

ORIGINAL ARTICLE

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The renal neoplastic lesions in non-functioning kidney patients who underwent simple nephrectomy

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Abstract

The simple nephrectomy is usually performed in daily urology practice for the non-functioning kidney. The aim of this study is to determine the incidental malignancy rate of the patients who underwent nephrectomy procedure. In total, 258 patients were included in the study. The patients who underwent simple nephrectomy and diagnosed as renal tumor between January 2003 and March 2016 for the non-functioning kidney at our department were recorded. There were 258 patients in this study. Of these patients; 123 were male and 134 were female patients. The mean age of the patients' was 52.33±17.63 years. The presence of stone formation was detected in 92 patients (35.65%). The renal malignancy was reported in 9 patients. Among the patients with malignancy; 2 patients were female and 7 patients were male. The mean age of the patients was 54.77±8.81 years. The pathological examination revealed that 6 patients were transitional cell carcinoma (TCC) of the renal pelvis, 2 patients were renal cell carcinoma, one patient was cystic nephroma. Interestingly, nephrolithiasis was detected only in one patient. The prevalence of all malignancy and the malignant tumor was 3.48% and 3.10% in this study. The final pathology showed that there is a risk of malignancy for the patients with the non-functioning kidney. The clinicians should be aware that the patient may be diagnosed as renal tumor after pathological examination.

Keywords: Nephrectomy, neoplasia, prevalence

Introduction

Nephrectomy is a surgical procedure for removal of the kidney for some diseases such as injury, congenital disorders, renal tumors, polycystic disease and serious kidney infections [1]. Nephrectomy has many types; partial, simple and radical. In open simple nephrectomy technique; 15-25 cm flank incision is made, renal vascular structures were clamped and cut, the ureter is cut between bladder and kidney. The non-functioning kidney was defined; paper thin parenchyma on ultrasound and or no contrast visualization in the collecting system on intravenous urography and or renal function less than 10% on nuclear function tests [2]. The effect of chronic inflammation on different cancer types has been demonstrated in recent years. In addition, renal stones are known predisposing factor for the development of upper urinary tract carcinoma [3].

The primary renal pelvis neoplasms are very rare and most of these pathologies are malignant [4]. Transitional cell carcinoma

is the most common form of renal pelvis malignancy, followed by squamous cell carcinoma (SCC). Squamous cell carcinoma is often associated with nephrolithiasis or infection; however, the incidence of coexisting urinary stone and SCC varies from 18% in the United States to 100% in Hong Kong.

The aim of this study was to report the prevalence of renal malignancies in our simple nephrectomy series.

Material and Methods

The patients who had undergone simple nephrectomy between January 2003 and March 2016 for the non-functioning kidney at our department were included in the study. The clinical data of the patients and pathology reports were reviewed retrospectively. The presence of stone is recorded.

All the patients were treated with simple nephrectomy. Surgical techniques were open and laparoscopic. All the pathology specimens were reviewed by two genitourinary pathologists in our pathology department. In the pathological examination; histologic subtype and grade of the tumor, invasion of the submucosal area, lympho-vascular invasion and extent of the tumor into renal parenchyma and gerota fascia were noted. Renal cell carcinomas were reported according to the TNM and Fuhrman grade classification.

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Results

There were 258 patients in the present study. Of these patients; 123 was male and 135 was female patients. The mean age of the patients was 52.33±17.63 years (Table-1). The pathological examination reported renal malignancy in 9 patients, xanthogranulomatous pyelonephritis in 13 patients, cyst hydatid in 2 patients, tuberculosis in 2 patients, the polycystic renal disease in 2 patients, transplanted kidney with rejection in 4 patients and chronic pyelonephritis in 226 patients. The presence of stone formation was detected in 89 patients (34.76%).

Among the patients with malignancy; 2 patients were female, and 7 patients were male. The mean age of the patients were 54.77±8.81 years. In the pathological examination; 6 patients were transitional cell carcinoma (TCC) of the renal pelvis, 2 patients were renal cell carcinoma, one patient was cystic nephroma (Table-1). Interestingly, nephrolithiasis was detected only in one patient. The prevalence of all malignancy and the malignant tumor was 3.48% and 3.10% in this study.

Table 1. The patients' characteristics and pathological reports

Age (Mean±SD)	52.33±17.63
Gender n (%)	258(100)
• Male	123(47.67)
• Female	235(52.32)
Pathological reports n (%)	
Xanthogranulomatous Pyelonephritis	14(5.42)
Chronic Pyelonephritis	226(87.60)
Cyst Hydatid	2(0.7)
Tuberculosis	2(0.7)
Malignancy n (%)	9(3.48)
• Transitional Cell Carcinoma	6(2.32)
• Renal Cell Carcinoma	2(0.7)
• Cystic Nephroma	1(0.3)

Discussion

Tumors of the kidney and renal pelvis account approximately 3% of all new cancer cases and cause of cancer deaths [5]. The widespread use of imaging techniques caused the increase of the incidence at all stages. The authors reported the incidence of renal mass and malignant renal mass was 2.3% and 0.8% at autopsy between 1991 and 2001. The diagnosis of malignancy in the non-functioning kidney is harder than normal kidney because contrast imaging techniques cannot reveal the main pathology [2]. In addition, tumors in functional kidneys may present with clinical symptoms and radiological imaging studies with contrast can show the main pathology.

Some authors think that there is an association between urinary stone and upper tract carcinoma [3]. They analyzed 88 nephrectomy specimens and found the prevalence of neoplastic tissue was 21.5% (19 patients). Of these patients, 13 were female

and 6 were male and all of the patients had multiple stones. The histological examination revealed that there was 14 non-invasive and 5 invasive lesions. Another study from India, the authors investigated 18 patients with stone associated renal pelvic malignancies and found 15 was squamous cell carcinoma, 2 was transitional cell carcinoma and one patient was adenocarcinoma [4]. The mean age of the patients was 61.5 years and male to female ratio was 2.6. Zengin et al [2], reported the prevalence of renal tumors and renal malign tumors was 11.34 and 9.27% respectively in patients who underwent simple nephrectomy. The prevalence of malignancy was lower than the literature and only one patient had nephrolithiasis. In addition, no patient was diagnosed as squamous cell carcinoma.

Cystic nephroma is a rare benign lesion of the kidney [6]. The most common presentations are a bimodal distribution in children between three months and two years and in adults over 30 years of age. The first original report was described by Edmunds in 1892 [7].

There are some limitations in this study. The present study includes a small number of patients with a retrospective design. Risk factors for urinary system malignancy, smoking and family history were not evaluated for the patients.

Conclusion

In conclusion, there is a risk of malignancy in patients whom simple nephrectomy was performed. The clinicians should be considered that some patients with non-functioning kidney can be reported renal tumor after pathological examination.

Competing interests

The authors declare that they have no competing interest.

Financial Disclosure

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