

Renal cell carcinoma in Brunei Darussalam

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Abstract

The incidence of renal cell carcinoma in Brunei Darussalam in the period 1996 to 2005, the some characteristics of presentation and tumour histology are analysed with a view of developing a better understanding of the disease in the country.

1. Introduction

Renal cell carcinoma (RCC) accounts for 1-2 % of cancer diagnosed in Brunei Darussalam [1]. RCC is not a single cancer but made of different subtypes, each with different histology, clinical course and different genetic changes [2]. Histological classification categorizes renal cell carcinomas into clear cell, papillary, chromophobe, oncocytoma, collecting duct, and unclassified RCC subtypes [3]. RCC occurs in both sporadic (nonhereditary) and hereditary forms. About 5% of tumours are hereditary, and a better understanding of their molecular basis has led to development of novel therapeutic interventions [2, 4].

Early stage RCC is cured with surgical resection, but up to 50% of patients either have metastatic disease at diagnosis or have recurrence resection. Chemotherapy regimens have only minimal activity and immunotherapy agents such as interferon alpha and interleukin-2 results in 10-20% response in patients with metastatic disease [5]. There is no proven treatment benefit for patients with progressive disease.

Several new agents that targets the vascular endothelial

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growth factor receptor, and signaling pathways downstream from the von Hippel-Lindau gene product defect, have clinical activity in patients with metastatic RCC as shown in phase II trials [6, 7]. These may be introduced for treatment of RCC in Brunei in the near future.

This study analyses the occurrence, histological subtypes and clinical presentation of RCC in Brunei Darussalam from 1996 to 2005. The data provide baseline information for developing better treatment procedures, including the use of more specifically targeted chemotherapeutics.

2. Methods

2.1 Patients

This is a retrospective review of a total of 33 patients diagnosed with RCC presenting from January 1996 to December 2005 at RIPAS hospital. Clinical data, surgical notes, pathologic findings, and summaries of treatment details were analysed.

2.2 Pathology

Tumors were classified as either conventional (nonpapillary) or papillary. Conventional tumors were further subclassified as clear-cell, chromophobe, and collecting duct carcinoma. A standard staining procedure with haematoxylin and eosin was employed. Cytologic grading was assigned according to the criteria proposed by Fuhrman et al [8]. This system uses nuclear grades that are based on size, irregularity of the membrane and nucleolar prominence.

2.3 Staging and clinical data

Tumor stage was determined according to the 1997 TNM (AJCC) classification of renal tumors.

Stage I - tumour 7cm or smaller confined to kidney (T1a-<4cm T1b>4cm)

Stage II - tumour> 7cm confined to kidney (T2,N0,M0)

Stage III - T3a:Tumour invades adrenal gland or perinephric tissues but not beyond Gerota’s fascia.
 - T3b:Tumour extends into renal vein or vena cava
 - T3c:Tumour extends into vena cava above diaphragm or Metastasis to single node

Stage IV -Tumour invading beyond Gerota’s fascia (T4) or multiple lymph node metastases or distant metastatic disease.

3. Results

3.1 Occurrence of RCC and age distribution

The annual detection of RCC in Brunei Darussalam for the period 1996 to 2005 is shown in Figure 1. Thirty three patients (26 males and 7 females) were diagnosed with RCC during this period (Figure 2).The age of patients ranged from 28 to 90 years (53.8median).

