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Presentation and Management of Renal Cell Carcinoma: A 7-Year Review

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Abstract: *Renal Cell Carcinoma (RCC) is a rare malignancy but it is the most common renal neoplasm. Its presentation is usually in advanced stage if not diagnosed incidentally. This study sought to document the presentation, histological pattern and treatment of the RCC. This is a hospital-based retrospective study of 22 patients, who presented with RCC over a period of 7 years from June, 2007. Patients' records were retrieved to collate data which were subjected to statistical analysis. A total of 22 patients presented with RCC during the 7 year study period. The mean age of the patients was 52±16 years (range, 24 – 89 years) and male/female ratio was 1: 1.2. Most of the patients were in the age range of 40 – 49 years. All the patients presented with features of advanced disease. The classical triad of symptoms of RCC was found in 10(45.5%) patients. Seventeen (77.3%) patients had both abdominal ultrasound and computed tomography of the abdomen to further characterize the tumour. All the patients presented with tumour size more than 7cm with mean size 16.34±7.11cm and 16.99±4.84cm in males and females respectively. Fourteen (63.6%) patients had radical nephrectomy while in 8(36.6%) patients tumour was non-resectable. Only 3 (13.6%) patients survived up to 5 years while 9(40.9%) died and 10 (45.5%) were lost to follow up. Renal cell carcinoma (RCC) is a rare tumour but the number patients seen is increasing. It remains a deadly tumour of the kidney and in our environment this is compounded by late presentation of patients.*

Keywords: *Renal cell carcinoma, Incidental tumour, Diagnostic triad, Radical nephrectomy*

I. Introduction

Renal cell carcinoma (RCC) represents 3% of adult malignancies[1, 2]. There are various types of renal tumours[3, 4], but renal cell carcinoma is the most common renal malignant neoplasm and it constitutes 80 – 85 % of all kidney tumours in adults[5, 6]. Its incidence is increasing globally.

Due to its retroperitoneal location, RCC remains asymptomatic and non-palpable until advanced disease develops. Most cases are identified during radiological examination for other reasons. In modern era, computed tomography (CT) scan of the abdomen obtained for other reasons identifies early renal masses.

Presentation in the West African sub-region is usually late, with consequent high mortality and morbidity [7, 8, 9, 10]. Chemotherapy and radiotherapy are ineffective and disappointing in the treatment of RCC. Therefore, surgery remains the mainstay of treatment of the tumour even in the advanced stages.

Various studies in other parts of the West African subregion have looked at the presentation and management of the renal cell carcinoma[9, 10, 11, 12].

This was a retrospective cross-sectional study that sought to document the presentation, histological characteristics and pattern of treatment of renal cell carcinoma in Jos.

II. Patients And Methods

This a hospital-based retrospective cross-sectional study carried out at Jos University Teaching Hospital (JUTH). The records of patients presenting with renal cell carcinoma between June, 2007 and June, 2014 were retrieved. Patients' demographic data, clinical presentation, investigations, surgical treatment, histologic characteristics and outcome were entered into SPSS version 21. The data was subjected to statistical analysis using the same statistical software.

III. Results

A total of 22 patients presented with RCC during the 7 year study period. There were 10 males (45.5%) and 12 females (54.5%) giving male to female ratio of 1: 1.2. The mean age of the patients was 52±16 years (range, 24 – 89 years). Most (38.1%) of the patients were in the age range of 40 – 49 years. Patients within 50 – 59 age range constituted 27.3% of the total number of patients **(Table 1).**

The presenting complaints were haematuria, flank pain, flank mass and weight loss for varying duration of 12 – 30 months prior to presentation. Only two (9.1%) patients presented with haematuria as the only complaint. Five (13.6%) patients presented with flank pain while seven (31.8%) patients had with flank pain along with flank mass. The classical triad of flank mass, flank pain and haematuria was found in 10 (45.5%) patients. Eighteen patients (81.8%) had weight loss **(Table 2).**

All patients had previously had initial evaluation (including abdominal ultrasonography) in a private or general hospital before presentation. Seventeen (77.3%) patients who had abdominal ultrasonography subsequently had Computed Tomographic urography while 5 (22.7%) of the patients had Intravenous urography (IVU).

All the patients presented with tumour size > 7 cm. The mean tumour size for male patients was 16.34 ± 7.11cm while that in females was 16.99 ± 4.84 cm. The mean difference was 0.65cm (-5.99 – 4.69, p=0.85).

Radical nephrectomy was the mainstay of treatment in 14 (63.6%) patients. In 8(36.4%) patients, tumour was non-resectable and only biopsy was obtained at surgery. No patient had partial nephrectomy. Only one patient had post-operative interferon and bevacizumab. All patients with severe pain who also had non-resectable tumour were referred for palliative radiotherapy.

Three (13.6%) patients survived for 5 years or above. Nine (40.9%) died, while 10(45.5%) were lost to follow up.

