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Clinicohistopathological Spectrum of Adult Renal Tumours: 3yrs Retrospective Study at a Tertiary Care Centre

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Abstract

Background: The broad range of kidney neoplastic lesions that are classified as primary renal tumours includes patterns that are comparatively different in children and adults. Both benign and malignant primary renal tumours are possible. These neoplasms account for two to three percent of all adult malignancies and 80–85% of all primary malignant neoplasms of kidney.

Aim and Objective: Finding relative frequencies of various adult renal tumours and examining clinicohistopathological features and their variations in patients under study are goals of this research.

Methods: This retrospective investigation was carried out at tertiary care facility on all patients who were diagnosed with kidney tumour based on histology between 2020 and 22. Information was gathered about clinical presentation, pathological features, and demographics of patients. Histological section employed standard haematoxylin and eosin stain for pathological investigation.

Results: Over period of three years, among 50 patients, 63% were males and 37% females. Most tumours were malignant: 88% vs. 12% benign. Peak incidence was found more in 6-7th decade. Renal cell carcinoma (RCC) was most prevalent type of cancerous tumour. Angiomyolipoma, oncocytoma, and adult cystic nephroma were examples of benign renal tumours.

Discussion: This is single center study from tertiary care center. Range of adult renal tumours found in this study is in line with earlier research findings. We identified both benign and malignant tumours in our investigation.

Conclusion: With a thorough literature analysis and focus on each tumour category, this article provides an overview of range of adult renal tumours in tertiary care centres.

Keywords: Renal; Benign; Malignant; Adult.

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INTRODUCTION

In the world, kidney cancer ranks 14th in terms of frequency,[1] and for the next 20 years, it is predicted to rise at one of the highest rates.[2] Worldwide, the number of cases of renal cell cancer in both men and women is rising.[3] There is a paucity of information on kidney cancer locally, despite the anticipated increase in cases worldwide.[4]

Renal cell carcinoma, the most fatal of the main genitourinary malignancies, accounts for 3% of all adult cancers in Western countries; approximately 25% of patients pass away from the illness.[5,6]

SUBJECTS AND METHODS

We examined and investigated the cases that were histologically diagnosed with renal tumours at tertiary care centres between January 2020 and December 2022 (a period of three years). Patients without sufficient medical information or those under the age of 18 were excluded from the study.

Study epidemiological data on kidney tumours was gathered from the appropriate patient's case sheet in the record area, taking into consideration variables such as age, sex, signs and symptoms, gross appearance of the tumour, etc.

METHODS

After fixing the specimen in ten percent buffered neutral formalin for 24 hrs, the gross appearance of the specimen was studied. After processing, paraffin wax was used in making tissue blocks. Thin portions of the paraffin-embedded blocks were cut and stained.

Pathological analysis was conducted in histopathological section using routine haematoxylin and eosin stain.

RESULTS

Fifty patients received a kidney tumour histological diagnosis over the course of the three year period; males were more likely to have this diagnosis. There were 38% (19) females and 62% (31) males, for a male to female ratio of 1.6:1.

Mostly between the ages of 46 and 75, the age distribution peaked in the sixth and seventh decades. Of the 50 individuals that were part of the trial, 45 (90%) had symptoms, and 5 (10%) had none at all.

Table 1. Gender wise distribution

Gender	No. of patients	Percentage %
Male	31	62%
Female	19	38%

Table 2. Age wise distribution

Range	No. of patients	Percentage %
46-50	7	14%
51-55	5	10%
56-60	2	4%
61-65	14	28%
66-70	10	20%
71-75	12	24%

Table 3. Presenting symptoms and concomitant diseases.

