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Histopathological aspects of adult renal tumors at tertiary care center

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Abstract
Background: Renal tumors constitute approximately 3% of all malignancies in adults. They form a heterogenous group with variable morphological, immunohistochemical, and molecular features.
Aims and Objectives: The objective of this study was to analyze the spectrum of adult renal tumors at a tertiary care center and study the demographic and histomorphological features.
Materials and Method: This is Observational study conducted in Department of Pathology at B.J. Medical College, Ahmedabad from November 2022 to Novemmber 2024 including cases of partial and radical nephrectomy specimens of adult patients.
Inclusion Criteria: All specimens of total, radical or partial nephrectomies performed for benign and malignant tumors of adult patients (≥17 years) with adequate histology material received at Histopathology Department.
Exclusion Criteria: Nephrectomies performed for non-tumorous conditions, paediatric tumour nephrectomies, needle biopsies carried out for tumours, biopsy with artefacts, inadequate material/data were excluded from the study.
Results: Out of 158 nephrectomy specimens 91 specimens were reported of adult renal tumor. Among 91 patients, 62(68.13%) were males and 29(31.86%) females. Mean age was 54.72 +/- 13.78 years (range; 17 - 100 years). Maximum cases of Adult renal tumors were found in middle aged individuals, the most common age group affected was 51-60 years followed by 41-50 years of age group. Hematuria followed by pain/lump in renal fossa were most common presenting symptoms. Malignant lesions comprised 91.20% of all masses and 8.79% of these were Benign lesions. Various subtypes of RCC included: clear cell RCC, 63 (69.23%); papillary RCC, 8 (8.79%); chromophobe RCC, 4 (4.39%) and Other malignant neoplasms were following; 5 cases (5.49%) of Multiloculated Cystic Renal Neoplasm, 2 case (2.19%) of Wilms tumour and 1 case (1.09%) of Ewing's sarcoma. Benign renal tumours included 5 cases (6.06%) of Angiomyolipoma, 2 cases (2.19%) of oncocytoma and 1 case (1.09%) of Papillary adenomatosis (Table 1).
Conclusion: RCC was the commonest malignant tumor and clear cell RCC was the most common subtype. Most of the cases in our study were in ISUP grade 3 and TNM stage 3. Papillary RCC was second most common subtype. Tumor necrosis correlates with higher grade and tumor stage.

Keywords: Carcinoma, nephrectomy, renal

Introduction

Tumors, especially cancerous tumors, are one of the major health concerns worldwide [3]. Renal neoplasm are heterogenous group of tumors arising from different components of renal parenchyma such as tubular epithelium, urothelium, interstitial tissue and primitive elements [7]. These neoplasms have distinct distribution pattern among the pediatric and adult population [2]. Wilms tumor is the commonest neoplasm in pediatric population while renal cell carcinoma (RCC) is the commonest one in the adults [8]. RCC constitutes more than 90% of renal malignancies in adults [9]. The most common age at presentation is from 51-60 years of age and is more common in male patients [9]. It is the thirteenth most common malignancy worldwide [10]. Renal tumors classically present with abdominal pain, hematuria, and palpable abdominal mass. Radical nephrectomy and partial nephrectomy are the common surgical treatment. We frequently receive nephrectomy specimens at our pathology department for histopathological examination and confirmatory diagnosis of renal neoplasms

with histological subtyping. Tumor stage and nuclear grade are the most important prognostic factors along with histological subtypes and presence of necrosis [11]. Renal tumor in adults can be subtyped into different groups like Benign neoplasms are 20%-30% and malignant neoplasms are 70%-80% occur in kidney. Malignant neoplasms are of great importance clinically. Histological diagnosis is straightforward in many cases but in some cases immunohistochemistry (IHC) may be required to subtype the tumor and to differentiate renal cell carcinoma from benign mimickers [12]. This study aimed to study the histopathological spectrum of renal neoplasms in adult population at tertiary center and their distribution as per age and sex along with further emphasis on factors such as tumor size, tumor site, histologic types, histologic grade (WHO/ISUP system) and pTNM staging. In this retrospective study, we have determined the different histopathological varieties of renal tumors among the adult patients (above the age of 17 years) who underwent nephrectomy in our institute over a period of 2 years [7].

