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Original Research Article

Histopathological Evaluation of Malignant Adult Renal Tumors-A Study of Specialized Tertiary Care Center

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Abstract: ***Background:*** According to the recent World Health Organization (WHO), renal cell carcinomas (RCCs) that primarily affect adults and 2.2% of all new malignancies and 1.8% of all cancer deaths. Majority of the cases, the diagnosis of RCCs and its subtype can be based on histomorphological evaluation. Accurate pathological classification along with staging and grading of the tumor are necessary for prognosis and various therapeutic options. ***Materials and Methods:*** It was a retrospective observational study. This study conducted in histopathology department of the Center for Kidney Disease & urology (CKD & Urology) Hospital, Dhaka, Bangladesh. The study period was eight month from February 2021 to September 2021. The specimens were both partial and total nephrectomy sample of more than 38 years of aged patients. ***Results:*** Total 62 nephrectomy specimens were received. Fifty seven (57) cases were malignant tumor and five cases were benign lesions. Majority of malignant tumor consisting of clear cell type renal cell carcinoma 37 (64.91%), followed by papillary type 12 (21.05%), Chromophobe (8.77%), two cases (3.5%) were sarcomatoid cell type and one case (1.75%) of Multiloculated Cystic Renal Neoplasm was noted. Renal cell carcinoma was seen in age range of 38 to 78years with 32 (56.14%) patients more than 50 years of age. Total 42 (73.68%) cases were ISUP Grade 1 and 2 and majority cases were (66.66%) presented at AJCC stage (pT_2). ***Conclusion:*** In conclusion we observed significant increased clear cell type renal cancer in our institution based population. There was similar male to female ratio, mean tumor size as well as Grade 1, 2 and Stage pT_2 as compared to other studies.

Keywords: Malignant, Renal cell Carcinoma, ISUP Grading, AJCC staging.

INTRODUCTION

Renal cell carcinoma (RCC) is a group of heterogeneous tumors histopathologically and on the basis of molecular as well as genetic studies. Renal tumor in adults can be subtyped into different groups. The most common subtypes of RCC are clear cell RCC, papillary RCC and chromophobe RCC respectively [1]. These classifications are proven to have prognostic and predictive significance for newer therapeutic approach [2, 3]. The most common age at presentation is from 60-70 years of age and is more common in male patients [2].

One of the recognized important prognostic factors is grading of renal cell carcinoma (RCC). Fuhrman grading has been recently replaced by four-tiered WHO/ International Society of Urological Pathology (ISUP) grading system. This grading system has been applied for clear cell and papillary RCC. Correlation between grade and outcome is not

established in case of Chromophobe RCC [4-8]. According to the AJCC staging most of the reported cases (77.1%) presented at early stage of disease [9-11].

The present study was done to investigate the pattern of adult malignant renal tumors in a tertiary care specialized center in Dhaka, Bangladesh considering the patient demographics data, histopathological classification, tumor grade and stage at presentation.

MATERIALS AND METHODS

It was a retrospective observation study. This study was done in histopathology department of CKD & Urology Hospital, Dhaka, Bangladesh. Duration of the study period was eight month from February 2021 to September 2021. All the specimens were both partial and total nephrectomy sample. The lowest age of the patients was 38yrs and its above was included in this study. After surgery the specimen were kept jar containing 10% buffer formalin with proper identification. The gross examination of the specimen were done and special attention were given for size of tumor, tumor focallity, location in the renal pole, hemorrhage, necrosis and gross involvement in the renal capsule, adrenal glands, renal vessels and ureter, regional lymph nodes (if any) and perinephric fatty tissue [12, 13]. After processing of the specimen in the laboratory the sections were cut in 3-4 micron and routine hematoxylin and eosin staining was done [12].

For grading and classification of RCC we followed the ISUP grading system (The International Society of Urological Pathology grading classification for renal cell carcinoma) and WHO classification of renal cell carcinoma respectively [8]. Pathological staging (pTNM) were also done by using the 8th Edition of the American Joint Committee (AJCC) [9-11].

RESULTS

Sixty two (62) cases were included this study. These were done in CKD & Urology Hospital, Dhaka, Bangladesh during the period of February 2021 to September 2021. Among those 42 (67.7%) cases were total nephrectomy specimen and 20 (32.2%) cases were partial nephrectomy specimen.

Fifty seven (57) patients had malignant tumor. Other five total nephrectomy specimen were benign, out of these three cases were angiomyolipoma and two were oncocytoma.

We evaluated fifty seven (57) malignant cases. Thirty (30, 52.63%) cases were male and 27 (47.36%) cases were female. The male to female ratio was 1:1. On grossing, all the tumor were unifocal and 40 (70.17%) cases were involved in upper and mid region of kidney and remaining 17 (29.82%) cases were in lower pole region of kidney. The tumor size ranged from 2.5 to 15.5cm with a mean of 7.5cm.

The lowest age of the patients noted in the study was 38yrs and 78yrs was the highest age limit.

Thirty (32, 56.14%) cases were more than 50yrs of age and mean age of presentation was 56.5yrs.

