

Case Report

Bifocal Metanephric Adenoma in a Patient with Non-hodgkin Lymphoma

David S. Rosero^{1,*}, Celia del Agua², Isabel Marquina², Angel Garcia de Jalon³, Francesc Felipo⁴

¹Cumberland Infirmary, Pathology Department, Carlisle, United Kingdom

²Servicio de Anatomia Patologica, Hospital Universitario Miguel Servet, Zaragoza, Spain

³Servicio de Urologia, Hospital Universitario Miguel Servet, Zaragoza, Spain

⁴Servicio de Anatomia Patologica, Hospital Clínico Universitario Lozano Blesa, Zaragoza, Spain

Email address:

roserocuesta@gmail.com (D. S. Rosero)

*Corresponding author

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Abstract: Metanephric adenoma (MA) is a rare benign renal tumor. Radiology does not clearly differentiate between this benign lesion and renal carcinoma accurately. We report the case of a woman with history of non-Hodgkin lymphoma. CT scan showed nodules in one kidney, and radical nephrectomy was performed under the appearance of hypernephroma. Two lesions were identified, and the histopathological diagnosis was MA. No other MA has been reported in patients with non-Hodgkin lymphoma. The correct diagnosis of this tumor prevents radical nephrectomy. In the current report we describe two foci of tumor, and being MA usually solitary, its benign characteristics might be more challenging.

Keywords: Metanephric Adenoma, Kidney, Bifocal, Renal Neoplasm

1. Introduction

Metanephric adenoma (MA) is a rare benign tumor of renal origin [1, 2]. First described by Mostofi in 1988, it represents 1% of renal neoplasms [3, 4]. The mean age of patients with MA is 41 years old, most commonly in the 5th decade [5]. Most of the MA-like tumors are detected incidentally by diagnostic imaging, without showing clinical findings. CT scans, ultrasound and MRI imaging do not clearly differentiate between this benign lesion and renal carcinoma accurately [1]. The main differential diagnostic considerations for metanephric adenoma are epithelial-predominant nephroblastoma in children and the solid variant of papillary renal cell carcinoma in adults [4-6]. It can be also difficult to distinguish it from Wilms tumor and other lesions based on imaging alone, and even may be not easy on histopathologic analysis [6]. This concept is relevant, given that initially the malignancy of MA was uncertain, although it almost always has a benign clinical course [7]. However, two cases have been reported showing malignant behavior with metastasis [7, 8].

One of the cases metastasized to bone and presented atypical cytology and even evidence of mitotic activity. But the other that behaved in a malignant fashion did not show atypia, and metastasized to the regional lymph nodes [7, 8].

The size of MA varies, being around 30 - 60 mm in diameter with the largest being 200 mm [7]. This tumor is usually unifocal and unilateral, with few exceptions reported [5, 7].

The imaging features of MA on computer tomography (CT) and magnetic resonance imaging (MRI) show that most of these tumors are located both in the renal cortex and medulla and use to exhibit exophytic growth [8]. Plain CT shows that MA seems solid, and a slight enhancement in the renal cortex phase and an even higher enhancement in the renal parenchymal phase is observed. MRI reveals that MA tumor is isointense on T1WI and isointense on T2WI with some slightly hyperintense areas in the center. The images may give some clues; however, the diagnosis of MA is mainly dependent on postsurgical histopathological examination [8].

2. Case Report

A 72-year-old woman with medical history of non-Hodgkin lymphoma in complete remission after chemotherapy, underwent routine follow-up. Ultrasound and CT scan identified two echogenic masses in the right kidney. One solid, measuring 3.5 cm; and the other cystic-like, 3 cm in diameter. The solid lesion displayed an expansive pattern and hypernephroma appearance.

A right radical nephrectomy was performed, under the prior clinical diagnosis of malignant neoplasm.

The specimen revealed a 3.5 cm whitish circumscribed mass in the cortex in the lower pole. Cut surface made evident that the mass was separated by fibrous septae. During the

specimen sampling another solid nodular lesion was observed, well-defined, in the upper pole. This second lesion was 0.8 cm in diameter and showed similar macroscopic features to those described in the former nodule. Furthermore, two renal retention cysts were found (measuring 3 and 1 cm).