Materials and Methods

The retrospective study was carried out at Histopathology Department, B.J. Medical College, Ahmedabad from November 2022 to November 2024(2 years period). The data collected included age, sex, tumor size, tumor site, histologic types, histologic grade (WHO/ISUP system) and pTNM staging. Tumor staging was performed according to the American Joint Committee on Cancer (AJCC) 8th edition cancer staging system. Data entry and analysis were made using LIS software program and was depicted in tables as means and percentages. Inclusion criteria were total, radical or partial nephrectomies performed for benign and malignant tumors of adult patients (≥17 years of age) [3]. Nephrectomies performed for non-tumorous conditions, paediatric tumour nephrectomies, needle biopsies carried out for tumours, biopsy with artefacts, inadequate material/data were excluded from the study [2]. The frequency of all Adult Renal Tumors were collected from the pathology reports and was divided into two groups, i.e., benign and malignant groups [3]. Detailed histopathologic characteristics including side of involvement, tumor type (according to WHO classification), tumor size, tumor grade, lymph node status, capsular invasion and renal vein invasion were assessed for the malignancy by microscopic examination.

For histopathological study, the specimens were received in 10% buffered formalin and processed under routine histopathology techniques. A thorough Gross examination of the specimens was done. Sampling of the specimen was done following standard protocol, and subsequently dehydration, clearing, embedding in paraffin wax was carried out. Blocks were made, sections of 5 um thickness were cut and stained with Harris Haematoxylin and eosin stain (H &E). Special stains and immunohistochemistry (IHC) was done where necessary. The slides were examined under microscope and WHO classification of renal neoplasms was employed for the diagnostic categorization of the tumours. Revised Tumour, Node, Metastases (TNM) classification was used for staging and Fuhrman nuclear grading system was employed for grading the malignant neoplasms [2]. The clinical, radiological and therapeutic data from LIS records were correlated while reporting. Since the molecular testing and cytogenetic studies are not available in our institution the diagnosis is made on histopathological study only.

Results

Total 91/158 nephrectomy specimens resected for adult renal tumors formed the study out of which 91(57.59%) specimens were reported of adult renal tumor and 11(6.96%) specimens were reported of pediatric renal tumor. Thus renal cell carcinoma almost exclusively a cancer of adults [1, 2, 9]. The mean age was 54.72 years with standard deviation of 13.78. The highest incidence of renal tumors was seen in the middle-aged population in the 5th–7th decade of life [1, 9]. Maximum cases (30 cases, 32.96%) were seen in the sixth decade (Figure 1). There were 62 males (68.13%) and 29 females (31.86%) with male to female ratio being 2:1 [1] (Figure 1). The tumors were seen to occur equally in both kidneys.

The most common clinical presentation was flank pain in 39 (42.85%) cases, followed by pain with haematuria in 15 cases (16.48%), mass per abdomen in 14 (15.38%) cases, isolated haematuria and flank pain with mass 8 (8.79%) cases each. 7 (7.69%) case was incidentally detected (Table 1) [14]. None of the cases showed triad of pain, mass and haematuria.

