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Case report

Nephrectomy for a case of intrarenal dermoid cyst: Was it an appropriate decision?

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Abstract

Dermoid cyst in a kidney is rarely seen. We report a case of intrarenal dermoid cyst which mimics malignant renal tumour and discuss the dilemma in managing this disease.

Keywords: Renal, dermoid cyst, nephrectomy, treatment.

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Introduction

Dermoid cyst is typically known to occur in the median line of the body, near the line of embryonic fusion. They are rarely encountered in the kidneys, and only a few cases have been reported in the literature. We report a case of intrarenal dermoid cyst discovered during investigations of urolithiasis with a review of relevant literature.

Case Report

A 58-year-old man presented with history of passing out stone fragments for five years, associated with symptoms of intermittent haematuria and backpain. Physical examination showed no palpable masses. Laboratory investigations revealed worsening renal profile, but normal serum uric acid and calcium levels. An intravenous urogram (IVU) showed a mass at the lower pole of the left kidney, with extension into the renal pelvis with coarse calcifications within. Bilateral renal and distal left ureteric calculi with obstructive uropathy were also observed. Subsequent CT scan of the abdomen confirmed the presence of a 5x3cm mass arising in the collecting system of the left kidney with fragmented calculi within (Fig. 1). The distal left ureteric calculi were fragmented in a ureteroscopic procedure and urine as well as cytologic brushings were taken from the renal pelvis. This revealed the presence of atypical cells. A hand-assisted nephroureterectomy was then performed under the assumption that this was a malignant transitional cell carcinoma of the renal pelvis (Fig. 2). Post-operative recovery of the patient was unremarkable and there was no significant complication that occurred.

The final diagnosis of renal dermoid cysts was made based on the histopathological findings of cyst wall lined by stratified squamous epithelium containing keratin flakes with presence of sebaceous glands (Fig. 3). The stone fragments, typically of that seen in cases of urolithiasis, were scattered within the cystic cavity. In addition, the renal pelvis, in continuity with the cystic wall, was lined by unremarkable urothelium with focal squamous metaplasia and there was presence of scattered lymphoplasmacytic infiltrates. After the surgery, the patient had been doing fine and

reviewed regularly for at least two years in the outpatient setting.

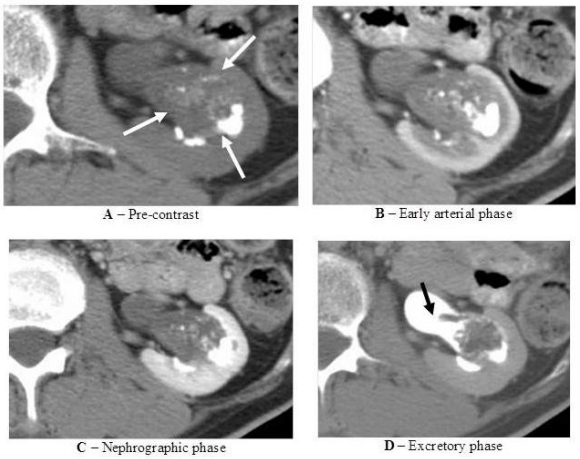

Fig 1: 4-phase axial CT study of the left kidney. **A**, is the pre-contrast image showing a mass in the renal medulla (arrows). The density reading (not shown) indicates that the tumour consists of both fluid (cystic) and solid components. Multiple flakes of calcification or stone fragments are noted within the mass. **B**, in the early arterial phase, the mass is isodense to the renal medulla. **C**, in the nephrographic phase, it does not enhance to as much as the rest of renal parenchyma, suggesting hypovascular nature of the tumour. **D**, the excretory phase image shows parts of the tumour are projecting into the renal collecting system (black arrow).

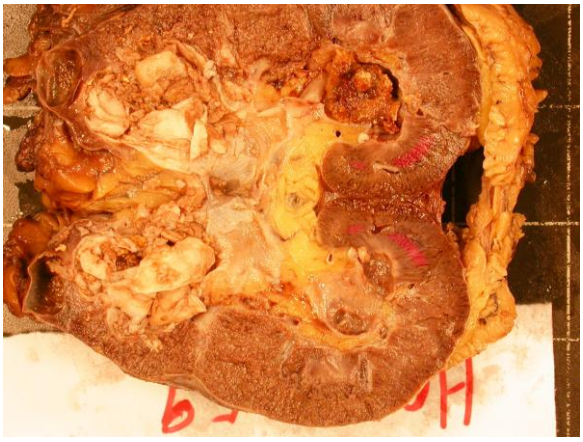

Fig 2: Cut section shows there is a friable tumor mass within the renal medulla containing whitish, cheesy flakes admixed with yellowish gritty calcification at the lower pole measuring 3 x 3 x 1 cm and in continuity with the dilated pelvis

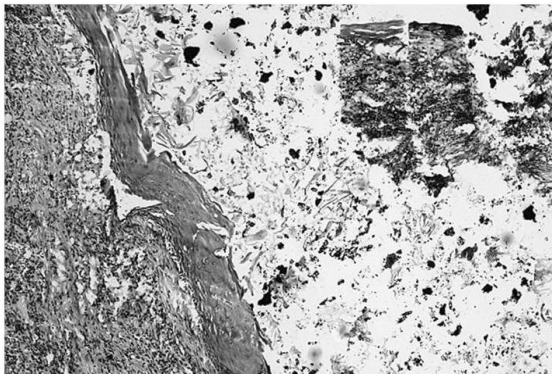

Fig 3: Cyst wall lined by keratinising stratified squamous epithelium containing keratin flakes admixed with calcification within the cavity.