Histologically, both solid tumors were composed of a highly cellular neoplasm (figure 1) with basophilic proliferation of small rounded and extremely uniform cells with smooth nuclear contours, scant pale cytoplasm, dark-staining nuclei, and inconspicuous nucleoli. These epithelial tumoral cells, were arranged into compact ductal and acinic fashion, with glomeruloid and papillary structures. Several psammoma bodies were also identified (figure 1). Mitotic figures were absent throughout the lesion.

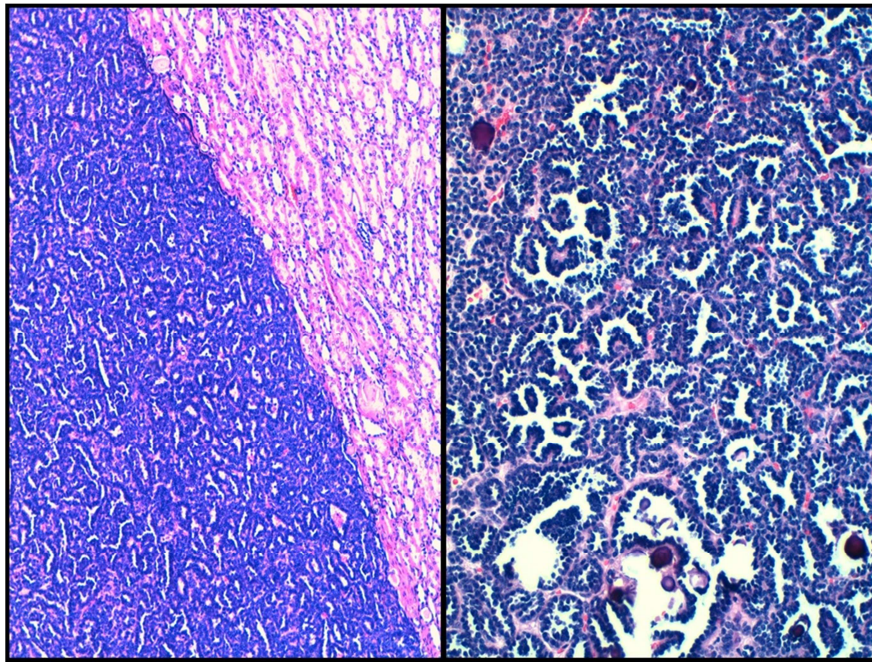


Figure 1. Well-defined and highly cellular neoplasm (left, HEx100). Several psammoma bodies and papillary structures were identified (right, HEx200).

The tumor expressed CK AE1/AE3, CK18 and vimentin (figure 2). Besides, it was EMA, CK7 and WT-1 negative. The final diagnosis was MA.

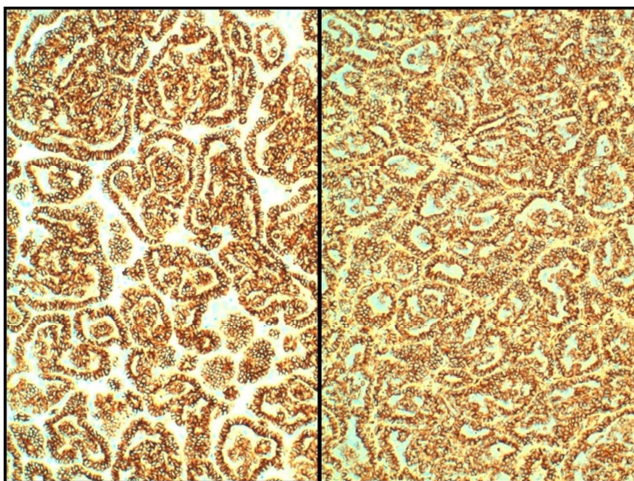


Figure 2. Tumoral expression of CK18 (left) and Vimentin (right). 200x.

3. Discussion

MA is a rare kidney tumor. In the last 14 years we have diagnosed only 2 cases of MA, in our hospital (Hospital Universitario Miguel Servet, Zaragoza, Spain), found among more than 100,000 biopsies.