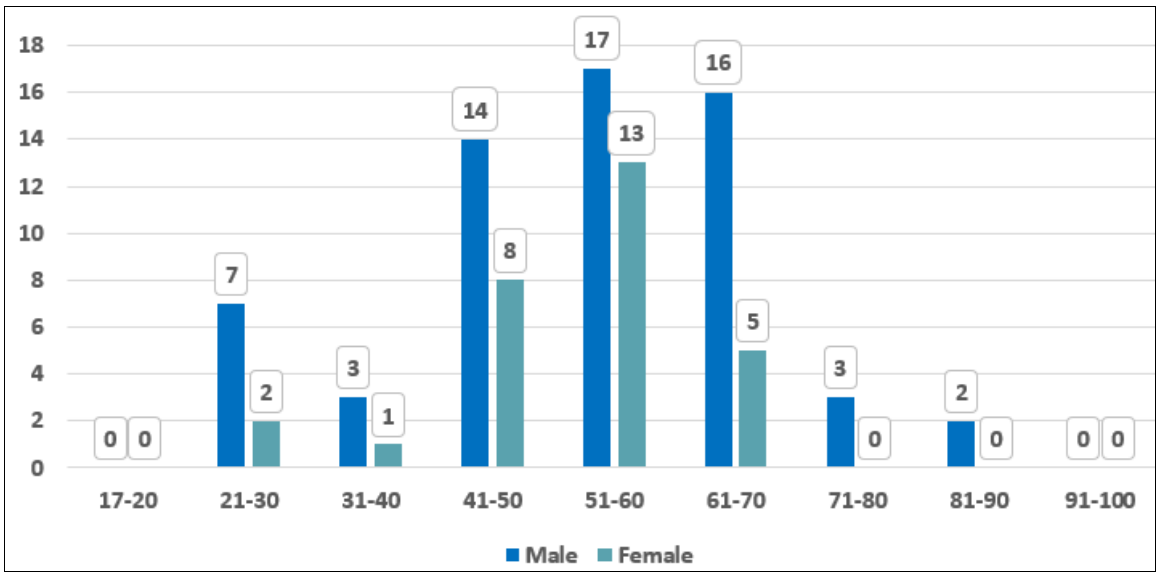

Fig 1: Histogram showing number of cases from different age and sex

Table 1: Clinical presentation

Symptoms	Number	Percentage
Flank Pain	39	42.85%
Flank Pain with Hematuria	15	16.48%
Mass	14	15.38%
Hematuria	8	8.79%
Flank pain with mass	8	8.79%
Incidental Finding	7	7.69%
Triad	0	0.00%
Total Cases	91	99.99%

Total 91 cases of adult renal tumors were identified. Among them 83 cases(91.20%) consisted of malignant tumors and 8 cases(8.79%) were benign lesions [7] (Table 2). Renal cell carcinoma was the commonest adult renal neoplasm (75 cases, 82.41%) [1, 3].

Table 2: Histological subtypes of adult renal tumors (91 cases)

Benign tumours (8.79%)	Number of cases	Percentage
1) Angiomyolipoma	5	5.49%
2) Oncocytoma	2	2.19%
3) Papillary adenoma of kidney	1	1.09%
Total Benign Cases	8	8.79%
Malignant Tumours (91.20%)		
RCC (75 Cases)		
1. Clear Cell Carcinoma	63	69.23%
2. Papillary Renal Cell Carcinoma	8	8.79%
3. Chromophobe Renal Cell Carcinoma	4	4.39%
Non RCC (8 Cases)		
4. Multilocular Mucinous cystic neoplasm of kidney	5	5.49%
5. Wilm's Tumour	2	2.19%
6. Ewing's sarcoma	1	1.09%
Total Malignant Cases	83	91.20%
Total Cases	91	99.95%

Clear cell RCC was the most common histological subtype (63 cases) comprising 69.23% of total RCC [1]. Papillary RCC was the second commonest histological subtype (8 cases) comprising of 8.79% of total cases followed by Chromophobe RCC; 4 cases (4.39%) (Figure 2) [1, 2].

