Incidence of Secondary Renal Tumor, Surgical Treatment for Metastatic Malignancy to the Kidney: Clinical and Pathological Features

Sekonder Böbrek Tümörü Sıklığı, Böbreğe Metastatik Malignitede Cerrahi Tedavi: Klinik ve Patolojik Özellikler

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ABSTRACT

Objective: The present study aims to evaluate the clinical and pathological features of secondary renal tumors, which constitute only a few cases of renal tumors, and to present our experience in the surgical treatment of metastatic malignant disease to the kidney.

Methods: Data of 420 patients who underwent surgical treatment with a diagnosis of renal tumor between January 2005 and December 2011 were analyzed. The clinical and pathological data of the patients with secondary renal tumor were presented.

Results: Secondary renal tumor was detected in 12 (2.8%) of 420 patients who underwent surgery with a diagnosis of renal tumor. Tumors were incidentally detected in 10 patients (83.3%), while they were detected in 2 patients (16.6%) due to symptoms of hematuria. The primary tumor site of patients with secondary renal tumor was the lung in 4 patients (33.3%), gastrointestinal tract in 4 patients (33.3%), hematopoietic system in 3 patients (25%), and genital tract in 1 patient (8.4%).

Conclusion: In renal metastatic disease, the metastasis can be removed in appropriate patients by evaluating the situation of primary disease so as not to cause morbidity. Nephrectomy may be required in some cases that occur in renal metastatic disease, such as uncontrollable hematuria. *(JAREM 2014; 4: 111-4)*

Key Words: Secondary tumors, renal tumors, metastasis

ÖZET

Amaç: Böbrek tümörleri arasında az sayıda olguyu oluşturan sekonder böbrek tümörlerinin klinik ve patolojik özelliklerini değerlendirmek, böbreğe metastatik malign hastalıkta cerrahi tedavi deneyimlerimizi sunmak.

Yöntemler: Ocak 2005 ile Aralık 2011 tarihleri arasında böbrek tümörü tanısı ile cerrahi tedavi uygulanan 420 hastanın verileri değerlendirildi. Sekonder böbrek tümörü saptanan hastaların klinik ve patoljik verileri sunuldu.

Bulgular: Böbrek tümörü tanısı ile cerrahi uygulanan 420 hastanın 12 (%2,8) sinde sekonder böbrek tümörü saptandı. Sekonder böbrek tümörlü hastaların yaş ortalaması 64,9 yıl (48-75). On hastada (%83,3) tümör insidental olarak saptanırken 2 hastada (%16,6) hematüri semptomu nedeniyle tümör saptandı. Sekonder böbrek tümörü saptanan hastaların primer tümörün yerleşim yeri 4 hastada akciğer (%33,3), 4 hastada gastrointestinal sistem (%33,3), 3 hastada hemopoetik sistem (%25), 1 hastada genital sistem (%8,4) olarak saptandı. On iki hastanın 6'sına (%50) parsiyel nefrektomi, diğer 6 (%50) hastaya da radikal nefrektomi yapıldı.

Sonuç: Böbreğe metastatik hastalıkta, primer hastalığın durumu değerlendirilerek uygun hastalarda metastazların çıkarılması, hastada moribiditeye neden olmayacak şekilde uygulanabilmektedir. Böbreğe metastatik hastalıkta meydana gelebilen kontrol altına alınamayan hematüri gibi durumlar da nefrektomi gereksinimini oluşturabilmektedir. *(JAREM 2014; 4: 111-4)*

Anahtar Sözcükler: Sekonder tümörler, böbrek tümörleri, metastaz

INTRODUCTION

Renal cell carcinomas (RCCs) constitute 3% of adult solid tumors and about 85% of all parenchymal renal tumors. Among urologic tumors, RCC ranks third in incidence after prostate and bladder tumors. They constitute 2% of deaths from tumors (1, 2).