The clinical symptoms of MA include abdominal pain, backache, hematuria, fever, or a palpable mass. However, patients with MA are commonly asymptomatic and the lesions are found incidentally [8]. For instance, some of the Metanephric adenomas (MAs) described in the literature have been found at autopsy, after dying from totally different situations than renal or tumoral diseases [6, 12]. Our patient was another example of incidental MA, found after the woman underwent routine follow-up.

Some cases of the MAs reported in the literature have been associated with hematological diseases, particularly with polycythemia vera [7, 9, 10]. There is a higher incidence of simultaneous polycythemia compared to any other renal diseases. Besides, myelofibrosis and von Willebrand disease

have been found in patients with MA [7]. However, no other MA has been reported in English literature in patients with diagnosed non-Hodgkin lymphoma, as in our case. Until the present, it may represent a casual relationship found. However, this should be noticed in the literature, in order to increase the possible relationships among neoplasias in the scientific community.

The patient described above is older than the usual for MA; being 72 years old. However, patients with this tumor have been found in a wide range, from 15 months to 83 years old [5].

Differential diagnosis includes papillary renal cell carcinoma, metanephric adenosarcoma, metanephric stromal tumor, Wilms' tumor in adults and metastatic lung and papillary thyroid carcinoma [3, 6]. Detailed knowledge of the CT and MRI characteristics of MA play an important role in MA diagnosis and treatment. Nevertheless, a histopathological study would generally confirm or exclude the diagnosis accurately [8].

The accurate diagnosis of the usually benign tumor MA prevents unnecessary radical nephrectomy. Its clinical recognition may facilitate nephron-sparing surgery [1, 3]. In this matter we would like to remind that MAs can be reliably diagnosed intraoperatively by frozen section, with histology mainly showing small, tightly packed cells, and absence of mitosis [9]. Precise preoperative characterization would help patient management [1, 11].

On gross examination, MAs are typically circumscribed, not-encapsulated, solid masses; and calcification, in addition to cystic changes and necrosis have been also described [8].

Histologically, these neoplasms are typically composed of small epithelial cells arranged as tightly packed small acini. A hyalinized or edematous stroma can be present. Psammoma bodies are common. The cells have scant cytoplasm, round nuclei, and variably present nuclear grooves. However, metanephric adenomas may assume a variety of architectures and may thus present a diagnostic challenge to the pathologist [2, 4-6, 12].

Metanephric adenomas are usually positive for WT-1 [5, 9, 10, 12]. Nevertheless, in this case report WT-1 it was negative. The rest of the immunohistochemical profile was the usual for MA, including positive expression for CK AE1/AE3, vimentin, CD57, and CAM 5.2. While NSE, CEA, chromogranin A, synaptophysin, actin, desmin, and AMACR (α -methylacyl-CoA racemase) are negative [8]. Even though, there is no specific antibody profile for MA [7, 11]. For example, EMA and CK7 are absent in most MAs, but some authors have reported positive results for these antibodies [5, 11].

Molecular pathology and mutational study has been also applied to MA and other metanephric stromal tumors. FISH can be used for analyzing chromosomes 7, 17 and Y. Metanephric adenoma lacks the gains of chromosome 7 and 17 and losses of Y that are typical of papillary renal cell carcinoma [7, 13]. There is previous documentation of BRAF exon 15 mutations in MA, in order to compare the results with other relatively similar renal tumors [12, 13]. Tumor genomic DNA extracted from formalin-fixed paraffin-embedded tissue, followed by PCR amplification and Sanger dideoxy

sequencing, can result in finding BRAF exon 15 mutations, corresponding to BRAF V600E. These results can help to approach the diagnosis when encountered; however, the majority of MA cases do not need a supporting molecular link to dictate the accurate histological diagnosis [13].

MA is a rare benign tumor which has not been always well recognized. The clinical and morphological features of this lesion should lead to accurate diagnosis, with the aim to deal better with the right treatment. In the current report we found two tumoral foci, and being MA usually solitary, its consideration as entirely benign might need some more follow-up.

4. Conclusion

We describe a case of MA incidentally found in a patient with non-Hodgkin lymphoma. The imaging techniques led to think that it was a malignant tumor, mainly because two tumoral foci were identified. This study will help to be alert before diagnosing other possible bifocal or multifocal MAs, in order to perform the specific treatment necessary for each patient with renal neoplasms.

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