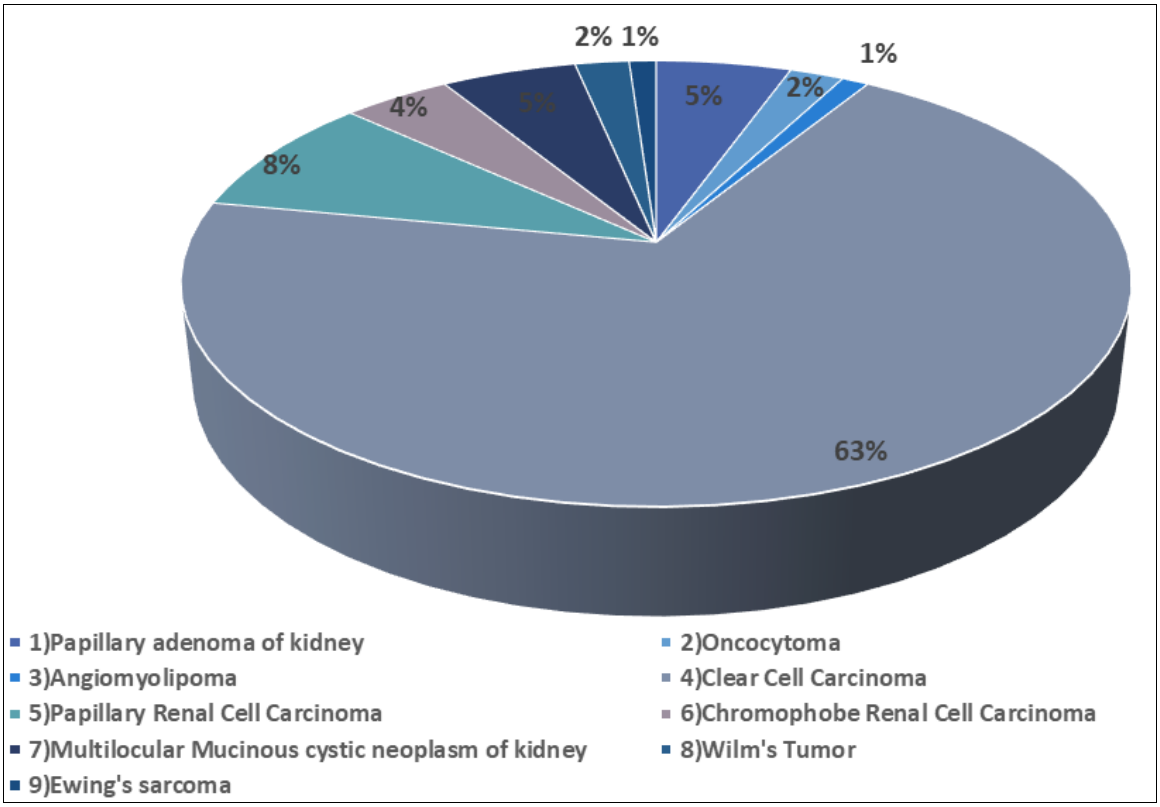

Fig 2: Percentage of Histological subtypes of Adult Renal Tumours

On histopathological examination, Clear cell RCC showed tumor cells arranged in nests separated by fibrous septa (Figure 3). Chromophobe RCC showed tumor cells arranged in nests and trabeculae surrounded by fibrovascular septa with raisinoid nuclei and perinuclear halo (Figure 4). Likewise, tumor cells with bland nuclei and abundant eosinophilic cytoplasm were seen in Oncocytoma (Figure 5). Sometimes, the distinction between Chromophobe RCC and Oncocytomas becomes difficult. Few such cases were sorted with Cytokeratin 7 (CK7) immunohistochemistry (IHC) staining where diffuse CK7 positivity was noted in chromophobe RCC differentiating from oncocytoma. Papillary RCC and showed tumor cells arranged in papillae lined by small cuboidal cells.

Other malignant neoplasms were following; 5 cases (5.49%) of Multiloculated Cystic Renal Neoplasm, 2 case (2.19%) of Wilms tumour and 1 case (1.09%) of Ewing's sarcoma. Benign renal tumours included 5 cases (6.06%) of Angiomyolipoma, 2 cases (2.19%) of oncocytoma and 1 case (1.09%) of Papillary adenoma of kidney (Table 2).

Pathological staging was done using TNM staging (AJCC eighth edition) in total 75 cases of RCC. Majority of Renal cell carcinomas were in advanced stage pT3a (38 cases, 41.75%) (Table 3). Tumors in stage pT1a consisted of 16 cases, 17.58%, stage pT1b consisted of 12 cases, 13.18%, stage pT2a consisted of 14 cases, 15.38% and stage pT2b consisted of 11 cases, 12.08%, (Table 3). None of the malignant renal tumors showed lymph node metastasis.

Table 3: pTNM staging for RCC (75 cases)

pTNM Stage	Number
pT1a	16(17.58%)
pT1b	12 (13.18%)
pT2a	14(15.38%)
pT2b	11 (12.08%)
pT3a	38(41.75%)

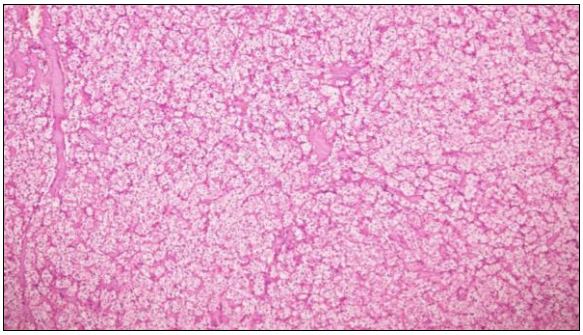

Fig 3: Clear cell RCC showing tumor cells arranged in nests separated by fibrous septa (HE stain, X100).

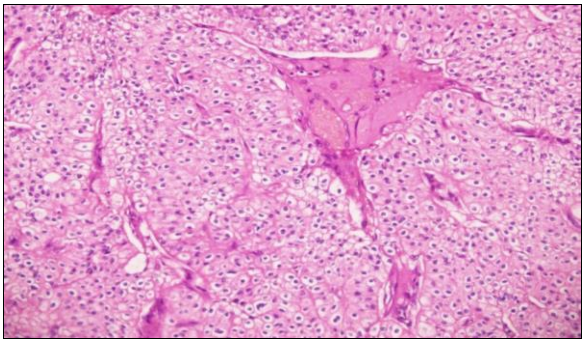

Fig 4: Chromophobe RCC showing prominent perinuclear halos (HE stain, X200).