Table 1: Age distribution

Age group	Number of patients	Percentage (%)
20 – 29	2	9.1
30-39	2	9.1
40 – 49	7	31.8
50 – 59	6	27.3
60 – 69	1	4.5
70 – 79	2	9.1
80 – 89	2	9.1
Total	22	100

Table 2: Patients and Tumour Characteristics

Presentation,Characteristics,Treatment	Total	%
Presentation		
Incidental detection	0	0
Haematuria	2	9.1
Flank pain	5	13.6
Flank mass		
Flank pain + Flank mass	7	31.8
Classic triad	10	45.5
Weight loss	18	81.8
Preoperative Imaging		
Abdominal USS+ IVU	5	22.7
Abdominal USS+ CTU	17	77.3
Surgery		
Radical Nephrectomy	14	63.6
Irresectable	8	36.4
Histological subtype		
Clear cell carcinoma	15	67.7
Papillary carcinoma	5	23.8
Unclasssified	1	4.8
Not stated	1	4.5
Tumour size		
≤7cm	0	0
>7cm	22	100

IV. Discussion

Our study buttressed the fact that Renal cell carcinoma (RCC) is a rare malignancy as reported in other studies[1, 2]. We noted an increase in the number of patients that presented during the period under review. A total of 22 patients were seen over a 7 year period. Over 10year duration, Mandong[13], in a previous review at the same institution found that of 2,246 malignant tumours that presented only 17 were RCC. Also, a 10year review by Seleye-Fubara[14] and colleagues recorded only 10 cases of RCC in Port Harcourt. Other studies from South-Eastern Nigeria also recorded lower number of patients compared to our finding [5, 15]. The incidence of RCC has been increasing globally over the last two decades. Several studies have shown that the overall incidence of RCC and the incidence of late-stage RCC have been increasing gradually [16, 17].

The age range of patients in this study was 24 to 89years, with mean age of 52yeares. The peak age incidence at presentation in our study was 40-49. This differs from report from Europe and North America where the peak incidence of RCC is after the 5th decade of life, commonly early 60s[2, 19, 20]. Past studies support that RCC is diagnosed in younger patients in our subregion[5, 8, 9].

The male-to-female ratio in this study was 1: 1.2. This slight female preponderance agrees with previous retrospective review in our Hospital[13]. This contrasts with findings from other studies where RCC is noted to be commoner in males[19, 21, 22]. This may be a reflection of the fact that the incidence of RCC has been found to increase rising in women[23].

Overall, the difference in our patient demographics compared to other studies may be due to the small number of patient we reviewed or indeed due to genetic and environmental differences in our patients.

This study also highlights the problems associated with the management of RCC in our subregion, particularly late presentation of patients. Most patients in our study presented with features of advanced disease. The diagnostic classical triad is a feature of late presentation. Many patients (45.5%) presented with classical triad of weight loss, haematuria and abdominal mass. The finding of late presentation agrees with reports from other centres in the subregion[7, 8,9,10].

No patient presented with incidental tumour in our study. In contrast, in Europe and America, most RCCs are diagnosed incidentally. Jayson [24] and colleague, in a review of 131 consecutive patients who had nephrectomy for RCC found that 61% of the patients were incidentally diagnosed. Additionally, tumour stage is lower and 5 year survival rate is better in incidentally diagnosed RCC.

Abdominal ultrasound can be used to detect the presence of renal mass but it is operator dependent and is limited in complete characterization of such masses. Computed tomography (CT) scan is the imaging modality of choice in the diagnosis and characterization of RCC. It reveals the tumour, its extent, venous involvement, status of loco-regional lymph nodes as well as adrenal and liver extension. Computed tomography (CT) scan is available and largely affordable in our center. Many of the patients (77.7%) had CT urography and abdominal ultrasound, indicating increasing use of the modality to charaterise the tumour. This contrasts with earlier studies where CT of the abdomen were rarely done due to non-availability or high cost[5, 8, 9] .

Our study also found that all the patients presented with tumour size greater than 7cm with the mean tumour size measuring 16.6cm. There is positive correlation between renal mass being malignant and tumour size. Tumour size of more than 7cm in diameter is 95-99% likey to be malignant[25].

There are several histological subtypes of RCC. In this study, 67.7% of the tumours were clear cell carcinoma. The clear cell variety of RCC arises from the epithelial cells lining the proximal convoluted tubules[26, 27]. Papillary carcinoma accounted for 23.8% of the tumours. Other studies have also demonstrated that clear cell carcinoma is the commonest histological subtype of the RCC[28, 29].

The detection of smaller tumours has stimulated increased use of minimally invasive techniques in the treatment of RCC e.g. cryotherapy, partial nephrectomy, laparoscopic resection and radiofrequency ablation. None of these techniques was used for our patients as all our patients presented with advanced disease and tumour size more than 7cm in diameter. Most of the patients (63.6%) had radical nephrectomy while 36.4% of the tumours were non-resectable. Surgery remains the mainstay of treatment for the RCC as it is not responsive to radiotherapy or chemotherapy[30].

Less than 10% of patients with metastatic disease survive more than five years[31]. In this study, only three (13.6%) patients are still alive after 5 years. Ten patients were lost to follow up and 9 have died.

Our study is limited by the fact that small number of patients was evaluated and relatively of shorter duration. Also, our data represent a retrospective review and therefore subject to inherent biases of a retrospective study.

V. Conclusion

Renal cell carcinoma (RCC) is a rare tumour, though the number of patients seen is increasing. It remains a deadly tumour of the kidney and in our environment this is compounded by late presentation of patients.

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