CASE REPORT

Metanephric Adenoma: A Case Report and Literature Review

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This is a case of 27-year-old female who presented with a slow growing mass on the right flank. Computed tomography scan was done which revealed a cystic mass with septations and peripheral calcifications. Radical nephrectomy was performed on the patient. Histopathology and immunohistochemical staining were done which revealed features consistent with metanephric adenoma.

Key words: metanephric adenoma, benign renal tumors, immunohistochemical staining

Introduction

Metanephric adenoma is a rare renal tumor, accounting for about 0.2% of adult renal masses. It can present at any age, peaks at the 5th decade of life and more common among women.[1] Although considered benign, slow growing, with excellent prognosis, it clinically and radiologically imitates malignancy.[2] Therefore, diagnostic workup, treatment and follow up of this tumor should be approached cautiously.

High index of suspicion, preoperative preparation and analysis of the tumor can assist the medical team on the appropriate approach for this condition and halt unnecessary radical and aggressive surgery. In this report, current literature with regard to metanephric adenoma is looked into focusing on workups, differential diagnosis and treatment.

The Case

This is a case of a 27-year-old female who presented with a six-year history of slow growing mass at her right flank area. Patient had no other clinical symptoms. On physical examination, there is a 5cm x 5cm mass, non-hard, non-movable and non-tender on the right flank. Urinalysis and laboratory results showed no pathologic findings.

Contrast enhanced computed tomography showed a well-defined, thin-walled complex predominantly cystic mass with septations and peripheral tiny calcifications arising from the right kidney measuring 23.3cm x 17.2cm x 17.2cm (CC x T x AP) extending inferiorly into the right side of the pelvic region (Figure 1).

Patient underwent radical nephrectomy with findings of a 25cm x 24cm x 16cm brown to dark brown mass, ovoid, rubbery tissue. Cut section shows irregularly multiloculated to smooth solid surface with hollow cavity filled with dark brown diffused internal excrescences.

Microscopic sections of the right kidney revealed tumor cells arranged in sheets predominantly in epithelial differentiation seen as closely packed tubules with minimal stromal component. Lymphovascular space invasion is not demonstrated. The blood vascular margin, ureteral margin, adrenal

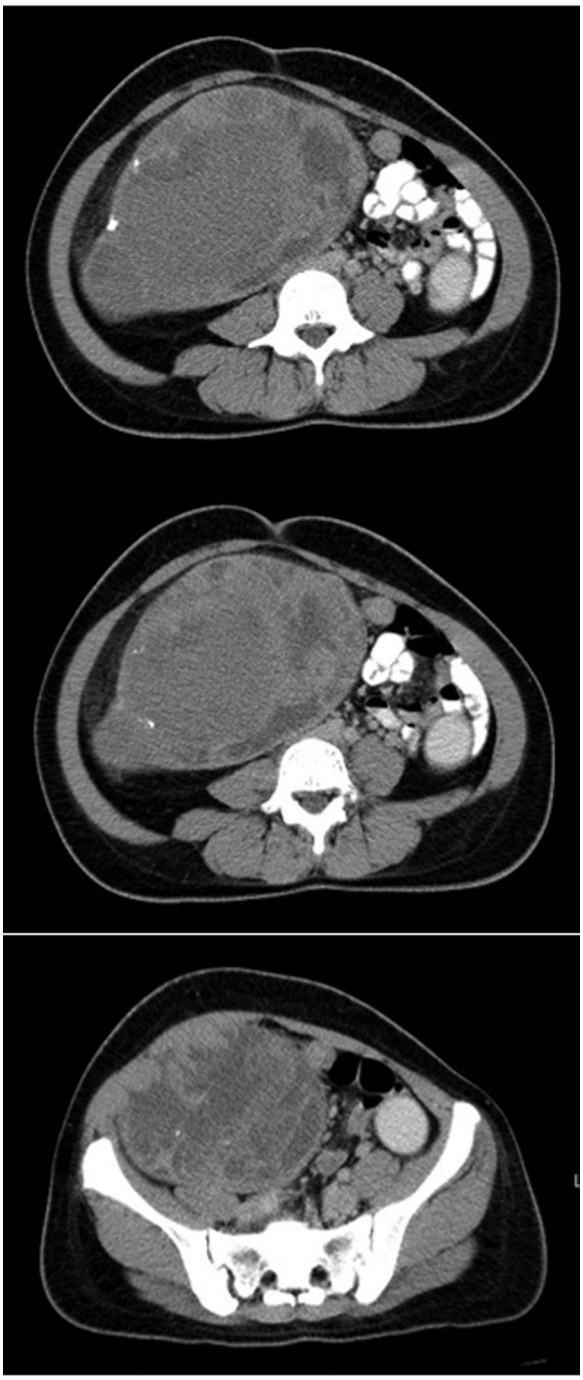

Figure 1. Computed tomography scan with contrast showing 23cm x 17cm x 17cm mass. With a thin walled complex predominantly cystic mass with septations and peripheral calcification

gland and hilar fat are all negative for malignant cell. Considerations that time are Wilms tumor as opposed to metanephric adenoma.

Immunohistochemistry was done and tested positive for WT1, CD56 and CD57. Immunomorphologic features consistent with metanephric adenoma. Patient endured the procedure well; no complications were noted post operatively.

Discussion

The kidney develops from metanephric blastema and in certain instances, remnants of this tissue within the renal parenchyma progresses into Wilms tumor and seldom metanephric adenoma. This Wilms tumor and metanephric adenoma are histologically related and metanephric adenoma is considered to be benign counterpart of Wilms tumor.[3] Patients with metanephric adenoma commonly presents with symptoms such as flank pain, gross hematuria, palpable mass, and polycythemia.[4] On gross examination, metanephric adenoma is a well-circumscribed soft or hard tumor with gray to tan to yellow cut surface. Changes like cyst formation, necrosis and hemorrhage may be present. Calcification may be apparent and extensive.

Histologically, metanephric adenomas are composed of densely packed small uniform cells with regular nuclei that form a tubular or acinary pattern. The cells have a scant pink or clear cytoplasm and the nuclei, only slightly larger than lymphocytes, are irregularly rounded or ovoid with delicate chromatin.[5]

With the use of immunohistochemistry, metanephric adenomas always test positive for Wilms tumor protein WT1, vimentin and CD57 and negative for A-methylcoA racemase whereas papillary renal cell carcinoma does otherwise. Papillary adenomas stain positive for cytokeratin 7 and EMA.

Metanephric adenomas have resemblances with renal cell neoplasms, where they both exhibit a well circumscribed tumor with tightly packed cells as described above. Hence, the differential diagnosis is crucial. Immunohistochemical staining with CD57, WT1 and CK7 may aid in differentiation and achieving diagnosis.

From a clinician point of view, most renal masses are regarded as malignant unless proven otherwise and are managed surgically. For cases that are diagnosed preoperatively, nephron sparing surgery is recommended. However, in practice, metanephric adenoma is hard to diagnose from malignant tumors and oftentimes, patients undergo

radical nephrectomy. The surgical approach should be determined according to tumor location, size and of course, the skill of the surgeon.

Patients with MA treated with partial or total nephrectomy have an excellent prognosis. Long-term active surveillance is necessary because of the uncertainty of the biological behavior and potentially composite malignant components of MA.

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