MULTILOCULAR CYSTIC RENAL CELL CARCINOMA

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ABSTRACT

Objective: Multilocular cystic renal cell carcinoma appears to be uncommon subtype of renal cell carcinoma with characteristic gross and microscopic features. This study reports the presentation, diagnosis, and treatment of multilocular cystic renal cell carcinoma, which is a rare entity and its true incidence and biologic behavior are not well known in Jordan.

Methods: We have identified two cases of multilocular cystic renal cell carcinoma at Queen Rania Urology Center over the last three years. The clinical, radiological, and pathological features were described and the surgical procedure and follow up outcome were studied.

Results: The tumor was an incidental finding in both cases. Ultrasound and computerized tomography (CT) scans were performed prior to surgery but could not identify the tumor. Nephrectomy was performed in both cases. Tumor size was 5 cm in one case and 7 centimeters (cm) in the second. Both cases were followed until the present time and last ultrasound and CT scan proved to be negative for recurrence.

Conclusion: Multilocular cystic renal cell carcinoma is uncommon subtype of renal cell carcinoma, and it has a benign clinical course. Nephrectomy is a curative procedure and there is no need for any other adjuvant therapy.
The Multilocular renal cell carcinoma must be distinguished from renal cell carcinoma with cystic degeneration and multilocular cystic nephroma.

Key words: Multilocular cystic, renal tumors, nephrectomy.

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Introduction

Multilocular cystic renal cell carcinoma (MCRCC) is a recently described variety of renal cell carcinoma with characteristic pathologic and clinical features. It presents a diagnostic challenge because they are malignant tumors with a benign course [(1)]. MCRCC has characteristic histological findings. It is a rare variant of classic renal cell carcinoma, which carries an excellent prognosis and is usually curative by surgery alone [(2)]. In long-term studies, none of the MCRCC kidney tumors showed a malignant behavior. If this type of renal neoplasm can be identified preoperatively and confirmed intraoperatively, it can be managed by more conservative surgery [(3,4)].

We present two cases in which the preoperative differential diagnosis between benign hydatid cyst and malignant mass was difficult.

Methods

Two cases of MCRCC were diagnosed at Queen Rania Urology Center over the last three years. For these cases the clinical, radiological features, gross appearance, pathological stage, and surgical procedures will be evaluated.

First Case

A 33-year-old lady, with no previous medical or surgical illness, presented with chronic right loin pain. Ultrasound and computerized tomographic scan reported a 7 x 9.5 cm septated multiloculated cystic lesion containing flecks of calcification arising from the upper pole of right kidney. There was some extension into the medial and anterior perinephric space; which is most probably consistent with hydatid disease of the right kidney. No lymph node enlargement was seen.

The patient was admitted on June 26th, 2002, and exploration of the right kidney was performed via right subcostal incision the following day.

Findings were a multicystic mass occupying the upper pole of the right kidney with enlarged hilar lymph nodes. A frozen section was performed and it revealed the

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presence of a cystic renal cell carcinoma. Right nephrectomy and dissection of lymph nodes was performed and the patient was discharged in good health on the first of July 2002.

The histopathological report of the whole specimen showed a multiloculated cystic tumor composed of variable sized spaces lined by clear epithelial cells. The septa between the cysts contained scattered islands of a nuclear grade I clear cell carcinoma. There was no extra renal capsular spread and no invasion of the pelvis or renal vessels. All lymph nodes were reactive. The appearance was in keeping with a multilocular cystic variant of clear cell carcinoma of the kidney and in summary a multilocular cystic renal cell carcinoma was completely excised. Tumor lymph node & metastasis (TNM) stage $T_1N_0M_x$.

Follow up chest and abdomen CT scan five months later was free of local recurrence and metastases. The left kidney was normal, and no lymph node enlargement was detected.

Second Case

A forty-five-year-old lady, with a history of lung tuberculosis that was treated with partial left pneumonectomy, presented with long standing left loin pain and chronic urinary tract infection. She was investigated as an outpatient and found to have a left renal cystic mass about 2.7 cm in diameter. A CT scan was performed which showed a septated cystic mass lesion arising from the posterior aspect of the lower pole of the left kidney measuring 4 cm in diameter. The lesion invaded the medulla and cortex and protruded beyond the renal outlines. The appearance was that of a cystic tumor, however the possibility of hydatid cyst could not be ruled out. There was no lymph node enlargement. She was admitted on December 2000 for operation but she asked to postpone her surgery and she was admitted again on July 19th 2001. Her case was discussed again and the provisional diagnosis was hydatid cyst.

