



Original Article

Histopathological pattern of adult renal tumours in a tertiary cancer center

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ABSTRACT

Background: Renal tumours are 16th most common malignancies in the world accounting for 2.2% of all new malignancies and 1.8% of all cancer deaths. Histopathological classification of renal tumours along with tumour grade and stages is proven to have prognostic value.

Materials and Methods: This was a retrospective study conducted in Department of Pathology at B.P.Koirala Memorial Cancer Hospital Bharatpur from January 2017 to December 2019 including cases of partial and radical nephrectomies of patients more than sixteen years of age.

Results: Total 78 nephrectomy specimens were received out of which 70 (89.7%) consisted of malignant tumour and 8 (10.3%) were benign lesions. Clear cell type renal cell carcinoma was the most common malignant tumour consisting of 57 (81.4%) cases of renal cell carcinoma, followed by papillary type 9 (12.9%), Chromophobe (4.3%) and one case (1.3%) of Multiloculated Cystic Renal Neoplasm was noted. Renal cell carcinoma was seen in age range of 26 to 80 years with majority of patients more than 50 years of age, while a small peak (14.3%) was noted in female patients of 31 to 40 years of age.

Conclusion: This study found increased incidence of renal cell carcinoma among female patients of 31 to 40 years of age in contrast to studies done in the Western population.

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INTRODUCTION

Renal tumors are the 16th most common malignancies in the world, comprising of 2.2% of all new malignant tumors and 1.8% of all cancer deaths. The most common age at presentation is from 60-70 years of age and is more common in male patients.¹ Renal tumour in adults can be subtyped into different groups. Histopathological classification of renal tumours along with molecular signature of the tumour is proven to have prognostic and predictive significance for newer therapeutic approach.^{2,3}

Grading of renal cell carcinoma (RCC) has been recognized as a key prognostic factor. Fuhrman grading has been

replaced by four-tiered WHO/ International Society of Urological Pathology (ISUP) grading system. This grading system has been validated for clear cell and papillary RCC. Correlation between grade and outcome is not proven in case of Chromophobe RCC and hence not graded according to current guidelines.⁴⁻⁷

The current study was done to inspect the pattern of adult renal tumors in a tertiary cancer center in Nepal considering the patient demographics, pathological classification, tumor grade and stage at presentation.

MATERIALS AND METHODS

This was a retrospective study done in the Department of Pathology at B.P.Koirala Memorial Cancer Hospital, Bharatpur from January 2017 to December 2019, including cases of partial nephrectomy and radical nephrectomy.

Patients aged more than 16 years were included in the study. The nephrectomy specimen received in the pathology department were properly labeled and subjected to grossing and histopathological examination.

All cases were routinely fixed in 10% buffered formalin. Sections were taken from the mass, pelvis, ureter, renal vessels, capsules and lymph nodes if present.⁸ Four micron sections were cut and hematoxylin and eosin staining was performed.⁹ ISUP grading system was used to grade renal cell carcinoma.⁴⁻⁶ Renal cell carcinoma was classified according to WHO Classification of tumours of the Urinary System and Male Genital Organs, 4th Edition.⁶ The 8th Edition of the American Joint Committee on Cancer TNM staging system was used for cancer staging.¹⁰

RESULTS

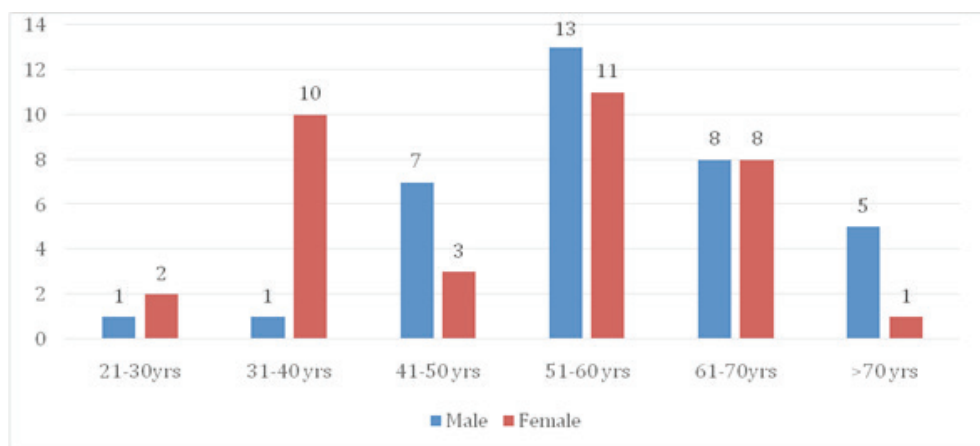


Figure 1: Age distribution of patients with Renal Cell Carcinoma

Table 1: Histological diagnosis of nephrectomy specimen

Diagnosis	No of cases	Percentage
Clear cell RCC	57	73.1%
Papillary RCC	9	11.5%
Chromophobe RCC	3	3.8%
Multiloculated Cystic Renal Neoplasm	1	1.3%
Angiomyolipoma	3	3.8%
Oncocytoma	1	1.3%
Chronic Pyelonephritis	2	2.6%
Renal Abscess	1	1.3%
Acute Pyelonephritis	1	1.3%
Total	78	100%

