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Histomorphological study of renal tumors in a tertiary care hospital

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Abstract
Introduction: Renal tumors can present as a mass or lump on the side or lower back along with other clinical symptoms such as fatique, loss of apetite and weight loss. Nephrectomy is done as a surgical management for renal masses.
Aim: To study the histopathological spectrum of neoplastic lesions in nephrectomy specimen
Methods: Study included all the nephrectomy cases done for renal tumor over a period of 10 years (November 2008-october2018)
Results: Out of 85 neoplastic lesions, renal cell carcinoma was the most common lesion diagnosed in 68 (80%) specimens, followed by Wilms tumor in 9(10.58%) specimens, followed by metanephric adenoma in 3(3.52%) and squamous cell carcinoma in 2(2.35%) while angiomyolipoma, multicystic nephroma and renal sarcoma were diagnosed in 1 (1.17%) specimen each.

Keywords: Nephrectomy, Renal cell carcinoma, Wilms tumor

Introduction

The kidney is liable to different diseases and nephrectomy is a common procedure in surgical practice.

Renal neoplasms comprise of a diverse spectrum of benign and malignant lesions with patterns that are relatively distinct for children and adults, some of which require its surgical removal. Nephrectomy can either be simple in which only kidney is removed and is mainly done for non neoplastic conditions or radical nephrectomy which is performed for renal neoplasms. In some cases partial nephrectomy is indicated in bilateral renal cell carcinoma or renal cell carcinoma involving a solitary functioning kidney. Radical or Partial nephrectomy is the treatment of choice for great proportion of patients with renal tumors [1]. The neoplastic kidney conditions are classified as renal cell tumors, metanephric tumors, nephroblastic and cystic tumors mainly in children, mesenchymal tumors, mixed epithelial and stromal tumor, neuroendocrine tumors, metastatic tumors. 99% of renal neoplasms are malignant, with Renal cell carcinoma in adults and Wilm's tumor in children being the most common [1].

Wilms tumor is ranked 5th in frequency among children. It usually occurs before four years of age but can also occur in adults, however less than 1 percent of Wilms tumor occur in adults [2]. Renal cell carcinoma accounts for 2 percent of adult malignancies. The main curative option for management of renal cell carcinoma is surgical excision because it appears to be resistant to chemotherapy and radiotherapy [3].

Angiomyolipoma kidney demands nephrectomy. Most patients are adults and approximately, one third cases are associated with tuberous sclerosis. Grossly, kidney are unencapsulated yellow to grey leisions, causing capsule elevation. Histologically, it is characterised by presence of 3 components that is mature fat cells, smooth muscle and blood vessels [4].

Metanephric adenoma/renal epithelial tumor is a cortical epithelial tumor with rare incidence of 0.2% of all epithelial neoplasms. Metanephric adenoma often presents as a mass or as an incidental finding in the scan. Clinically, in most cases patient presents with polycythemia, hematuria and abdominal pain. It is difficult to distinguish it from other malignant tumors before surgery [5].

Nephrectomy remains the standard management for patients with suspected renal mass, despite studies that have established it as an independent risk factor for developing chronic

renal insufficiency [6].

Acharya Shri Chander College of medical sciences and hospital, sidhra is a tertiary care teaching hospital where we have facilities for diagnosis and management of urological problems. The present study was an effort to determine histomorphological spectrum of neoplastic lesions in nephrectomy specimen.

Aim

- To study the histopathological spectrum of neoplastic lesions in nephrectomy specimen

Material and Methods

The study was conducted in the post graduate department of pathology in collaboration with the department of Surgery (Urology), Acharaya Chander College of Medical Sciences, Sidhra (ASCOMS). The study consisted of:-

Retrospective analysis of nine years w.e.f 1st November 2008 – 31th october 2017. All the histopathological reports maintained in the histopathology section of department of pathology and H&E stained slides of each case were reviewed. All the clinical information provided in the requisition forms were taken into consideration and recorded in a prestructured proforma.

The prospective study conducted in the post graduate department of pathology, ASCOMS and Hospital, Sidhra, Jammu comprising of fresh cases presented in the course of one year w.e.f 1st November 2017 – 31st October 2018. The clinical information of patients was obtained from the requisition forms and any further relevant information were procured from the clinical case sheets.

After the gross examination of specimens, sections were taken and Tissue blocks were prepared, sections were cut and stained with Haematoxylin and Eosin method; and then studied under light microscope.

Results

Out of 258 cases, only 85 were neoplastic (32.9%) and there was female predominance.

Most common clinical presentation was Flank pain in 88% patients, followed by burning micturition in 46%, hematuria in 32%, fever in 29%, lump abdomen in 24%, vomiting in 14%, bone pain in 5% and epigastric pain in 4% patients. More than one clinical presentation was noted in some patients.