She underwent exploration of the kidney on August 8th, 2001 and the surgical finding appeared to be that of a hydatid cyst about 7 cm in diameter, bulging from lateral surface and lower pole of the kidney. Enucleation of the cyst was performed. The patient was discharged on August 12th 2001.

Two weeks later, the histopathological report revealed an intact cystic mass measuring 5cm in maximum dimension. The cut surface showed a well-circumscribed small multilocular cystic mass containing gelatinous material with a 1.2 cm rim of normal renal tissue.

Microscopically, the sections showed a well-circumscribed renal tumor with features consistent with a Grade I multilocular cystic clear cell renal cell carcinoma. The tumor was completely excised.

The patient was readmitted and left nephrectomy was done on Sept. 9th 2001. Histopathological examination revealed no evidence of residual or recurrent malignancy. She was discharged two days later in good health.

Follow up ultrasound and CT scan on Dec. 2002 proved to be free from recurrence or distant metastasis.

Results

In both cases of MCRCC the clinical and radiological interpretation as well as surgical management were evaluated. The tumor size, site, gross appearance, and pathological stage were recorded.

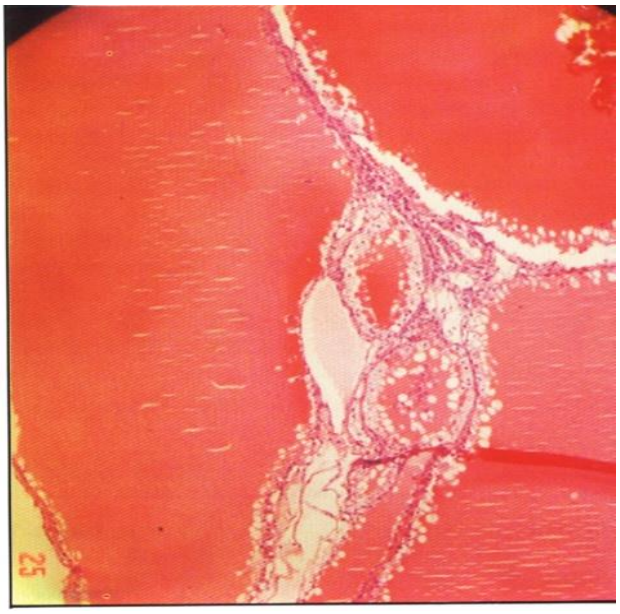
For tumor staging and histological evaluation, representative sections were taken from the tumor, its capsule, perinephric fat, and non-tumorous renal parenchyma, surgical resection margins any lymph nodes were taken into consideration. The same pathologist reviewed all slides in both cases.

The clinical presentation, treatment, and follow up data were obtained from the patient charts and directly from the physicians. Stage was assessed according to 1997 TNM classification, tumor nuclear grade was evaluated according to the Fuhrman system

Clinical Features

We identified two cases of MCRCC, both were females, 33 and 47 years of age, respectively. The tumor was found incidentally and in both cases the radiological evaluation showed the possibility of hydatid cyst as the most likely diagnosis.

During surgery one case was diagnosed by frozen section and nephrectomy was performed at the same session, but in the other case the cyst was not suspicious, thus no frozen section was taken and the patient underwent another surgical exploration after the histopathological report came with diagnosis of MCRCC (Fig. 1,2).