Table 2: Histological subtypes of Renal cell Carcinoma

Renal Cell Carcinoma	No of cases	Percentage
Clear Cell Type	57	81.4%
Papillary Type	9	12.9%
Chromophobe	3	4.3%
Multiloculated Cystic Renal Neoplasm	1	1.4%
Total	70	100%

A total of 78 nephrectomy and Partial nephrectomy were performed in BPKMCH from Jan 2017 to Dec 2019. Within the study population 89.7% had malignant tumour while 10.3% had benign lesion. Benign lesions consisted of three cases of Angiomyolipoma, one case of Oncocytoma, two cases of chronic pyelonephritis and one case each of renal abscess and acute pyelonephritis (Table 1). Three cases of Angiomyolipoma were reported, all in female patients ranging from 36 to 68 years of age. Single case of Oncocytoma was noted in a 55 year male. Within the malignant tumours Clear cell type was the most common histological subtype comprising of 57 (81.4%) of cases followed by Papillary, Chromophobe and Multiloculated Cystic Renal Neoplasm, consisting of 9(12.9%), 3(4.3%) and 1 (1.4%) cases respectively (Table 2).

The male to female ratio within the malignant tumours was 1:1. Renal cell carcinoma was noted in age range of 26 to 80 years with a mean age of presentation at 54.2 years. The majority of patients (65.7%) were more than 50 years of age while a small peak (14.3%) was noted in female patients from 31 to 40 years of age (Fig 1).

The tumour size of RCC ranged from 3cm to 13.5cm with a mean of 7.2cm.

The majority of patients (53.7%) had WHO/ISUP grade 2 tumour while Grade 1 consisted of 22.4%, Grade 3 consisted of 13.4% and 10.5% of patients had Grade 4 tumour (Table 3). The majority of patients (77.1%) presented at early stage (T1&T2) while 18.5% presented with T3 and 4.2% presented with T4 disease (Table 4).

DISCUSSION

In the current study male to female ratio of adult renal tumours was 1:1, which was similar to Talic et al with ratio of 1.3:1.¹¹ A study done in Nepal by Sidharth et al¹² reported a M: F ratio of 1.7:1, while in studies done in the Indian subcontinent by Narupareddy et al¹³ and Latif et al¹⁴ observed M:F ratio of 2:1, and Mahajan et al¹⁵ reported ratio of 2.3:1. In a study done in Saudi Arabia by Albasri et al found a ratio of 2:1.¹⁶ In a multicenter study including centers from France, Italy, Netherlands and USA, Patard et al also found a ratio of 2:1.¹⁷

The age at presentation ranged from 26 to 80 years of age with mean age of 54.2, which was similar to other studies with mean age at presentation ranging from 51.4 to 55.7 years.^{2,12,15,16,18-20} Studies by Patard et al¹⁷ in European and American population and Gudbjartsson et al²² in Icelandic population found a higher age of onset with 61 and 64 years respectively. In this study peak was noted in female patients (14.3%) from 31 to 40 years of age, similar to Albasri et al where 19% of patients were less than 40 years of age.¹⁶ The mean size of tumour at presentation was 7.2cm, similar to findings of Sidharth et al¹² Albasri et al¹⁶, Bilal et al¹⁸ and

Table 3: ISUP grade of Clear Cell and Papillary Renal Cell Carcinoma

ISUP Grade	Clear Cell	Papillary	Total
1	14	1	15
2	31	5	36
3	7	2	9
4	7	0	7

Table 4: Pathological stage of Renal Cell Carcinoma

Pathological stage	Number (Percentage)
pT1	36(51.4%)
pT1a	11(15.7%)
pT1b	25(35.7%)
pT2	19(27.1%)
pT2a	13(18.5%)
pT2b	6(8.5%)
pT3	12(17.1%)
pT3a	10(14.3%)
pT3b	2(2.8%)
pT4	3(4.3%)

Gudbjartsson et al²². The predominant histological type of RCC was Clear Cell type consisting of 81.4% of all cases which was similar to studies by Mahajan et al¹⁵ and Gudbjartsson et al²². The majority of patients were ISUP grade 2 (53.7%) followed by Grade 1 (22.4%) similar to Bilal et al¹⁸ while Patard et al²³ show Grade 2(36.7%) followed by Grade 3 (34.4%).

Most of the cases (77.1%) presented early with T1 and T2 disease similar to Siddharth et al¹², Patard et al¹⁷ and Agnihotri et al²¹, while studies done by Patard et al²³ and Gudbjartsson et al²² show patient presenting commonly with higher stage disease (T3&T4), 47.3% and 59.3% respectively.

CONCLUSIONS

Renal cell carcinoma is the commonest malignant tumour in the kidney. This study showed increased incidence of renal cell carcinoma in young female patients from 31 to 40 years of age. Further studies in our population are required to corroborate these findings and possible reasons behind it.

Conflict of interest: None

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