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Original Research Article

Histopathology of bladder carcinomas: an eight year retrospective study at Lagos state university teaching hospital, Ikeja, Nigeria

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ABSTRACT

Background: This study was undertaken to evaluate the histological types, frequency, age and sex distribution of bladder carcinoma in Lagos State University Teaching Hospital (LASUTH), Ikeja, Lagos state. This study aims to classify bladder carcinoma in this centre according to the World Health Organisation/ International Society of Urological Pathology.
Methods: An eight-year retrospective study of all bladder carcinomas specimens that were sent to the department of Pathology and Forensic Medicine, LASUTH between 1st January, 2011 and 31st December, 2018 was done. Relevant data consisting of the age and sex distributions as well as histopathological types were extracted from the departmental information system and filed documents. The data was analysed using the IBM-SPSS version 25.0.
Results: There were 87 cases of bladder tumours, out of which 55 (63.2%) were bladder carcinomas. The mean age at diagnosis of bladder carcinomas was 56.9±13.9 years. Sex distribution has male to female ratio of 1: 1. Urothelial carcinoma predominates as the most common histological type.
Conclusions: Bladder carcinoma presents most frequently at the 5th decade of life, with a slight male preponderance.

Keywords: Age at diagnosis, Bladder carcinoma, Histological type

INTRODUCTION

Bladder cancer is the 10th most common cancer worldwide, the 6th most commonly occurring cancer in men and the 17th most commonly occurring cancer in women.[1] There were almost 550,000 new cases and 200,000 deaths globally in 2018.[1] In both sexes, the highest incidence rates of bladder cancer are observed in Europe and North America.[2]

Bladder cancer is a significant health care burden in developed countries due to its high incidence rates. It is estimated that bladder cancer costs €4.9 billion in the European Union in 2012.[3] Accurate epidemiological data about the incidence and mortality of bladder cancer are unavailable for regions with lower development indices.[4] However, the highest mortality rates have been recorded in Western Asia and Northern Africa.[5,6] Bladder cancer formed 6.4% of all malignancies seen in Kano in Northern Nigeria compared to 1.25% in Ibadan, South west Nigeria.[7,8]

The exact causes of bladder cancer are unknown; however, there are several associated risk factors. These include environmental factors, such as smoking and exposure to certain industrial chemicals (aromatic amines, polycyclic aromatic hydrocarbons and chlorinated hydrocarbons).[9] Chronic bladder inflammation due to Schistosomia haematobium infection, chemotherapeutic agents, analgesic abuse and

pelvic irradiation.[9,10] Genetic factors also play an important role in determining bladder cancer risk. Molecular researchers have linked mutations in several genes including Fibroblast growth factor receptor 3(FGFR3), Retinoblastoma protein (RB1), Harvey rat sarcoma (HRAS), Tumour protein p53(p53), and Tuberous sclerosis 1(TSC1)3 to various bladder tumours.[11]

The histological cell type of bladder cancer is geographically dependent, however transitional cell carcinoma (TCC) is the most common worldwide.[7-9] TCC accounts for over 90% of cases in North America and Europe.[2,9] In Africa, over 50% of bladder cancers are squamous cell carcinoma (SCC) because of the endemic infections with Schistosoma species.[4,12-14] Adenocarcinoma accounts for less than 5% of bladder cancers in most studies worldwide and non-urothelial primary bladder tumours are extremely rare and may include small cell carcinoma, primary lymphoma, and leiomyosarcoma.[15-18]

This study aims to classify bladder tumours according to the World Health Organisation and International Society of Urologic pathology classification and the objectives include to describe the clinicopathological features of bladder carcinomas, consisting of age, sex, frequency, histological types as well as the histological grading of urothelial neoplasms.

METHODS

This is a retrospective study of all consecutive cases of bladder carcinomas that presented to the Department of Pathology and Forensic Medicine, LASUTH between 1st January 2011 to 31st December 2018. Lagos State university teaching hospital is a large referral multispecialty hospital in Lagos state, with a population of over 20 million people from different ethnic and racial background.

The laboratory receives histopathological samples from LASUTH urology department as well as general and private hospitals within and outside of the state. The important information such as the demographic and pathological data of the patients were sourced from the laboratory information system of the department as well as filed copies of the requisition form.

The corresponding slides and blocks of patients with these tumours were retrieved. Patients without adequate information and with slides and blocks missing were excluded from this study. Patients whose slides had faded or broken had recut from the main block and re-stained with haematoxylin and eosin. The slides were reviewed by Pathologists in the study. Special stains where indicated were also performed.

The result of this study was analysed using Statistical Analysis for Social Sciences (SPSS) version 25.0.

Inclusion criteria

- All cases of bladder carcinomas within the time under study were included.

Exclusion criteria

- All cases in which the tissue blocks were either missing or damaged.
- Cases in which no clinical information were available.

RESULTS

There were 87 cases of bladder tumour that presented at Pathology department of LASUTH between 2011 and 2018. The ages of all these patients ranged from 19 to 84 years. Males accounted for 47 (54.0%) while females represented 40 (46.0%) with overall male to female ratio of 2: 1. Of the 87 samples, 55 (63.2%) cases were bladder carcinoma.

