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UNVEILING THE RARITY: A COMPREHENSIVE REVIEW OF RENAL EPIDERMOID CYSTS

Histopathology

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ABSTRACT

Renal epidermoid cysts represent an exceedingly rare entity, with limited documentation in the medical literature. We report a case involving a 58-year-old female presenting with abdominal pain, where a CT scan identified lesions in both the kidney and uterus. A comprehensive surgical approach, involving exploration laparotomy, radical hysterectomy, and radical right nephrectomy, was undertaken. Microscopic examination unveiled a dual pathology: Endometrial endometrioid Adenocarcinoma of the uterus and an Epidermoid Cyst of the Right Kidney. This case underscores the diagnostic challenges and therapeutic complexities associated with uncommon renal lesions, contributing to the expanding spectrum of medical knowledge.

KEYWORDS

Renal Epidermoid cyst, Nephrectomy, Abdominal Pain

INTRODUCTION

Within the intricate landscape of medical anomalies, certain conditions stand out as enigmatic and rare, captivating the attention of both clinicians and researchers alike. Epidermoid cysts, typically associated with the skin's epidermal inclusion cysts, have been recognized for their distinct characteristics, featuring a squamous cell lining and a luminal space filled with keratin debris.

Although these cysts are frequently observed on the skin, their presence in internal organs is still a fascinating anomaly. Among the internal organs where epidermoid cysts have been reported, the kidneys emerge as an exceptionally uncommon site. Fewer instances of renal epidermoid cysts have been reported in the medical literature to date, indicating the rarity of this condition. [1][2]

This article aims to shed light on the elusive nature of renal epidermoid cysts by presenting a unique case study. Through a meticulous examination of the histopathological findings, we unravel the diagnostic intricacies of a complex renal cyst identified as an epidermoid cyst. In addition to the presented case, our exploration extends to a comprehensive review of the limited existing literature on renal epidermoid cysts. By synthesizing insights from documented cases, we seek to deepen our understanding of the clinical manifestations, diagnostic challenges, and potential treatment modalities associated with this rare pathology.

As we navigate the uncharted territory of renal epidermoid cysts, this article serves as a valuable resource for healthcare professionals and researchers striving to unravel the mysteries of these exceptional medical occurrences.

Case Study

A 58-year-old female, experiencing abdominal pain for one month, presented with a palpable mass in the hypogastric and right lumbar region on clinical examination. Imaging studies, including ultrasonography and CT scan, revealed gross hydronephrosis of the right kidney with significant cortical thinning and a large calculus in the right renal pelvis. Multiple calculi were noted in the middle and lower calyces and an altered density area in the upper pole. Simultaneously, a diffusely bulky uterus exhibited a large heterogeneously enhancing lesion involving the myometrium and endometrium.

There was no lymph node involvement or liver metastasis, stable vital signs, and normal laboratory results. The surgical intervention comprised total abdominal hysterectomy with bilateral salpingo-oophorectomy, right radical nephrectomy, and bilateral inguinal lymph node dissection.

Gross examination revealed a firm uterine mass and a nephrectomy specimen with cysts containing necrotic material and multiple calculi, largest measuring 2.5 x 2.3 cm.(Figure:1)

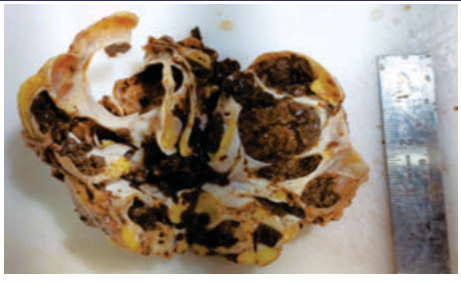

Figure 1: A nephrectomy specimen with cysts containing necrotic material and multiple calculi.