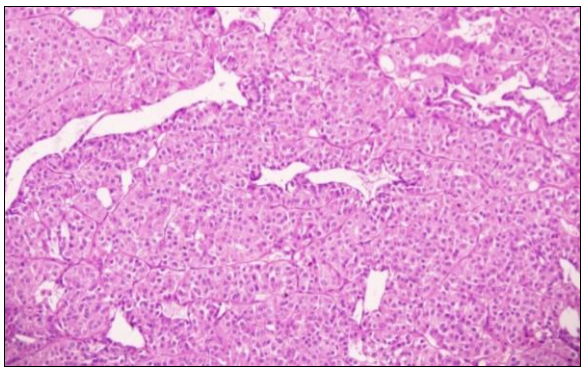

Fig 5: Renal oncocytoma showing cells with bland nuclei and abundant eosinophilic cytoplasm (HE stain, X100)

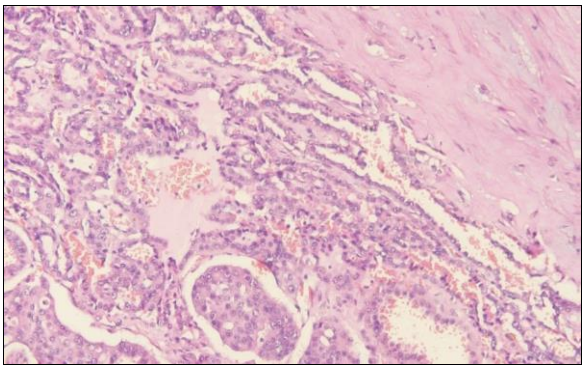

Fig 6: Type1 papillary RCC showing tumor cells arranged in papillae lined by small cuboidal cells (HE stain, X100).

WHO/International Society of Urologic Pathology (ISUP) 4 tier Grading system replaces Fuhrman grading system. ISUP Grading was applied for grading of all the cases of Clear cell RCC and Papillary RCC (Table 4). Majority of the cases of clear cell RCC were of WHO/ISUP grade 3 (26 cases, 36.61%) followed by grade 2 (20 cases, 28.16%) and grade 1 (12 cases, 16.90%). Whereas, most of the cases of papillary RCC were of low grade (Grade 1, 3 cases accounts of 4.22%). Sarcomatoid and/or Rhabdoid features were noted in six cases (5 cases of clear cell RCC and 1 case of papillary RCC) resulting in WHO/ISUP nuclear grade 4 (Table 4).

Table 4: ISUP grade of Renal Cell Carcinoma (Clear cell and Papillary)

Stage	Clear Cell Carcinoma	Papillary RCC	Total
Stage I	12	3	15
Stage II	20	2	22
Stage III	26	2	28
Stage IV	5	1	6

This study was done in age range of 17 to 100 years with majority of patients more than 50 years of age group in both the sex. Its incidence increases with each decade of life until the sixth and it is more common in males than females [1, 2, 9].

Discussion

We describe here the compilation of the findings on adult renal tumors in B.J. Medical College, Ahmedabad, the largest tertiary care center in Gujarat, India. In adult population, Renal cell carcinoma is the most common renal tumor and shows male preponderance [1, 2, 14]. Unfortunately, majority of the renal neoplasms do not present with the

classic triad of haematuria, pain and mass [15]. Early detection of renal neoplasms aids in effective treatment which includes partial or total nephrectomy. Since, systematic gross and histopathological evaluation is very essential to grade and stage the tumour and guide in further management, we have attempted to evaluate the histomorphological spectrum of renal neoplasms and adopt the CAP guidelines reporting format for nephrectomy cases.

WHO 2022 has taken a new approach to classify the renal tumours (Table 5). The recently published fifth edition of the WHO classification of renal tumours is a comprehensive categorization system that incorporates several factors such as morphology, immunohistochemistry, molecular characteristics, clinical data, epidemiology, and prognostic information [13]. Renal tumors can be classified into several overarching categories, including clear cell renal tumors, papillary renal cell tumors, oncocytic renal cell tumors, chromophobe renal cell tumors, and collecting duct tumors. In the WHO 2022 classification of renal malignancies, three new entities have been included: elongin C (ELOC)-mutated renal cell tumors, eosinophilic solid cystic renal cell tumors, and anaplastic lymphoma kinase (ALK) rearranged renal cell tumors [13] (Table 5).