Symptoms and coexisting disease	No. of patients	Percentage %
Asymptomatic	5	10%
Flank pain	9	18%
Hematuria	7	14%
Flank mass	6	12%
Urinary tract symptoms including burning micturition and difficulty in micturition	6	12%
Presence of stones	3	6%
Hypertension	5	10%
Weight loss	4	8%
Renal impairement	3	6%
Fever	2	4%

Table 4. Malignant vs benign

Type of tumor	No. of patients	Percentage
Malignant	46	92%
Benign	4	8%

Among the symptomatic group, flank pain was most common pertaining to 9 patients (18%) followed by hematuria which was seen in 7 patients (14%). In our study both malignant and benign tumor was found, malignant found in 46 cases (92%) and benign found in 4 cases (8%). Few cases required partial nephrectomy, but the majority of cases underwent radical nephrectomy.

The tumor being more common on left side (84%) seen in 42 patients and on right sided was seen in 8 patients (16%). We have not found any case of

bilateral renal tumor. Among the cases, Renal cell carcinoma (RCC) was the commonest type seen in 36 cases (72%).

DISCUSSION

Renal cell cancer accounts for two to three percent of all cancer cases, with a higher frequency in the West. According to the 2009 United States Cancer Statistics Report, the estimated incidence of kidney and renal pelvis cancer was 3% for women and 5% for men.[7] It was one of the top 10 leading causes of cancer related death and was placed seventh and eighth among the top ten cancers in males and females, respectively.[8]

The principal illness that affects the elderly

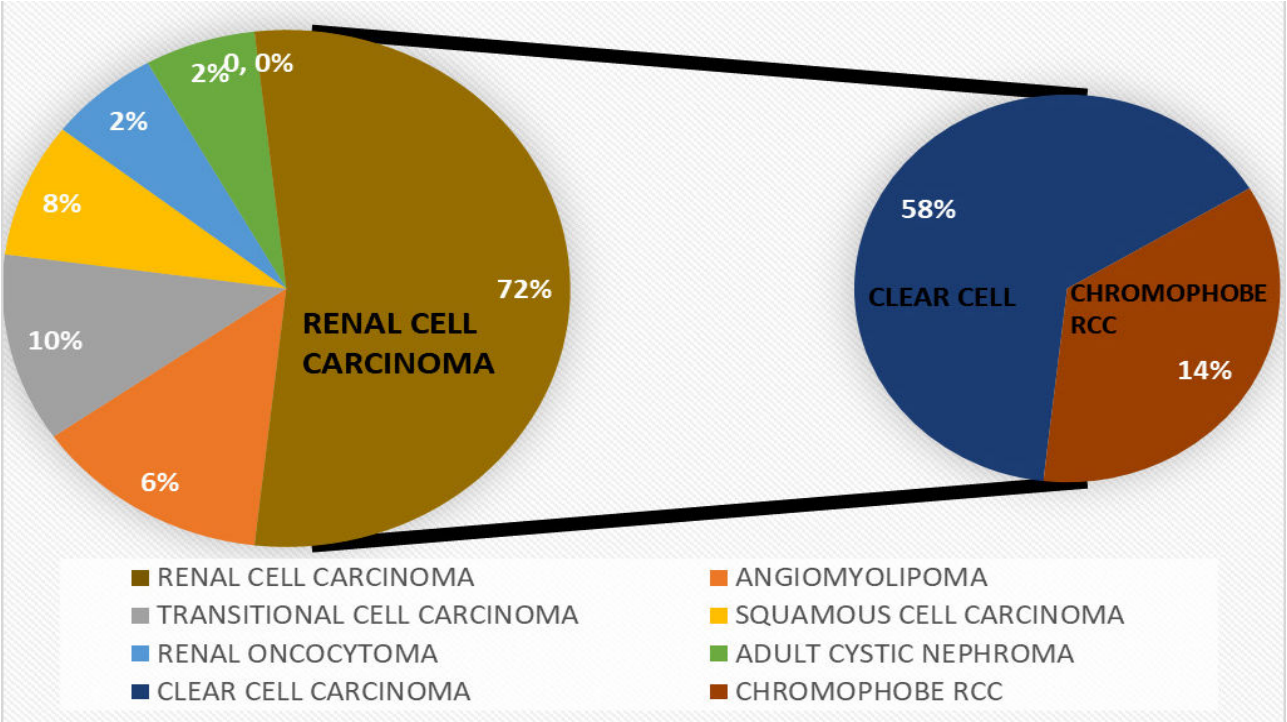


Chart No. 1 Distribution of renal tumors-pathological characterisation (pie diagram)

is renal cell carcinoma (RCC), which usually manifests in the sixth and seventh decades of life.[9-10] Roughly 25–30% of kidney tumours are discovered by accidental radiologic studies and are asymptomatic.[11] For the majority of its progression, renal cell carcinoma (RCC) may remain clinically occult.[11]