Discussion

Dermoid cyst arises from the inclusion of ectodermal elements during embryological development close to the lines of embryonic fusion (1). The cyst wall is lined by stratified squamous epithelium with the presence of skin appendages such as sebaceous and sweat glands.(2) Apart from the skin, visceral dermoid cyst has been reported in a variety of organs such as colon, liver and stomach.(2). Contrary to the common belief that dermoid cyst of the kidney is rarely seen, it was first reported in 1915 by Baldwin (3). Due to the various pathological names used to describe what is essentially the similar entity, the numbers of cases seem to be small, and the names used included of course, dermoid cyst, as well as mature cystic teratoma, or simply teratoma (3,4,5). Foremost in reporting these unusual renal pathological cases were Otani and Choi in 2001 and 2005, who each described a list of cases of dermoid cyst in their respective reports (3,4). Disregard of the variable nomenclature applied, the histopathological findings included certainly the squamous epithelium, in addition to the hallmark presence of skin appendages, such as sebaceous gland or hair follicle. Dermoid cyst is a type of teratoma for the reason that teratoma could be composed of either or more of the three germ layers.(6) In fact, some of the reported cases of dermoid cyst contained other unusual tissues such as carcinoid tumour or adenocarcinoma (7). Calcification within the cystic cavity is a well-recognised common feature of dermoid cyst (1,2).

It is difficult to make an accurate diagnosis, radiologically. The lesion could appear as distortion of the pelvicalyceal system and sometimes with dilatation in IVU (4). Ultrasonography has shown cystic, heterogenous, mixed cystic solid, and hyperechoic masses with coarse foci of calcification (4). CT scan has demonstrated heterogenous masses, with cystic areas, and coarse foci of calcification (4). These features aforementioned were seen in this presentation, and they were essentially also the features of renal tumours (8). Although it was mentioned that such a diagnosis should be a prime consideration when there is dense calcification, Choi et al on the other hand, reported a case in which there was no calcification seen in the lesion (4,9). Although CT scan is the preferred method of imaging in suspected cases of renal tumours, its confidence level decreases when the mass is predominantly cystic. MRI also has the similar disadvantage in this regard in addition to other issues such as availability of facilities and suitability of patients (8). The common differential diagnosis suspected preoperatively in adults includes an unspecified renal tumour, renal cell carcinoma or infected renal cyst (4). The correct diagnosis is often made based on histopathological examination of the nephrectomy specimen.

The question now is whether the patient could have avoided nephrectomy for basically a benign disease. An earlier study stated that none of the twenty one cases reported by the six earlier papers diagnosed correctly prior to radical surgery (9). This undesirable situation was similarly faced by other papers in which the prime differential diagnosis was renal tumour (7,10). There were however exceptional cases and one of which was a case reported in Germany whereby the appropriate diagnosis was made through a ureterorenoscopic biopsy and the patient's kidney was only partially excised as it was symptomatic (11). Even if the right diagnosis was made pre-operatively, was it possible to salvage the kidney given that the sizes of intrarenal teratoma at presentation were 1.3 to 15.6cm in adults and 5.6 to 11.5cm in children? (4). Earlier researchers partially removed their patient's kidney which had not just one but three cysts, in which the sizes ranged between 2 X 2cm to 8 X 5cm (3). It was believed that factors other than size of mass should be taken into consideration before embarking on nephron-sparing surgery, such as laterality of mass, location of mass on kidney, patient's choice as well as operating surgeon's experience. Disregard of the nature of the disease, nephrectomy seems to be an appropriate decision in certain situations especially when the mass was critically symptomatic such as infective or ruptured (5,12).

It is not known whether malignant transformation commonly occurs with dermoid cysts. The presence of focal squamous metaplasia as seen in this case should not be taken lightly. We opine that it was justifiable that nephroureterectomy was performed for the patient. This is compounded by the fact that the lesion was symptomatic clinically and not favourable for partial resection given its size of 5 cm, involvement of collecting system, clinical impression of transitional cell carcinoma rather than renal cell carcinoma, as well as presence of atypical cells in urine cytology.

Conclusion

In conclusion, intrarenal dermoid cyst should be considered as a differential diagnosis when radiological imaging reveals these findings. Nephrectomy is invariably done given the risk of malignancy in a renal mass. Diagnosis is often confirmed postoperatively

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