Table 5: WHO Recent classification of Renal tumors

	Name of Renal Tumour	WHO 2016 Classification	Key updates in the WHO 2022 classification
1	PRCC	Subclassification into type 1 and type 2 recommended	Subclassification into type 1 and type 2 is NOT recommended. Morphology patterns updated, such as Warthin-like RCC and PRCC with reverse polarity.
2	Clear cell papillary renal cell tumour	The name given to the tumour is 'clear cell papillary RCC'.	Due to its indolent behaviour and no evidence of metastasis, the name was changed from clear cell papillary RCC to clear cell papillary renal cell tumour.
3	FH-deficient RCC	The name of the tumour in this classification was hereditary leiomyomatosis associated with RCC due to its association with uterine and cutaneous leiomyoma.	The FH protein deficiency is observed in many categories along with this one. Hence, the name was changed to FH-deficient RCC.
4	SMARCB1-deficient renal medullary carcinoma	Due to its constant location observed at the renal medulla region, it was given the name 'renal medullary carcinoma'.	The SMARCB1 deficiency is also observed in this category. So, the name was changed to SMARCB1-deficient renal medullary carcinoma.
5	TFE3-rearranged and TFEB-altered RCC	It was categorised together as the 'MIT family of RCC'	The MIT category no longer exists. Two separate categories were made, namely the TFE3-rearranged and TFEB-altered RCC. Due to different clinical behaviour and prognosis, TFEB-altered RCC was again categorized into TFEB-rearranged and TFEB-amplified RCC.
6	Eosinophilic solid and cystic RCC	No such category present	It is added as a new entity under the category of 'other renal tumours'.
7	ALK-rearranged RCC	An emerging entity in this classification.	It is added as a new entity under the category of 'molecularly defined renal carcinoma'.
8	ELOC-mutated RCC	An emerging entity known as RCC with leiomyomatous stroma in this classification.	It is added as a new entity under the category of 'molecularly defined renal carcinoma'.
9	Low-grade oncocytic tumours	No such category	Emerging entity
10	Eosinophilic vacuolated tumour	No such category	Emerging entity

The mean age of patients at clinical presentation was 54.72 years. Similar studies by Bashir N *et al*., reported 54 years [14].Datta B *et al*., reported mean age of 47.3 years [16].and Duchene DA *et al*., reported mean age of 57.4 years [17].Our study also revealed male preponderance with male to female ratio of 2.13: 1. This is in concordance with the studies conducted by Latif F *et al*, Bashir, N. *et al*, and Yamakanamaradi *et al* with reported male to female ratio of 1.94:1, 1.70:1, and 2.19:1 respectively [2, 14, 15].

Majority of the cases presented with flank pain in 32 (42.66%) cases, followed by pain associated with haematuria in 14 (18.66%) cases and mass per abdomen in 11 (14.66%) cases. (Table 1). Datta B *et al*., reported pain in 73% cases, haematuria in 61% cases and mass in 20% cases [7]. Bashir N *et al*., reported pain in 35.86% cases followed by mass and haematuria [14]. Ray R *et al*., reported haematuria as the most common presentation in 53.33% cases followed by pain abdomen in 50.67% of the cases [17]. Four cases (5.33%) was incidentally detected in our study. Duchene DA *et al*., reported 48% [16] and Ray R *et al*., reported 9.33% of incidental tumour detection [17].

In our study, renal tumours were found to be equally distributed on either sides [15]. Bashir N *et al*., observed in his study that 53.8% tumours were left sided and 46.1% of the tumours were right sided [14]. Amin AN *et al*., reported right sided tumours in 53.1% and left sided in 46.9% cases [18].

Here, majority of the tumours were malignant amounting to 91.20% and 8.79% cases were benign. Similar findings have been reported by Sheenu VS *et al*. [1], Németh I *et al*. [6] Duchene DA *et al*. [16] and Aiman A *et al*. [19], who have reported malignancies in 92.7%, 86.7%, 86% cases and 87.5% cases respectively.

The most common malignancy encountered in our study was RCC in 82.41% cases. Of these, clear cell variant was the most common histological subtype observed in 67.03% cases followed by papillary RCC in 8.79% cases and chromophobe RCC in 4.39% cases. Bashir N *et al*., reported RCC in 79.8% cases with clear cell variant in 60.8% cases, papillary RCC in 14.7% cases and 1.1% case of chromophobe RCC [14], Duchene DA *et al*., [16], reported 100% RCC among malignant lesions with Clear cell variant in 93% cases and chromophobe RCC in 7% cases. Stinga AC *et al*., [20], reported RCC in 95% of the malignant lesions

with clear cell variant in 73.6% cases, papillary RCC in 16.6% cases and chromophobe RCC in 16% cases.
Pathological staging was done using TNM staging (AJCC eighth edition) in total 75 cases of RCC. Majority of Renal cell carcinomas were in stage pT3a (38 cases, 41.75%) (Table 3). ISUP Grading was applied for grading of all the cases of Clear cell RCC and Papillary RCC (Table 4). Majority of the cases of clear cell RCC were of WHO/ISUP grade 3 (26 cases, 36.61%) by grade 2 (20 cases, 28.16%) and grade 1 (12 cases, 16.90%). Whereas, most of the cases of papillary RCC were of low grade (Grade 1, 3 cases accounts of 4.22%). Sarcomatoid and/or Rhabdoid features were noted in six cases (5 cases of clear cell RCC and 1 case of papillary RCC) resulting in WHO/ISUP nuclear grade 4 (Table 4).