Hematuria (40%) and flank pain (40%) along with a palpable tumour in the belly or flank (25%) make up the typical trio.[11] Additional symptoms include night sweats, malaise, weight loss (33%), fever (20%), hypertension (20%), hypercalcemia (5%), and varicocele (2% of men), which is typically left-sided and caused by blockage of the testicular vein.[12] The widespread use of abdominal computed tomography (CT) and ultrasound has led to a rise in the unintentional discovery of renal cell carcinoma (RCC) in recent years.[13-19]

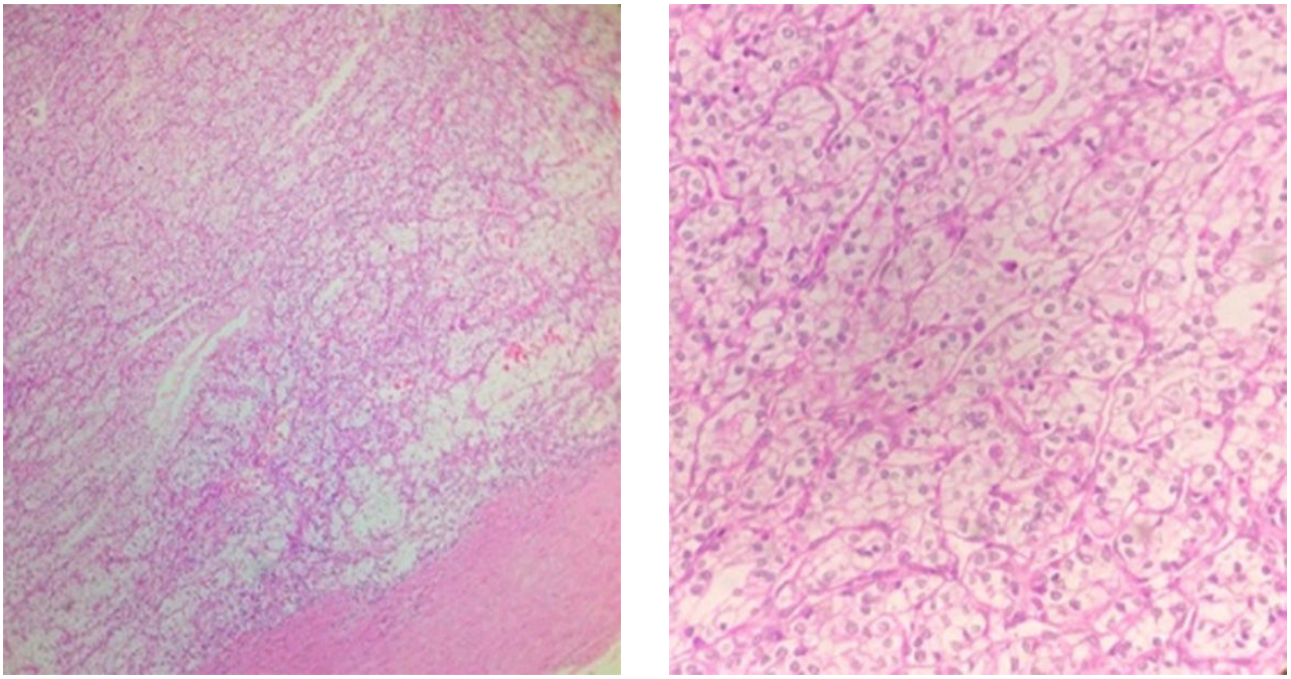
Previous investigations by Bayapa et al., Amin et al., Eggener et al., and Hatimota et al. revealed higher frequency with male to female ratio of approximately 15:1. Our study found that the tumour was more common in males with a male:female ratio of 1.6:1, peak incidence in the sixth or seventh decade. The prevalence was 1.6 to 1, according to the 2005 National Cancer Registry Report. With a male to female ratio of 1.5:1 and a mean age of occurrence in the sixth decade, Dinelle et al.'s results were comparable to our own. Peak incidence was recorded in the sixth decade by Soroush et al., whereas the seventh decade was noted by Alana et al. and Rou Wang et al. According to data presented, the mean age was 65 years according to the Seers Cancer Registry, but 68.6 years according to Cauberg et al.