Microscopic examination disclosed well-differentiated endometrial endometrioid adenocarcinoma involving the endometrium and myometrium. The renal specimen exhibited multiple inter communicating cysts lined by stratified squamous epithelium with a granular layer and laminated keratin, characteristic of an epidermoid cyst. No skin appendages or cellular atypia or metastasis were identified.(Figure:2,3)The final diagnosis encompassed Well-differentiated Endometrial Endometrioid Adenocarcinoma of the Uterus coexisting with an Epidermoid Cyst of the Kidney, as determined through comprehensive histopathological examination.

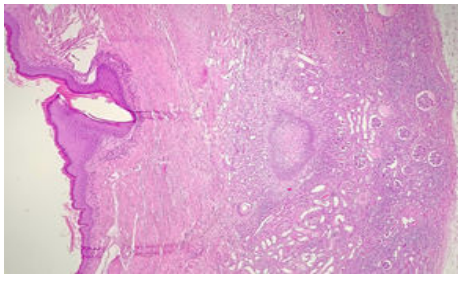

Figure 2: Cyst lined by stratified squamous epithelium with a granular layer.

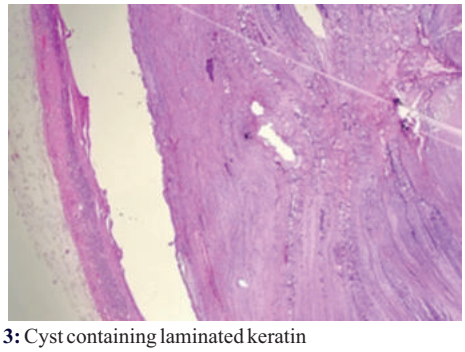

Figure 3: Cyst containing laminated keratin

DISCUSSION

Renal epidermoid cyst is a rare lesion, predominantly located towards the renal pelvis and calyces with reported cases concentrated between the sixth and seventh decades of life, exhibiting no gender predilection.[3]

The pathogenesis remains elusive, with theories including aberrant ectodermal implantation of epidermal remnants from Wolf's duct during embryogenesis being widely discussed. Another theory suggests squamous metaplasia of the urothelium, either irritative due to microtrauma induced by lithiasis formations or deficiency-related, particularly linked to vitamin A deficiency. Recent findings also associate prolonged tacrolimus use with the occurrence of renal epidermoid cysts, emphasizing its role in transplant rejection prevention. Markers of urothelial differentiation in the basal layer, Uroplakin II and CK7, showed mixed positivity when stained with immunohistochemistry. Interestingly, cells in the superficial and intermediate zones showed no expression, which is consistent with the squamous metaplasia that was seen.[4][3][5]

Clinically, renal epidermoid cysts lack specific symptoms, commonly presenting with diffuse lumbar pain and macroscopic or microscopic haematuria. Renal colic may also occur, often associated with renal lithiasis.[6]

Digital imaging typically reveals cystic lesions with irregular contours and potential calcifications, occasionally raising suspicion of malignancy. Histologically, these cysts feature a cavity lined by keratinizing squamous epithelium with a visible granular layer, occupied by keratin lamellae. Differential diagnoses include dermoid cysts, which additionally contain pilosebaceous appendages, and cystic teratomas, distinguished by structures from at least two embryonic layers.[7]

In most reported cases, surgical intervention, predominantly total or partial nephrectomy, is the recommended treatment based on the lesion's size and location, resulting in a generally favourable postoperative course and prognosis.

CONCLUSIONS

In unravelling the mysteries of renal epidermoid cysts, our exploration sheds light on their rarity and diagnostic challenges. The presented case, a complex renal cyst identified as an epidermoid cyst, underscores the need for heightened clinical awareness. The comprehensive literature review provides valuable insights, emphasizing the scarcity of documented cases and the ongoing need for collaborative research. As clinicians navigate the diagnostic complexities, this knowledge serves as a call to action, fostering a deeper understanding of renal epidermoid cysts for improved patient care and future advancements in medical science.

Acknowledgements:
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