Secondary renal tumors are tumors that raise secondary to renal involvement by tumors with a primary site of origin of another organ. In postmortem studies, metastases of primary tumors were observed in the kidneys of 7% to 12% of the patients who died from tumors (3, 4). In addition to lung tumors as the most common type, breast, hematopoietic system, and gastrointestinal tract tumors are often seen (5). Renal involvement can be multiple or solitary. Proteinuria, acute renal failure, and uncontrollable hematuria may occur due to involvement (6-10). Treatment is usually systemic treatment of the primary tumor. However, surgi-

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cal treatment models are used in the presence of uncontrollable hematuria, in solitary renal metastasis, in patients with a longer life expectancy, in cases of successful treatment of the primary tumor, and when a definitive diagnosis can not be established with regard to whether it is a primary or secondary renal tumor. Partial or radical nephrectomy can be performed as the surgical treatment.

In our study, the pathological and clinical features of the patients who underwent partial or radical nephrectomy were retrospectively analyzed. Secondary renal tumors were documented. The features of the patients and tumors, as well as surgical treatment choices, were discussed with the literature.

METHODS

The present study recruited 420 patients in whom we performed radical nephrectomy (RN) or nephron-sparing surgery (NSS) with a pre-diagnosis of renal cell carcinoma (RCC) between January 2005 and December 2011. The pathologies and clinical records of these patients were retrospectively analyzed. Histological classification was performed according to the 2004 World Health Organization scheme (Table 1). Age, sex, and clinical features of the patients and the surgical treatment method performed, as well as the type, size, and site of secondary tumors, were recorded and evaluated. Data were given as median (min-max).

Statistical Analysis

Calculations were performed using Microsoft Office Excel 2010, (Microsoft Corporation, One Microsoft Way, Redmond, WA 98052, USA). Data were given as mean and median (min-max).

RESULTS

The mean age of all patients was 57.5 years; 69 (30%) of the patients were women, while 161 (70%) were men, and the male-to-female ratio was 3:1. Nephron-sparing surgery (NSS) was performed in 27 patients (12%), while 203 (88%) underwent radical surgery. The mean tumor diameter was measured as 6.9 cm. Secondary renal tumors were detected in 12 patients (2.8%) (Table 1). The mean age of the patients with secondary renal tumor was 64.9 (range, 48 to 75), and the male-to-female ratio was 2:1. The primary tumor site of patients with secondary renal tumor was the lung (33.3%), gastrointestinal tract (33.3%), hematopoietic system (25%), and genital tract (8.4%), respectively. Four patients (33.3%) had right involvement, 4 patients (33.3%) had left involvement, and 4 patients (33.3%) had bilateral involvement. Partial nephrectomy (PN) was performed in 6 (50%) of 12 patients, and radical nephrectomy (RN) was performed in the other half (50%) (Table 2). Tumors were incidentally detected in 10 patients (83.3%), while they were detected in 2 patients (16.6%) due to symptoms of hematuria. Seventy-five of the tumors, the primary site of which was the lung, were adenocarcinomas, and 25 were squamous cell carcinomas. All (100%) of the gastrointestinal tract tumors were adenocarcinomas. All (100%) of the hematopoietic system tumors were B-cell lymphomas. The genital tract tumor was uterine leiomyosarcoma (LMS). Multiple involvement was observed in 25% of the lung tumors and in all of the hematopoietic system tumors, while solitary involvement was observed in all of the other tumors. The mean tumor diameter of the secondary tumors was 3.9 cm (range, 2 to 7). The mean tumor diameter was measured as 4.5 cm (range, 2 to 6) in the tumors, the primary site of which was lung; 5.2 cm (range, 4 to 6) in those the primary site of which was the gastrointestinal tract; and 2.6 cm (range, 2 to 6) in those the primary site of which was the hematopoietic system. The mean diameter of the tumor, the primary site of which was the genital tract, was 7 cm. While partial nephrectomy was performed in 75% of the lung tumors and in all of the hematopoietic system tumors, radical nephrectomy was performed in all of the gastrointestinal tract tumors and in the genital tract tumor (Table 3).