According to Dinelle et al., flank pain (42%) was more common than hematuria (31%), and flank pain (18%) was the most common presenting symptom. Hematuria (14%) was the second most common symptom. On the other hand, hematuria

was the most common complaint (64.7%), followed by flank pain (54.1%), according to data published by Bayapa et al. Studies by Mahasin et al. and Datta et al. revealed that 35% and 73%, respectively, of participants had flank pain. By contrast, hematuria was the most frequent clinical manifestation of renal malignancy, occurring in 43% of cases, according to Nardi and colleagues.

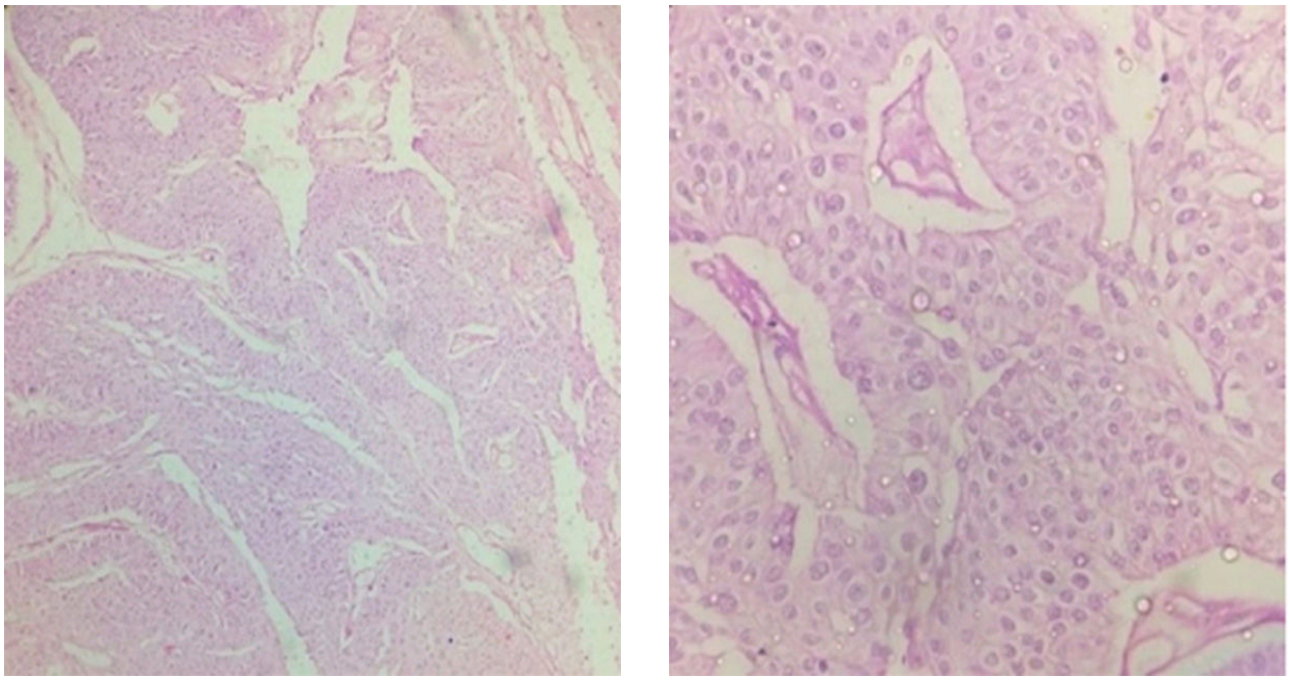
The histological entities that make up renal cell carcinoma are diverse. Clear cell, papillary, and chromophobe are the three primary kinds.