Angiomyolipoma
Angiomyolipomas (AMLs) are the most common benign renal tumours. Most of these neoplasms are found incidentally on imaging. Renal AMLs are typically composed of smooth muscle, blood vessels, and adipose tissue. Because of the abundant fat tissue, they give a characteristic appearance on imaging and are therefore easily diagnosed. Gorssly, predominant adipose tissue with/without hemorrhagic or cystic variant is seen. Renal AML can be classified histologically as typical (triphasic) or atypical (monophasic or epithelioid). Most AMLs contain all three components, namely dilated blood vessels (angio), smooth muscle cells (myo), and mature adipocytes (lipo), in various proportions. They are classified as triphasic tumours. However, some tumours consist almost exclusively of one component, while other elements are present in very small amounts. They are called monophasic. In our study, we observed 5 (5.49%) cases of oncocytoma. The age ranged from 35 to 52 years with a mean age of 45.6 years.

Renal Oncocytoma
Renal oncocytoma is a benign epithelial neoplasm accounting for about 3-7% of all primary renal neoplasms. Grossly, it reveals a well circumscribed mahogany brown solid lesion with central stellate scar. Histologically, it is composed of tumour cells arranged in nests, cords and tubules. The cells display adundant densely eosinophilic cytoplasm with monomorphic round vesicular nuclei and prominent central nucleoli. In our study, we observed 2(2.19%) cases of oncocytoma. The age ranged from 39 to 55 years with a mean age of 49.33 years.

Papillary Adenoma
These are epithelial neoplasm with papillary or tubular architecture measuring less than 5 mm in size with low grade nuclei. They are present in around 20% of the adult kidney. Nearly 50% of the adenomas are identified in papillary RCC. In our study, we observed 1 (3.1%) case of papillary adenoma in 77 years male, who presented with flank pain and non functioning kidney. Grossly, it was contracted kidney with dilated pelvicalyceal system. Microscopy revealed features of pyelonephritis with focal areas showing cells arranged in papillae. In our study, we observed 5 (5.49%) cases of Papillary Adenoma of kidney. The age ranged from 32 to 59 years with a mean age of 45.6 years.

Clear Cell Carcinoma
This tumour is known to originate from the renal tubular epithelium and accounts for about 70% to 75% of all RCCs [21], The 'clear' cytoplasm of the tumour cells is due to the presence of intracytoplasmic glycogen and lipids which gets dissolved during tissue processing [21], Higher grade tumours have more granular-eosinophilic cytoplasm. Gross examination reveals golden yellow coloured tumour due to abundant intracytoplasmic lipid. The high grade tumours display variegated appearance because of less lipid and glycogen and with areas of haemorrhage and necrosis. Microscopically, the tumour displays cells arranged in acinar and solid nest patterns, along with arborizing intricate capillaries. In our study, we observed 63 cases of clear cell RCC. The age ranged from 30 to 73 years with a mean age of 52.06 years.

Papillary (Chromophil) RCC
The second most common histological variant of RCC is papillary RCC, which accounts for about 10% of the cases [21], It arises from the proximal convoluted tubules and grossly reveals a discrete mass in the renal cortex with areas of haemorrhage, necrosis and cystic degeneration. Microscopically, it shows papillae, tubule-papillae and tubular structures. These papillae contain thin and delicate fibrovascular cores with foamy histiocytes. Histologically, there are two variants. Type 1 displays short and delicate papillae with single layer of cells having scant cytoplasm and low grade nuclear features. Type 2 displays large papillae lined by cells with abundant eosinophilic cytoplasm and large nuclei showing pseudostratification and prominent nucleoli. In our study, we observed 8 (8.79%) cases of Papillary RCC. The age ranged from 45 to 61 years with a mean age of 51.4 years.