Distribution of neoplastic lesions in nephrectomy specimens

Neoplastic lesions	Number (No.)	Percentage (%)
Renal cell carcinoma	68	80.00
Wilms tumor	9	10.58
Angiomyolipoma	1	1.17
Metanephric adenoma	3	3.52
Multicystic nephroma	1	1.17
Renal sarcoma	1	1.17
Squamous cell carcinoma	2	2.35
Total	85	

Out of 85 neoplastic lesions, renal cell carcinoma was the most common lesion diagnosed in 68 (80%) specimens, followed by Wilms tumor in 9(10.58%) specimens, followed by metanephric adenoma in 3(3.52%) and squamous cell carcinoma in 2(2.35%) while angiomyolipoma, multicystic nephroma and renal sarcoma were diagnosed in 1(1.17%) specimen each.

Grossly, all the kidneys showed growths ranging from 4 to 12 cm in size. In all cases the growths were solid with variegated appearance, showing yellowish areas along with areas of haemorrhage and necrosis. In 25 of the 68 cases the growth was seen to involve almost the entire kidney.

Histological types of renal cell carcinoma

Histological type of tumor	Number (No.)	Percentage (%)
Clear cell type	56	65.88
Papillary type	25`	29.41
Chromophobe	4	4.7

Microscopic examination of the cases of renal cell carcinoma revealed the occurrence of clear cell carcinoma in 56(65.88%) cases, papillary carcinoma in 25(29.41%) cases and chromophobe in 4(4.7%) case.

Discussion

Out of 85 neoplastic lesions, renal cell carcinoma was the most common lesion diagnosed in 68(80%) specimens. Renal cell carcinoma predominance was seen in Popat *et al*. (2010) [7], Aiman *et al*. (2013) [2], Shaila *et al*. (2015) [8], Narang *et al*. (2016) [1] and Chaitra *et al*. (2018) [9].

Microscopic examination of the cases of renal cell carcinoma revealed the occurrence of clear cell carcinoma in 56(65.88%) cases. A predominance of clear cell type of carcinoma was also reported by Pradhan *et al*. (2009) [10] who reported it in 74.8% cases. Predominance of Wilms tumor was seen in children.

The present study provides a insight into the histomorphological patterns of neoplastic lesions.

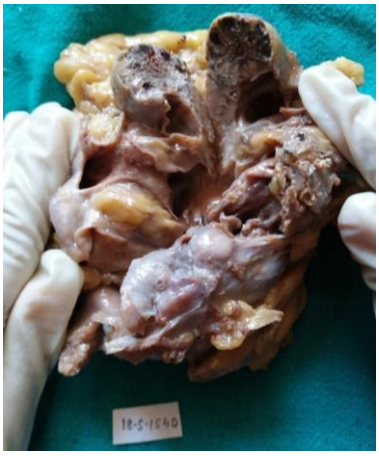

Fig 1: Gross photograph of Renal Cell Carcinoma

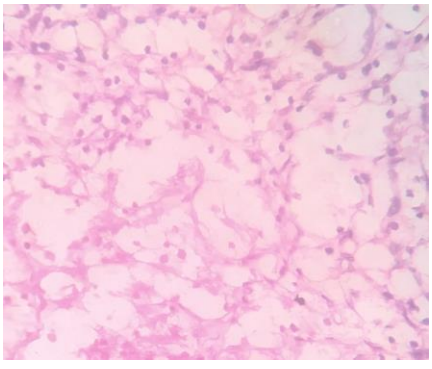

Fig 2: Renal carcinoma, clear cell type

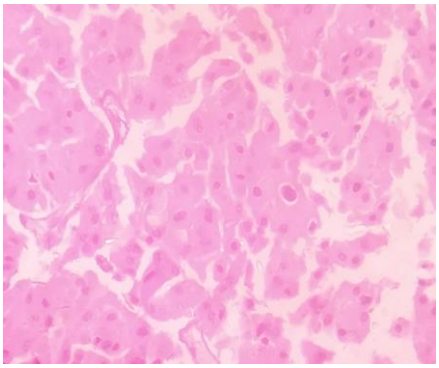

Fig 3: Renal carcinoma, chromophobe type

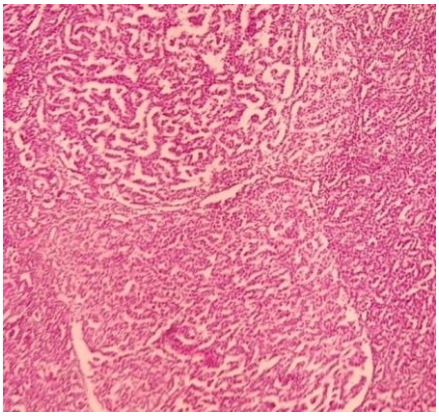

Fig 4: Renal cell carcinoma, papillary type

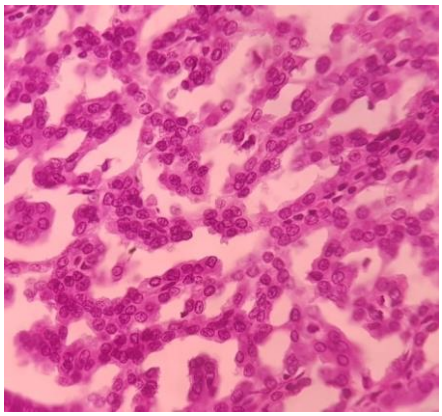

Fig 5: Renal cell carcinoma, papillary type

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