Microscopic pictures



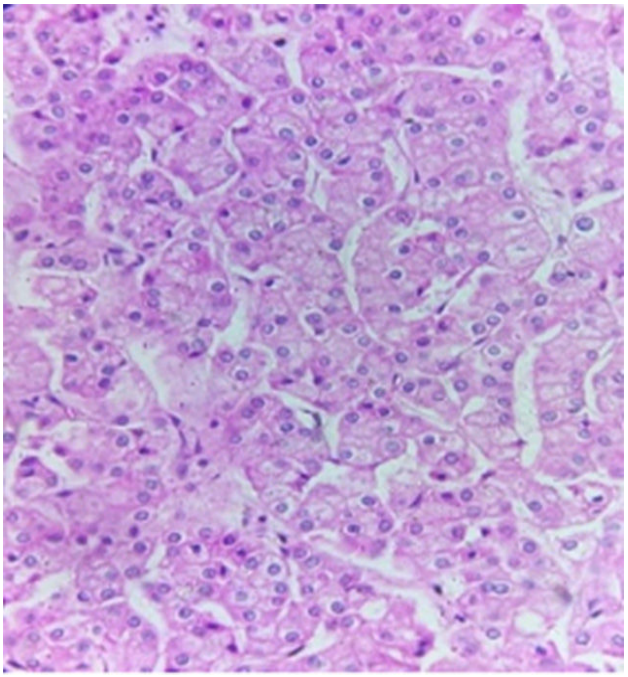
(a) **(b)**

Photo **(a)** on **10X** and **(b)** on **40X:** Clear cell carcinoma-showing typically compact nests and sheets of cells with clear cytoplasm and distinct membrane.



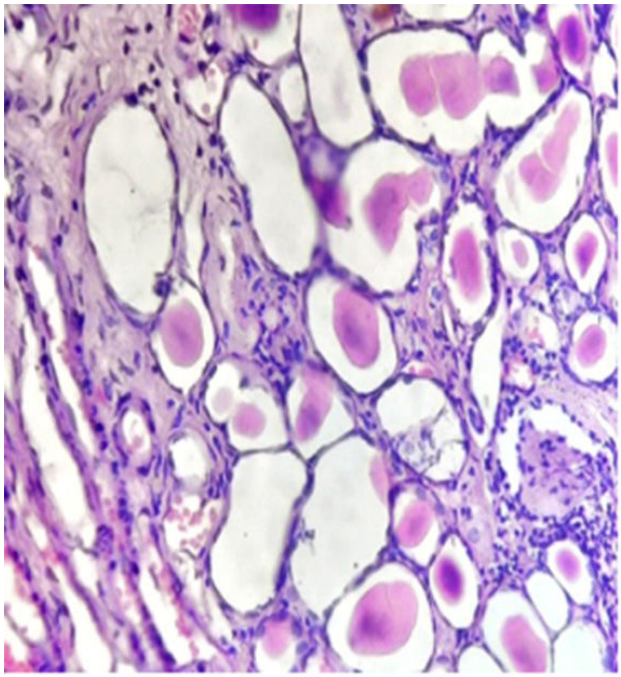
(c) **(d)**

Photo. **(c)** on **10X** and **(d)** on **40X:** Transitional cell carcinoma showing neoplastic cells arranged in irregular nests and single with nuclear pleomorphism, hyperchromasia.