Chromophobe RCC
Chromophobe renal cell carcinoma (ChRCC) is the third most common renal cell carcinoma (RCC) subtype. ChRCCs are considered to originate from the intercalated cell of distal tubules with two main morphological variants, classic and eosinophilic. ChRCCs may also be associated with sarcomatoid dedifferentiation, a kind of an epithelial–mesenchymal transition. Grossly, yellowish brown tumor with granular cut surface, a nodular tumor with focal hemorrhage and necrosis seen. Microscopically, ChRCCs are characterized by neoplastic cells with prominent cell membranes and pale to eosinophilic cytoplasm, arranged in a solid-alveolar pattern. Characteristic features that facilitate the recognition of most ChRCCs include hyperchromatic and irregular wrinkled (raisinoid) nuclei, perinuclear clearing (halos), and binucleation. Most ChRCCs carry a favorable clinical outcome. In our study, we observed 4 (4.39%) cases of Papillary RCC. The age ranged from 42 to 61 years with a mean age of 53.6 years.

Multilocular Mucinous cystic neoplasm of Kidney
Multilocular cystic renal neoplasm of low malignant potential (MCRNLMP) is a cystic renal neoplasm with an excellent prognosis. The true incidence rate is estimated to be between 1.5% and 4% of all RCCs. Grossly, Usually unilateral and < 5 cm, Well circumscribed with fibrous pseudocapsule, Variably sized cysts with thin septa, Cysts filled with clear, serous, gelatinous or hemorrhagic fluid, No mural solid nodules or areas of necrosis. Microscopically, Thin, fibrous septa lined by clear cells, Low grade nuclei without prominent nucleoli (WHO / ISUP grade 1 - 2), Clear cell clusters may be present within thin septations or fibrous

capsule but they should not alter their contours by expansile growth or exceed 1 mm (20x field of view), In rare cases, lining of cysts may show focal multilayering, cells with granular cytoplasm and small intracystic papillation, Septa may contain calcification or ossification, Presence of necrosis, frequent or atypical mitoses, lymphovascular or fat invasion, rhabdoid or sarcomatoid change are incompatible with diagnosis. Excellent prognosis with no reports of progression, metastases or cancer related death in multiple case series when diagnosed on strict criteria. Recurrence reported in rare cases. In our study, we observed 5 (5.49%) cases of Multilocular cystic renal neoplasm(of low malignant) of kidney. The age ranged from 38 to 57 years with a mean age of 49.5 years.

Wilms Tumour

Wilms tumour also known as nephroblastoma, is one of the most common solid malignant neoplasm of children. It is an embryonal type of renal cancer accounting for 90% of all paediatric tumours of the kidney. It is very rarely seen in adults. Grossly, they present as solitary, spherical well circumscribed mass with soft consistency. The size can vary from small to very large lesion. Cut surface reveals predominantly solid areas, pale grey or tan in colour with areas of haemorrhage, necrosis and cystic change. Microscopically, tumour displays triphasic elements with features of attempt to form various stages of nephrogenesis. In our study, we observed 2(2.19%) cases of Wilms tumour. There were two cases of adult Wilms tumour in 23 years and 35 years of aged respectively female and male was found in our study.

Ewing's Sarcoma

Primary Ewing sarcoma (EWS) of the kidney is a rare tumor in adults. Sources of renal EWS include neural cells that invaginate into the kidney during development or Other authors theorize that embryonic neural crest cells migrate into the kidney and undergo tumorigenesis. Grossly, Large mass which surrounded by a thin membranous capsule. Microscopically, The tumor was very cellular; the tumor cells were fairly uniform with round to oval nuclei, finely dispersed chromatin, inconspicuous nucleoli and ill-defined scant, pink cytoplasm. Despite aggressive treatment, the prognosis of renal EWS is poor. In our study, we observed 1 (1.09%) case of Ewing's sarcoma. The age was 45 years of male.

This study has a few limitations. Retrospective study design in itself is a limitation. Also, this being a single institutional study, the data may not reflect the burden in population of India. Hence, further research in a larger sample size could be conducted. This study was also not able to look into the outcomes and survival of this malignancy which could be an area of future research.

Conclusion

Clear cell RCC was the most common renal tumor in adult comprising the majority of the cases. These tumors were mostly of WHO/ISUP nuclear grade 3 and presented at an advanced stage (pT3a). Papillary RCC was the second most common RCC and demonstrated lower nuclear grade. Papillary adenoma was the most common benign renal tumor in adult followed by angiomyolipoma. Given the limited research on the histomorphological spectrum of heterogenous adult renal tumors, more studies if conducted from different parts of the country would facilitate in diagnosis and prognostication.

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