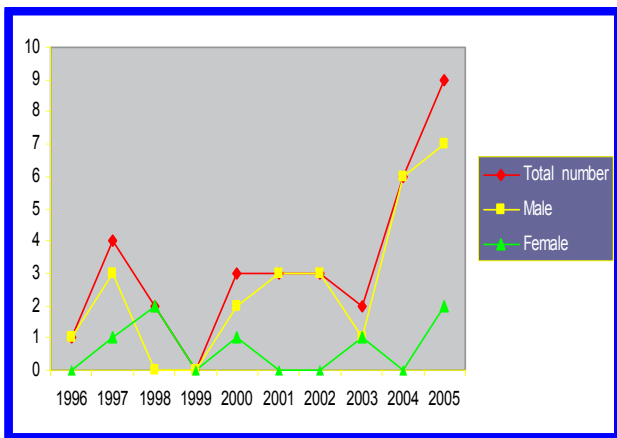


Figure 1. Renal cell carcinoma in Brunei Darussalam 1996-2005

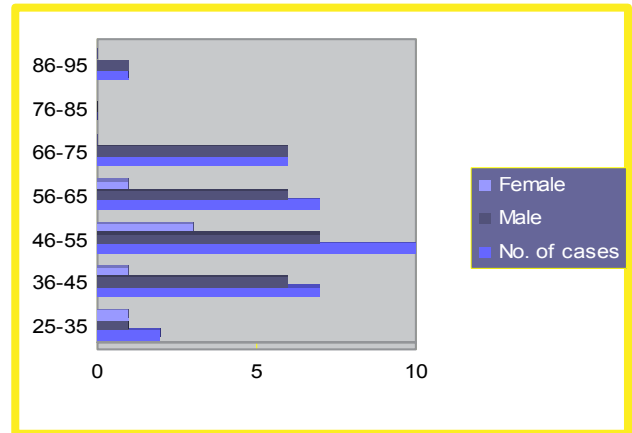


Figure 2. Age distribution of renal cell carcinoma in Brunei 1996-2005

3.2 Histological characteristics

Twenty seven patients (81.8%) had clear cell RCC, four patients (12.2%) papillary histotype, one (3%) chromophobe cell type and one (3%) collecting duct type (Table 1).Of the twenty seven patients with RCC, three patients (9%) had sarcomatoid stroma which carries a worse prognosis [9].

Histology	Patients %
Clear cell	81.8
Papillary	12.2
Chromophobe	3
Collecting Duct	3

Table 1. Histological characteristics of RCC in Brunei 1996-2005 (N=33)

3.3. Staging of tumours

Thirty one patients were staged. Five patients (16.1%) classified as stage I, nine (29%) stage II, seven (22.6%) stage III, (T3a-4 patients, T3b-3 patients) and ten (32.3%) stage IV (Table 2). Two patients were diagnosed with bilateral tumor.

Stage	Patients %
I	16.1
II	29
III	22.6
IV	32.3

Table 2. Presenting stage of RCC in Brunei 1996-2005 (N=31)

Fuhrman grading was assigned to 16 patients (48%); five (31.3%) classified as grade 1; four (25%) grade 2; three (18.7%) grade 3; and four (25%) grade 4 (Table 3).

Fuhrman Grade	Patients %
1	31.3
2	25
3	18.7
4	25

Table 3. Fuhrman Grading of RCC in Brunei 1996-2005 (N=16)

3.4 Tumour size

Tumor size, examined in 27 patients, was 4 -7cm in 29.6%), > 7- 10cm in 33.3% and more than 10 cm in 22.2% [Figure 3].

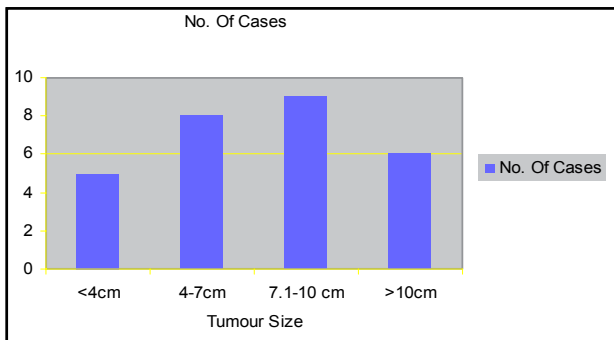


Figure 3. Tumour size distribution of RCC in Brunei 1996-2005

3.5 Clinical presentation

Majority of patients presented with haematuria though there were a few cases where the diagnosis was made on radiological imaging done for other reasons (Figure 4)

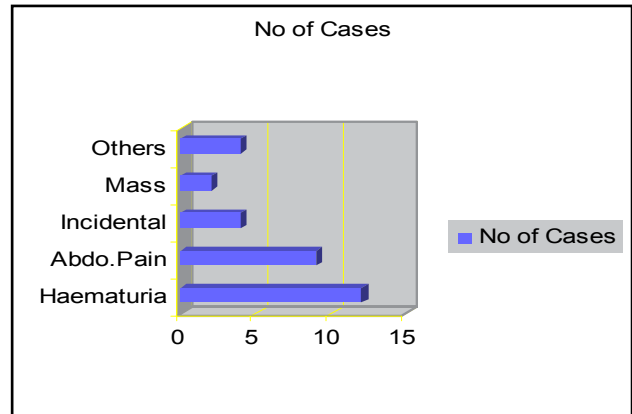


Figure 4. Clinical presentation of RCC in Brunei 1996-2005

4. Discussion

RCC is three times more common in males than females in Brunei which is similar to that observed in Singapore [10]. RCC is also more common among males in the USA, where its overall incidence is on the increase [11]. A relatively higher number of RCC were detected in 2005 in Brunei and the trend needs to be studied over a longer period to determine whether the incidence of RCC is increasing in Brunei. RCC is most commonly detected in the 4th and 6th decades of life in the USA [11], and this also is the case in Brunei.

The majority of patients with RCC in Brunei Darussalam have a clear cell histology which is comparable to that reported in western countries [4]. The analysis shows that patients also tended to present with stage IV disease (32.3%) and tumour size > 7 cm (53.5%). TNM stage and Fuhrman grade are widely recognized prognostic factors in RCC [12]. Some patients are diagnosed by radiological imaging done for reasons other than suspected cancer and this causes stage migration due to earlier diagnosis. It is anticipated that the data analysed here will lead to a better understanding of RCC in Brunei and contribute to developing more effective treatment procedures in the future.

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