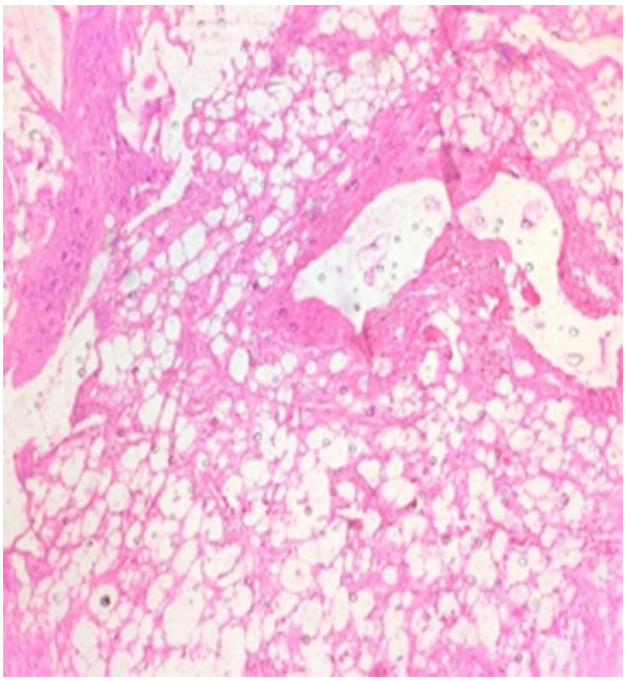
(e)

Photo **(e)** on **40X:** Chromophobe rcc-showing confluent solid growth with nests, sheets or alveoli composed of pale cells with sharply defined plant like cell borders.



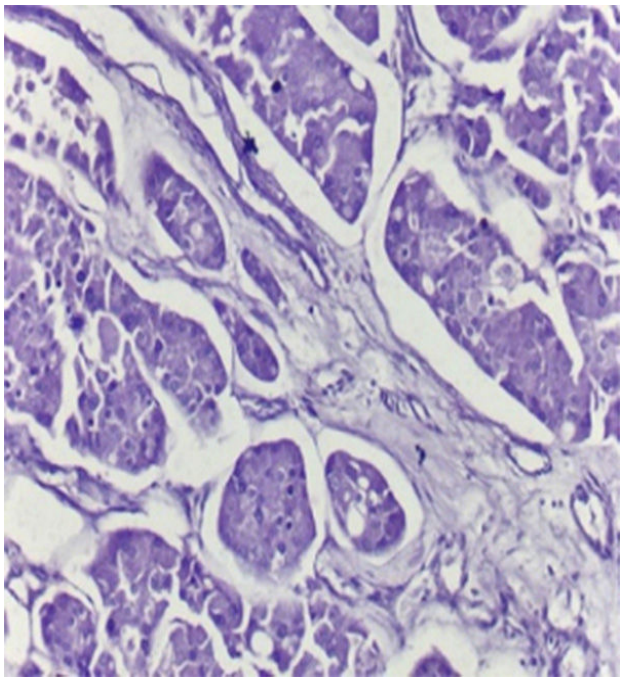
(g)

Photo **(g)** on **40X:** Adult cystic nephroma-composed of cysts separated by septa, stroma is collagenous and fibrous to odematous and myxoid. Areas of hyalinized stroma with contours resembling ovarian corpora albicanta.



(f)

Photo **(f)** on **40X:** Angiomyolipoma-classic triphasic with myoid spindle cells, mature adipose tissue and dysmorphic thick walled blood vessels without elastic lami



(h)

Photo **(h)** on **40X:** Renal oncocytoma-Histology shows a tumor arranged in sheets, nests and alveolar patterns separated by delicate vasculature. Tumor cells are large polygonal with moderate to abundant granular eosinophilic cytoplasm, with central round vesicular nuclei, few of these showing nucleoli. Some of the cells shows binucleation, perinuclear halos and nuclear atypia.

Consistent with our findings, Bayapa et al. discovered that renal cell carcinoma was the most prevalent malignant kidney tumour. Compared to the current study, Eggener et al. and Houston et al. have reported greater incidences of renal cell carcinoma.

Left sided tumors was more common than right comparable with our studies similar to Latif et al. In contrast Bayapa et al showed more right sided involvement than left.

Because USG and cross-sectional imaging are so often used, the number of incident renal masses discovered in western countries has increased.

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