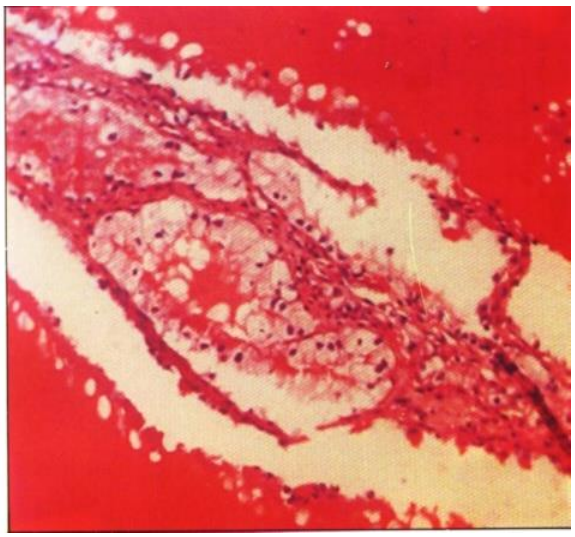


Fig. 1& 2. Histopathological diagnosis of MCRCC.

Imaging Studies

Renal ultrasound was performed in both cases, and demonstrated cystic lesions. Renal computerized tomographic scans were then arranged. In the first case a 7 x 9.5 cm septated multiloculated cystic lesion containing flecks of calcification arising from the upper pole of right kidney with some extension into the medial and anterior perinephric space was reported (Fig. 3) consistent with hydatid disease of the right kidney. In the second case the renal CT scan showed a septated cystic mass lesion arising from the posterior aspect of the lower pole of the left kidney measuring 4cm in diameter (Fig. 4). The lesion invaded the medulla and cortex and protruded beyond the renal outline. The appearance was concluded to be due to a cystic tumor, however the possibility of hydatid cyst could not be ruled out.

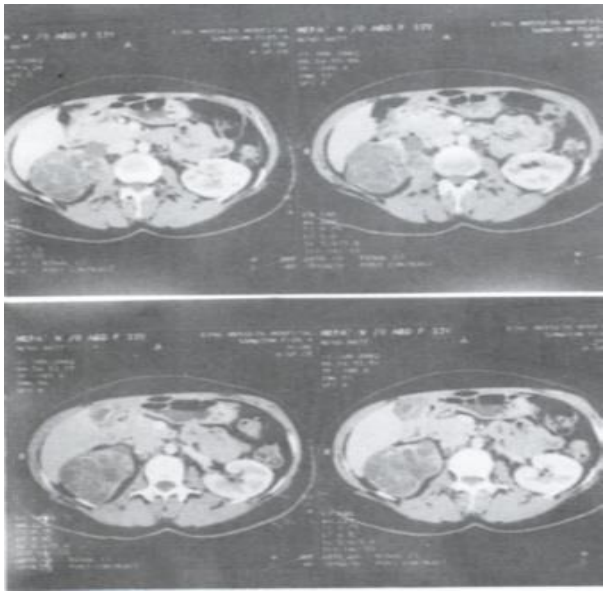


Fig. 3. CT scan in case 1- showing the lesion.

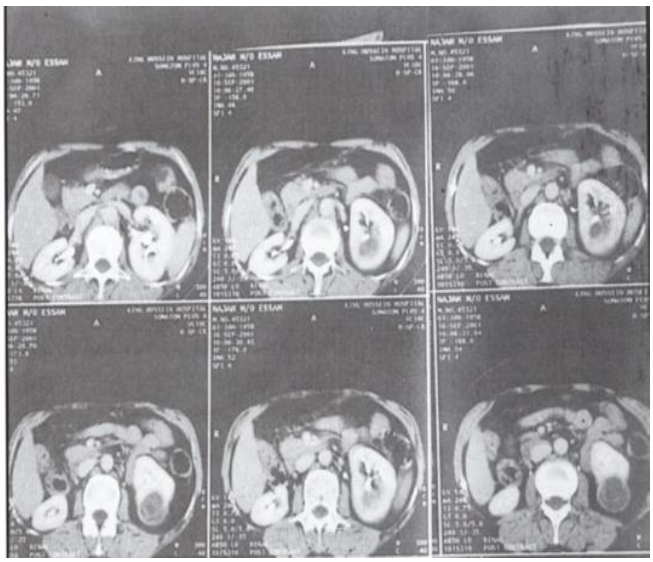


Fig. 4. CT scan findings in case 2.

