Case Report

Metanephric Adenoma: A Case Report with a Discussion of Pathology and Follow-Up Duration

CCK Khoo1, P Khetrapal2*, J Roux3, AW Bates4 and F Mumtaz5

1Department of Urology, Royal Free Hospital, UK
2Pilgrim Hospital, United Lincolnshire Hospitals NHS Trust, UK
3Department of Urology, Watford General Hospital, UK
4Department of Cellular Pathology, Royal Free Hospital, UK
5Department of Urology, Royal Free Hospital, UK

Abstract

Background: Metanephric adenomas are extremely rare, and often present as a mass or incidental scan finding. Differentiating them from Wilms’ tumours is important, but histology and immunohistochemistry have key similarities and some differences. From a clinical perspective, there is little guidance on post-operative management and follow-up duration.

Case: A 52-year old lady had a 16 mm mass identified as an incidental finding on a CT scan with no evidence of metastasis. She underwent a laparoscopic retroperitoneal partial nephrectomy. The tumors were solid, firm and white on macroscopic appearance. The immunophenotype was WT1, vimentin and CK7 positive and negative for CD10 and CD56. This was initially thought to be a metanephric adenoma but the diagnosis was later revised taking patient age and histochemical appearance into account. The patient is disease free at 6 months post-surgery, with a planned follow-up for a total of 24 months. No adjuvant or neoadjuvant treatment was used for her treatment.

Conclusion: Histological differentiation of metanephric adenomas and Wilms tumours remains a diagnostic challenge, but immunohistochemistry techniques are helpful in this endeavour. 24 months of post-operative follow-up is appropriate for metanephric adenomas of similar clinical and radiological presentations.

INTRODUCTION

Whilst, metanephric adenoma’s are extremely rare and usually benign tumours with an incidence of 0.2% of all adult epithelial neoplasms, they can present a diagnostic challenge as they may be difficult to distinguish from Wilms’ tumours. Both can present as small incidental renal masses and have similar radiological and histological appearances, with the latter exhibiting abundant mitotic figures with distinct cellular atypia.

For adult Wilms’, International treatment guidelines advocate radical nephrectomy and lymph node dissection followed by chemotherapy with or without radiotherapy within 30 days of surgery. With such management, reported 5-year survival rates have reached 82.6% [1-3]. In contrast, for a metanephric adenoma a local excision of the lesion would be considered adequate. A biopsy may be able to distinguish between the two but could remain inconclusive [2]. The following case highlights the potential difficulties in diagnosis and management of these tumours.

CASE REPORT

A 52-year old lady presented with an incidental small renal lesion with no significant urological history. A renal protocol CT scan showed a 16mm enhancing mass in the left lower pole of the kidney with no evidence of metastases. (Figure 1) After MDT discussion, the patient underwent laparoscopic retroperitoneal partial nephrectomy.

The macroscopic appearance of the specimen showed a solid, firm, whitish 15 x 15 x 12mm tumour. On microscopy the lesion was a well-circumscribed nodule formed of tubules lined by cells with moderately pleomorphic, vesicular nuclei with small nucleoli, sharply defined from surrounding renal parenchyma. The immunophenotype was positive for WT1, vimentin, and CK7 focally, and negative for CD10 and CD56. This was initially thought to be a metanephric adenoma but the diagnosis was later revised taking patient age and histochemical appearance into account. The patient is disease free at 6 months post-surgery, with a planned follow-up for a total of 24 months. No adjuvant or neoadjuvant treatment was used for her treatment.

Keywords

• Metanephric
• Adenoma
• Follow-Up
• Renal tumour
operative chemotherapy was felt to be unnecessary, and she was reviewed in clinic in 6 months, with a plan to followup for 24 months total.

DISCUSSION

Both metanephric adenomas and Wilms’ tumours are thought to derive from nephrogenic rests (persisting clusters of embryonal cells). However, unlike Wilms’ tumours, metanephric adenomas usually present in adulthood. Histologically, metanephric adenomas usually have no or a sparse fibrous capsule (Figure 2), whereas Wilms’ tumours tend to be encapsulated. Additionally, Wilms’ tumours have areas of larger cells with more mitoses and hyperchromatic nuclei. The immunohistochemical staining profiles of Wilms’ tumours and metanephric adenomas have some key differences and similarities. Both display strong nuclear staining for WT1 so it is unhelpful in differentiating the two tumour types. Metanephric adenoma stains for CD57 and focally for CK7, but not for CD56 and desmin [4] whereas Wilms’ tumours stain for CD56, but not for CD57. It is important to remember that mixed tumours have also been reported in the literature, [5] further complicating the differentiation of these tumours.

Despite their histological relationship, metanephric adenoma and adult Wilms’ tumours have a vastly divergent clinical course. Early identification of these rare tumours enables best possible treatment. A localised excision with clear margins is an acceptable treatment for metanephric adenoma but inadequate for Wilms’ tumour. A pre-operative biopsy may enable best treatment decisions [2] but in cases of histological uncertainty, partial nephrectomy allows confirmation of the diagnosis.

Another interesting point of discussion was follow-up after surgical treatment. Various case reports have been published looking into the histopathology of metanephric adenomas, but to our knowledge there is no review discussing follow-up duration and imaging modalities. For this discussion, we went through all cases reported on Pubmed in the last 10 years in English and a summary is as follows (Table 1).

13 publications were identified using the above criteria and all of them included, in which 24 patients were discussed. Of these 24 cases, 2 patients did not report follow up durations, 2 patients had ongoing follow-up for an unlisted time and 3 had ongoing...
follow-up with follow-up at the time of writing the publication stated. Of the remaining 15 cases, the mean follow-up time was 36 months, with a range of 12-179 months. Bastide et al [12] looked at 9 cases, and only one of them was followed up for more than 5 years and this case has significantly increased our mean follow-up duration. The mean follow-up duration if this case is excluded is 27.5 months, which is closer to the modal follow-up duration of 24 months. Only 2 of the cases reported had adjuvant treatment, 1 due to bilateral disease who had a single radical nephrectomy with close monitoring of the remaining kidney, and the other for lymph node metastases.

Of the 24 cases reviewed, all patients were free of disease at the time of respective publication. Metanephric adenomas are most often benign lesions, and this data suggests that post-operative outcome is good even without adjuvant treatment if no metastases are identified at the time of definitive surgical management. Exceptions need to be made for longer follow-up durations if other associated features such as polycythaemia are identified, as is discussed by Le Nué et al. [17].

In our case, we chose a follow-up duration of 24 months. No evidence of metastases was identified on the initial CT scan prior to surgery, and the patient was disease free on follow-up CT scan at 6 months.

While only partial nephrectomy, nephroureterectomy and radical nephrectomy are discussed in this case reports as treatment options, novel approaches such as radiofrequency ablation and radiofrequency-assisted partial nephrectomy are being used for treatment, which may offer better outcomes and shorter follow-up once there is sufficient data available.

REFERENCES