Out of all malignant tumors Clear cell type was the most common histological subtype comprising of 37 (64.91%) of cases followed by Papillary 12 (21.05%), Chromophobe 05 (8.77%), Sarcomatoid type 02 (3.5%) and Multiloculated Cystic Renal Neoplasm 01 (1.75%) (Table 1).

Table 1: Renal cell carcinoma (RCC) histopathological subtypes (n=57)

Renal cell carcinoma (RCC)	Number of cases (percentage)
Clear cell type	37 (64.91%)
Papillary	12 (21.05%)
Chromophobe	05 (8.77%)
Sarcomatoid	02 (3.5%)
Multiloculated Cystic Renal Neoplasm	01 (1.75%)
Total	**57 (100%)**

Most of the cases 42 (73.68%) ISUP Grade 1 and 2 while Grade 3 consisted of 14.03% and 12.28% of patients had Grade 4 tumor (Fig 1).

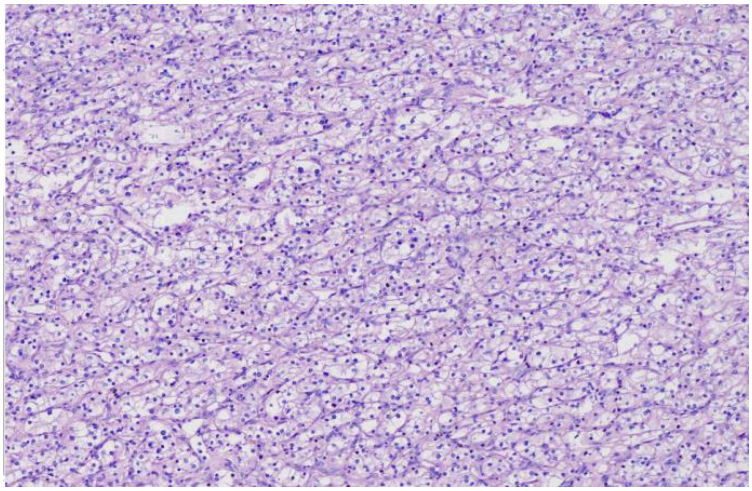

Fig. 1: H & E stain image (ISUP grade 1)

Thirty eight (66.66%) presented at AJCC stage (pT_2) while 8.77% (05) with (pT_1), 14.03% (08) presented with pT_3 and 12.28% (07) presented with pT_4 disease (Table 2).

Table 2: AJCC (8th edition) pathological stage of RCC (n=57)

AJCC pathological stage	Number (percentage)
pT_1	05 (8.77%)
pT_2	38 (66.66%)
pT_3	08 (14.03%)
pT_4	07 (12.28%)

DISCUSSION

In our short duration of study, the age presentation ranged from 38 to 78 years with mean age of 56.5yrs, which was similar to other studies with mean age at presentation ranging from 51.4 to 55.7 years [14-17]. Studies by Patard *et al.,* [16] in European and American population and Gudbjartsson *et al.,* [21]. The male to female ratio of adult renal tumours was 1:1, which was similar to Talic *et al.,* with ratio of 1.3:1 [15]. A study done in Nepal by Ranjan *et al.,* [22] reported a M: F ratio of 1.7:1, while in studies done in the Indian subcontinent by Latif *et al.,* [17] observed M:F ratio of 2:1, and Mahajan *et al.,* [18, 19] reported ratio of 2.3:1. In a study done in Saudi Arabia by Albasri *et al.,* found a ratio of 2:1 [20]. In a multicenter study including centers from France, Italy, Netherlands and USA, Patard *et al.,* also found a ratio of 2:1 [16]. That showed slightly higher in male presentation.

In one study of Nepal, peak was noted in female patients from 31 to 40 years of age, similar to Albasri *et al.,* where 19% of patients were less than 40 years of age [20, 22].

In the study, the mean size of tumor was 7.5cm at presentation, similar to findings of Ranjan *et al.,* [22] Albasri *et al.,* [22] and Gudbjartsson *et al.,* [21].

The histological type of RCC in our study was clear cell type consisting of 64.91% and next dominant cases were papillary subtype 21.05%. All other cases which was close to studies by Mahajan *et al.,* [19] and Gudbjartsson *et al.,* [21].

The majority of our patients were ISUP Grade 1 and 2 (73.68%) followed by Grade 3 (14.03%) nearly similar to Bilal *et al.,* [23] while Patard *et al.,* [26] show Grade 2 (36.7%) followed by Grade 3 (34.4%). The Grade 3 cases were higher in Patard *et al.,* in comparison of our result.

Majority of our cases (66.66%) presented early with pT_2 stage. The pathological stage pT_1 and pT_2 diseases were similar to Ranjan *et al.,* [22], Patard *et al.,* [16] and Agnihotri *et al.,* [25], while studies done by Patard *et al.,* [26] and Gudbjartsson *et al.,* [21] show patient came with higher stage disease (pT_3 and pT_4), 47.3% and 59.3% respectively.

CONCLUSIONS

Renal cell carcinoma is the commonest adult malignant neoplasm of the kidney. In our study there was significant increased clear cell type renal cancer in our institution based population. There was similar male to female ratio, mean tumor size as well as ISUP Grade 1, 2 and AJCC Stage pT_2 as compared to different studies.

Conflict of Interest: None.

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