Table 1. Histopathological distribution of the tumors

Histopathological type	n	(%)
Renal Cell Carcinoma Subtypes	350	83.4
Angiomyolipoma	10	2.4
Renal oncocytoma	12	2.8
XGP	36	8.5
Metastatic diseases	12	2.8

XGP: xanthogranulomatous pyelonephritis

Table 2. Features of the patients and tumors

Age (Years)	64.9	(48-75)
Sex	n	(%)
F	4	33.3
M	8	66.6
Surgical Treatment		
Partial	6	50
Radical	6	50
Primary Tumors		
Lung	4	33.3
Colon	4	33.3
Hematopoietic system	3	25
Uterus	1	8.4
Involvement		
Right	4	33.3
Left	4	33.3
Bilateral	4	33.3

F: female; M: male

DISCUSSION

Secondary renal tumors raise secondary to renal involvement by tumors, the primary site of origin of which is another organ. In postmortem studies, metastases of primary tumors were observed in the kidneys of 7% to 12% of patients who died from tumors (3, 4). In addition to lung tumors as the most common type, breast, hematopoietic system, and gastrointestinal tract tumors are often seen (5). Although secondary renal tumors are detected as small hypovascular tumors in radiological examinations, their differential diagnosis from primary renal tumors with radiological methods is quite difficult (4, 8, 9).

Table 3. Histopathological and clinical features of the secondary tumors

	M/S	A/S	PT	Histology	Symptom	Tumor Diameter	Surgical Model
1.	72/M	Lung	Adenocarcinoma	Incidental	3	PN	S
2.	65/M	Lung	Adenocarcinoma	Incidental	2	PN	S
3.	58/M	Lung	Adenocarcinoma	Incidental	4/3	PN	M
4.	56/F	Lung	Squamous cell carcinoma	Hematuria	6	RN	S
5.	62/M	Colon	Adenocarcinoma	Incidental	4	RN	S
6.	64/M	Colon	Adenocarcinoma	Incidental	5	RN	S
7.	74/M	Colon	Adenocarcinoma	Incidental	6	RN	S
8.	48/F	Colon	Adenocarcinoma	Incidental	6	RN	S
9.	74/M	Hematopoietic system	B-cell lymphoma	Incidental	2/2	PN	M
10.	67/F	Hematopoietic system	B-cell lymphoma	Incidental	2/3	PN	M
11.	75/M	Hematopoietic system	B-cell lymphoma	Incidental	3/4	PN	M
12.	67/K	Uterus	Leiomyosarcoma	Hematuria	7	RN	S

A/S: age/sex; PT: primary tumor; M/S: multiple/solitary

In our study, the rate of secondary renal tumor was 2.8% in patients who underwent nephrectomy. In keeping with the literature, the most common tumors were lung, gastrointestinal tract, and hematopoietic system tumors, while renal involvement by uterine leiomyosarcoma, which is a very rare genital tumor, was detected.

Secondary renal tumors are mainly asymptomatic and incidentally detected by imaging methods performed during a routine checkup. Symptomatic patients present with acute renal failure or hematuria that arises due to renal involvement by the tumor. Renal involvement can be multiple or solitary.

Treatment of secondary renal tumors is usually systemic treatment of the primary tumor. However, surgical treatment models are administered in the presence of uncontrollable hematuria and when a definitive diagnosis can not be established with regard to whether it is a primary or secondary renal tumor. Partial or radical nephrectomy can be performed as the surgical treatment. Partial nephrectomy is more preferred in patients with multiple and bilateral involvement. However, in the case of uncontrollable hematuria, radical nephrectomy is performed when the tumor site and size are not conducive to partial nephrectomy.

In our study, tumors were incidentally detected in the majority of patients. Renal involvement was generally in the form of a solitary lesion. Surgical treatment was preferred, since a radiological differential diagnosis could not be made in all of the patients. Six patients underwent partial nephrectomy, while the other 6 patients underwent radical nephrectomy. Two of the six patients underwent radical nephrectomy due to uncontrollable hematuria, and the other 4 patients underwent radical nephrectomy, since the tumor site was not conducive to partial nephrectomy.

The limited number of studies on secondary renal tumors in the literature renders our study valuable. The most important drawback of the study is that we could not mention the post-operative follow-ups of our patients due to inadequacy of the clinical records.

CONCLUSION

Secondary renal tumors are rarely encountered in clinical practice. Surgical decisions should not be hurried. If surgery is mandatory, organ-sparing approaches should be preferred at the highest possible level.

Ethics Committee Approval: Ethics committee approval was received for this study from the ethics committee of Dr. Lütfi Kırdar Kartal Training and Research Hospital (11.02.2014).

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