Discussion

Although description of multilocular renal cysts date back to 1892 [(5)], the presence of small clear cell population within their wall was not reported until 1928 [(6)], the diagnosis of lymphangioma was entertained, but this was not supported in later studies. The second case showing the presence of epithelial clear cells lining the cystic spaces was reported in 1957 [(7)], these two case reports appear to be the first descriptions of what today is classified as MCRCC. Several earlier studies had reported MCRCC as Renal Cell Carcinoma (RCC) arising in multilocular cystic nephroma. In 1982 [(8)] the term multilocular cystic renal cell carcinoma was introduced and MCRCC became accepted as a distinct entity.

Nowadays, many cases of MCRCC have been reported worldwide.

MCRCC is rare having a reported incidence between 1-4% of RCC. Because the etiology of RCC is not well established it would be difficult to elucidate the etiology of the MCRCC subtypes. More cases have been reported in Japan compared with the rest of the world; suggesting the importance of environmental and/or genetic factors. Conversely, this may be a result of greater awareness and reporting of MCRCC in Japan. Genetic susceptibility probably plays an important role, MCRCC has been associated with simultaneous primary tumors of other sites (endometrium), Corica *et al* [(9)] found that 83% of MCRCC cases were diagnosed incidentally. Tosaka *et al* [(10)] recognized that asthenia, anorexia, and weight loss were significantly higher in patients with non-cystic RCC compared with those with cystic RCC. Moreover, Fujii *et al* [(11)] found that all their patients with solid RCC were symptomatic, and there with solid RCC were not. Also MCRCC may be discovered incidentally while imaging the abdomen for unrelated conditions than for tumor related symptoms. In both of the cases reported in this paper loin pain was the

presenting symptoms.

Published reports suggested that ultrasonography and CT scan are the most practical tools for investigating and detecting MCRCC. Ultrasonography may only reveal septated cyst and may downgrade higher Bosniak category [12]. Adding color Doppler may prove useful. CT scan is diagnostically more accurate and will demonstrate malignant features such as contrast enhancement and increased attenuation; even so, CT scan may not be able to differentiate MCRCC from necrotic RCC. Yamashita *et al* [13] found MRI superior to CT scans for such differentiation. Conversely, Eble [14] and Bonsib [12] suggested that MCRCC should have no expansible nodules in the septa rather than stipulating a percentage of solid components.

Although the pathologic diagnosis of MCRCC seems to be straight forward, controversy regarding the diagnostic criteria continues. Murad *et al* [15] suggested 10% as the maximal percentage of solid tumor components. Later, Corica *et al* [9] expanded the definition to include lesions with a solid component occupying up to 25% of the total tumor size. Murad *et al* [15] suggested that Furhman nuclear grade I was a defining criterion for MCRCC and in fact we favor this criterion and we used it.

Because the term cystic renal cell carcinoma CRCC refers to several lesions with differing histopathological features and prognosis, it should be avoided unless clarified. CRCC can refer to both necrotic RCC and MCRCC. Cystic degeneration can be either from tumor regression or rapid growth. The later typically reflects an aggressive tumor that may have a very different prognosis from that of MCRCC. Failure to distinguish between cystic renal cell carcinoma as a general term and MCRCC can limit the prognostic usefulness of this category. Also bilateral cases of MCRCC were reported [18].

Without sub categorization, Gutierrez Banos *et al* [17] failed to show any significant survival differences. Tosaka *et al* [10] ascertained the outcome of 38 patients with MCRCC. Their 10-years survival rate and non-recurrence rate was 97.3% and 90.3%, respectively.

In summary, MCRCC is a predominantly cystic lesion with a small solid component (25% or less). It is probably a subtype of conventional clear cell renal cell carcinoma that because of its relatively low epithelial tumor volume has a lower malignant potential.

We recommend using the term multilocular cystic renal cell carcinoma (MCRCC) exclusively to identify a cystic lesion with a small volume of neoplastic clear cells in the wall of the cysts or within their septa. It is an uncommon histological subtype (3%) of conventional (clear cell) RCC usually cured by resection. The benign clinical course of these lesions suggests that patients may benefit from nephron-sparing surgery, such as partial nephrectomy [18]. In hand right, it was probably sufficient for the second case to have been managed in this way thus avoiding nephrectomy. Review of the published literature on MCRCC would support this approach. It was not possible preoperatively to confidently diagnose MCRCC in either cases and a high index of suspicious is necessary to concede this diagnosis given the radiological findings so that more conservative surgery can be planned.

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