CASE STUDY ARTICLE

METANEPHRIC ADENOMA OF THE KIDNEY SURGICALLY TREATED – A CASE REPORT

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ABSTRACT

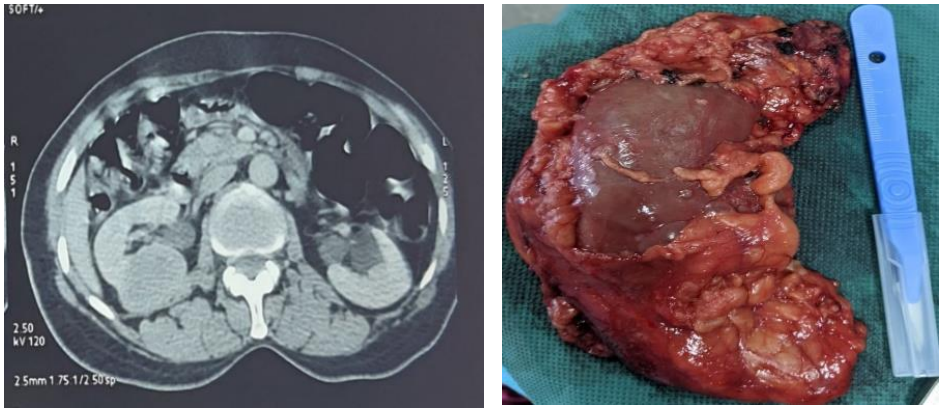
A metanephric adenoma is a rare tumor of the kidney. So far metanephric adenomas were considered to be benign, slowly growing, and non-metastasizing tumors with an excellent prognosis. Only recently two cases of metastasized metanephric adenomas were published. Therefore, diagnostic workup, therapy, and follow-up of this tumor have to be reassessed. We report the case of a 58-year-old female with metanephric adenoma.
***Key-words**: metanephric adenoma*

1. INTRODUCTION

Metanephric adenoma (MA) is a rare and frequently benign tumor but possesses two distinct renal lesions, which share several morphological and immunohistochemical features with solid variants of papillary renal cell carcinomas. Consequently, this may lead to potential misdiagnosis and inadequate treatment

2. Case report

A 58-year-old woman married and mother of 3 children, operated in 2017 for a mucinous ovarian adenocarcinoma without capsular protrusion classified as pT1 treated by a hysterectomy and bilateral salpingo-oophorectomy. She received six chemotherapy sessions adjuvant chemotherapy of paclitaxel and carboplatin. Note that the paternal aunt is followed for breast cancer. During the follow-up, Ultrasound, CT scans, and CA125 levels showed no particularities; however, in December 2020, a thoracic abdominal pelvic scan revealed lower polar right renal tissue mass with discreetly enhanced exophytic development (after injection of CP) measuring 46.3mm x 29mm x 25mm. It reaches the renal sinus and exerts a mass effect on the pelvis without dilation of the excretory cavity. No lymphadenopathy was detected. A renal metastasis of ovarian origin was initially suspected based on the surgical history. Histopathological of the Ultrasound-guided percutaneous biopsy of the right renal mass done in a private laboratory concluded in the existence of an ovarian metastasis but the re-reading at the level of the pathological anatomy laboratory of our hospital concluded in a morphological and phenotypic aspect of a metanephric adenoma of the kidney. The patient underwent an enlarged total nephrectomy and the histopathological interpretation of the specimen concluded to a metanephric renal tumor.



A B

Figure 1: A: an axial reformation of a CT scan showing lower polar right renal tissue mass with discreetly enhanced exophytic development, it reaches the renal sinus. B: enlarged total nephrectomy specimen piece

4. DISCUSSION

Metanephric adenoma (MA) is a rare, benign tumor of the kidney, that can have a microscopic appearance similar to a nephroblastoma (Wilms tumors), or a papillary renal cell carcinoma [1].

First named by Brisigotti et al in 1992, MA is an uncommon renal tumor with specific organizational characteristics. It is an uncommon renal benign tumor, derived from the renal residual organization during embryonic development [2].

Metanephric adenoma was classified as a benign renal epithelial tumor (nephradenoma) by the World Health Organization (WHO) in 1998. Currently, most studies advocated that MA is closely related to Wilms tumor and papillary renal cell carcinoma (PRCC). Some scholars considered MA as the benign counterpart of Wilms tumor. WHO (2004) indicated that MA is a kind of epithelial tumor, with small, embryonic tumor cells that have similar size and indefinite origin [2].

