosis of the lesion difficult.

Clinical case

We present a 56-year-old male patient with a clinical picture of severe low back pain associated with dysuria and gross hematuria, with no significant personal history. Urotomography was performed and a cystic mass measuring 4.5 $\times$ 4 cm with irregular borders was observed in the upper right pole with a density of soft tissues and calcifications in its interior, without evidence of enhancement with contrast medium. A retrograde pyelogram revealed a cystic lesion in the upper renal pole, with evidence of an adjacent 1 cm stone. Given the suspicion of a tumor mass, a partial nephrectomy of the upper renal pole was performed by laparoscopy and it was sent for histopathological study.

In the macroscopic review of the surgical specimen, the presence of a cystic lesion occupied by fragments with a sebaceous appearance was observed at the level of the upper right renal pole in the pyelocaliceal area (Fig. 1). The histological sections revealed a wall of a cystic lesion lined by squamous epithelium without atypical changes, filled with abundant lamellar keratin, accompanied by a chronic lymphohistiocytic inflammatory infiltrate (Fig. 2). The clinical progress after surgery was satisfactory.

Discussion

Histologically, renal epidermoid cysts are characterized by a cystic cavity lined by stratified squamous epithelium and occupied by lamellar keratin. Their origin is controversial, and the traumatic etiology is not accepted,\textsuperscript{4} and various other hypotheses have been raised that suggest different pathophysiological mechanisms to explain the histogenesis of these lesions. Among these are changes of the remains of the Wolffian duct, which can undergo abnormal ectodermal implantation during embryogenesis.\textsuperscript{1,2,5} A theory related to squamous metaplasia affecting the urothelium of the renal pelvis due to prolonged irritation by stones has also been
Furthermore, it has been suggested that vitamin A deficiency induces the development of squamous metaplasia in the urothelium, which has been observed in murine models with this deficiency condition, where heterogeneous positivity was observed with immunohistochemical staining for Uroplakin II and CK7, which are markers of urothelial differentiation in the basal layer. There is a lack of expression of these markers in the cells of the intermediate and superficial zones, corresponding to the squamous metaplasia that covers the urothelium.

Regarding the distribution by age groups, the epidermoid cysts previously described in the scientific literature show a higher incidence between the sixth and seventh decade of life with a predominant location toward the pelvis and renal calyces, without a predilection for sex. The symptoms that have been most frequently associated with these cysts are renal colic, macro- and microscopic hematuria, and renal lithiasis.

With regard to diagnostic images, renal epidermoid cysts have been commonly observed as masses with calcifications in their interior. The treatment in most of the cases described has been surgical management to remove the entire lesion by total or partial nephrectomy, taking into account the location and size of the lesion, with satisfactory postoperative results, and only in one particular case was nephrolithotomy performed percutaneously.

Conclusion

Renal epidermoid cysts are a diagnostic challenge in the presurgical stage given the low specificity of their clinical manifestations and radiological images coupled with the low frequency of their appearance in the renal parenchyma. Histological confirmation is necessary for a definitive diagnosis. Therefore, the most widely accepted theories about the pathophysiological mechanisms that explain the etiology of these lesions and that reflect their benign biological behavior allow us to expand the diagnostic possibilities that arise during the management approaches to cystic lesions in the kidney.

Consent

Written informed consent was obtained from the patient for the publication of this case report and its accompanying images.

Author contributions

Rina Barrios Barreto: Conceptualization, Investigation, Methodology, Writing- Original draft preparation, review and editing. Liney Mendoza Suarez Liney: Visualization, Investigation, Writing- Original draft preparation. Astrid Del Valle Pestana: Visualization, Investigation, Writing- Original draft preparation, review and editing. Carlos Silvera
Redondo: Investigation, Writing- Original draft preparation, review and editing.

Declaration of competing interest

The authors declare that they have no conflicts of interest. There was no external funding for this work.

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