The Pathophysiology of the MA seems to arise from different forms of maturation arrested embryonal rests or persistent blastema or maturing nephroblastoma due to its resemblance to nephrogenic rests / maturing Wilms tumor [3].

MA is an uncommon, usually asymptomatic, incidentally discovered renal neoplasm. It represents less than 0.5% of all renal neoplasm. It can be seen in patients from pediatric to old adult age, It affects people age range 5 - 84 years (mean about 54) and preferentially affects women (60% are female). More than half of MA was asymptomatic, which was incidentally discovered by routine physical examination. Few patients may present such conditions as flank pain, abdominal mass, painless, gross hematuria, and intermittent fever. According to previous studies, polycythemia can be seen in 12% of patients, with MA cells producing and secreting erythropoietin and a variety of other factors [2].

Our 58-year-old patient did not complain of any symptoms and the tumor mass was discovered incidentally during her usual follow-up for her ovarian cancer with a hemoglobin level of 12.6 g / dl.

Metanephric adenoma can arise from any part of the kidney, more located in the cortex. These tumors mostly localize to unilateral kidneys, but can also affect bilateral kidneys.6 Tumor size ranges from 0.3 to 20.0 cm (mean 5.15 cm) with thin layer coated or without capsule. They are gray, yellowish, or brown, homogeneous, with clear surrounding kidney tissues, and can be associated with cystic change, hemorrhage, necrosis, and secondary calcification change [4]. MA always presented as well-defined, round-like, low or high-echo solid mass. Color Doppler flow imaging (CDFI) shows no significant blood flow [2].

On CT scan, these tumors are consistently well-defined, differ in size, and most have an intact capsule. They are mostly spontaneous and slightly hyperdense in comparison with the normal adjacent renal parenchyma. Calcifications of various sizes can be seen [5]. The CT features of MA lack specificity compared with renal cell carcinoma.

MA has been described as being hypointense on T1-weighted magnetic and hypointense or slightly hyperintense T2-weighted magnetic resonance imaging (MRI) scans. MRI does not further elucidate the image diagnosis of MA [6]. The definite diagnosis depends on pathological examination. The preoperative biopsy can help improve the diagnosis, it is not systematically recommended: it is an invasive procedure that exposes the patient to a probable risk of implantation metastasis since at this time the diagnosis is still unknown [2].

On gross examination, metanephric adenomas are typically circumscribed, not-encapsulated, solid masses. Histologically, these neoplasms are typically composed of small epithelial cells arranged as tightly packed small acini. A hyalinized or edematous stroma is present occasionally. 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. 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. In challenging cases, immunohistochemistry and FISH techniques are helpful. With immunohistochemistry, metanephric adenomas usually label for WT1 and CD57 and are characteristically negative for CK7 and AMACR [7]. FISH can be used for analyzing chromosomes 7, 17, and Y. Metanephric adenoma lacks the gains of chromosomes 7 and 17 and losses of Y that are typical of papillary renal cell carcinoma [8].

Most MA can be cured by simple removal of tumor or nephrectomy. For definite diagnosed cases, nephron-sparing surgery (such as tumor enucleation or partial nephrectomy) is recommended. While in clinical practice, MA is hard to be differentially diagnosed from malignant tumors, which makes the preoperative diagnosis difficult. Thus, the surgical method should be determined according to tumor location and size, and also the proficiency of surgeons. For those smaller tumors that are diagnosed, follow-up observation is allowed [2]. However, there were also case reports of nephradenoma with lymph node metastasis [9, 10] or other malignant cells [11, 12].

Historically, patients with metanephric adenomas treated with partial or total nephrectomy have an excellent prognosis. Due to its benign history and surgical treatment, the follow-up has been short and not well documented. However, one study suggested a similar follow-up of patients with MA as with those with renal cell carcinoma (RCC) due to the finding of metastasis in the 7-year-old patient described previously. Such surveillance includes clinical examination and a chest radiograph every six months as well as an abdominal CT scan after one year [13].

5. CONCLUSION

MA cannot be seen as an absolute benign lesion. For definite diagnosed cases, nephron-sparing surgery (such as tumor enucleation or partial nephrectomy) is recommended. Careful follow-up is recommended to detect the first signs of recurrence and metastasis.

6. REFERENCES

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