The age range of patients with bladder carcinoma was from 21 to 84 years with a mean age of 56.9±13.9 years and modal age of 48 years. Of the 55 bladder carcinoma cases, there were 29 (52.7%) males and 26 (47.3%) females with male to female ratio of 1: 1. No malignant tumour was found among patients less than 20 years old. The malignant cases were commonly found in patients of age 40 years and above in 51 out of 55 cases (92.7%) with the peak incidence at age 40-49 years with 16 cases (29.1%). Of all the bladder carcinomas, urothelial carcinoma was the most common. This accounted for 83.6%. Squamous cell carcinoma presented next representing 14.6%. Only one case of adenocarcinoma was observed.

In this study, papillary urothelial neoplasm of low malignant potential (43.4%) were commoner than high grade urothelial carcinoma (39.6%) (Table 1). Figure 1 and 2 show urothelial carcinoma and squamous cell carcinoma respectively.

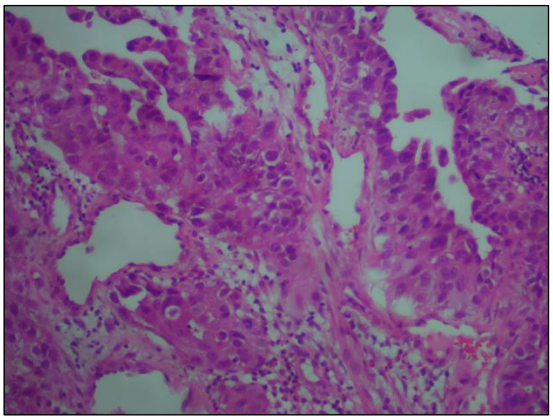

Figure 1: High grade papillary urothelial carcinoma of the bladder x 100 magnification.

Table 1: Patient's demographic and diagnosis.

Parameter (n=55)	Frequency	Percentage
Gender		
Male	29	52.7
Female	26	47.3
Age group (years)		
20-29	1	1.8
30-39	3	5.5
40-49	16	29.1
50-59	13	23.6
60-69	10	18.2
70 and above	12	21.8
Histological types		
Urothelial carcinoma	46	83.6
Squamous cell carcinoma	8	14.6
Adenocarcinoma	1	1.8
Urothelial ca grade		
Papillary urothelial neoplasm of low malignant potential	24	43.4
Low grade urothelial ca	6	17.0
High grade urothelial ca	16	39.6
Total	46	100.0
Squamous cell ca grade		
Poorly differentiated	1	12.5
Moderately differentiated	3	37.5
Well differentiated	4	500
Total	8	100.0

There were more urothelial carcinoma tumours among males with 24 cases (52.2%) than females, 22 cases (47.8%) with male to female ratio of approximately 1: 1 whereas there were equal number of squamous cell carcinoma in males and females with male: female ratio 1:1. Similar trend was observed for squamous cell carcinoma distribution across males and females and the only adenocarcinoma case seen was found in male (Table 2).

Table 2: Gender distribution of bladder carcinoma.

Histopathological type	Gender		M:F	p-value
	Male	Female		
Urothelial carcinoma	24 (52.2%)	22 (47.8%)	1.1:1	0.629
Squamous cell carcinoma	4 (50.0%)	4 (50.0%)	1:1	
Adenocarcinoma	1 (100.0%)	0 (0.0%)	1:0	

Table 3 shows age distribution of bladder carcinomas. Urothelial carcinoma was most prevalent within age group 30-69 years representing 87.2%. Similarly, 87.5% of squamous cell carcinoma cases were found within age group 40-59, while none was found in patients less than 40 years old.

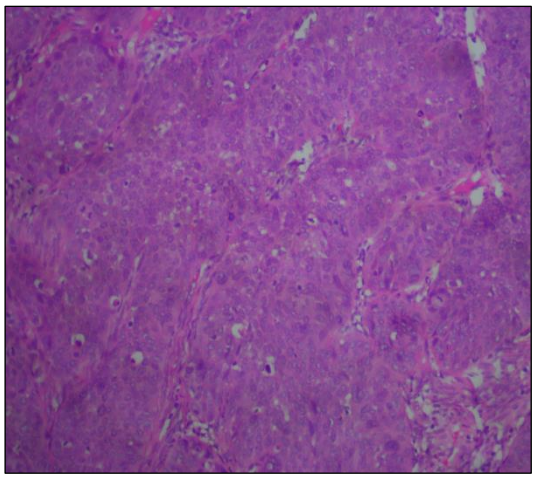

Figure 2: Infiltrating, poorly differentiated squamous cell carcinoma of the bladder x 100 magnification.

Table 3: Age distribution of bladder carcinoma.

Histopathological type	Age category N (%); p = 0.452					
	21-29	30-39	40-49	50-59	60-69	70+
Urothelial carcinoma	1 (2.2)	3 (6.5)	12 (26.7)	10 (21.7)	9 (19.9)	1 (23.9)
Squamous cell carcinoma	-	-	4 (50.0)	3 (37.5)	-	1 (12.5)
Adenocarcinoma	-	-	-	-	1 (100.0)	-

Of the 46 urothelial carcinoma cases, there were 12 cases of papillary urothelial neoplasm of low malignant potential seen in males as well as in female (M: F =1: 1).

Similarly, there were 8 cases each of high grade urothelial carcinoma seen in males and in females. However, the number of low grade urothelial cancers was higher in males, 4 (66.7%) than in females (33.3%) with M: F ratio of 2: 1 as shown in Table 4.

Papillary urothelial neoplasm of low malignant potential was most common in the 5th decade of life while low grade papillary urothelial carcinoma was seen in 6 cases (100.0%) in patients with a minimum age of 50 years.

This group also contained the majority of high grade urothelial carcinomas in 12 out of 16 cases (75.0%) as shown in Table 5.

No statistically significant variation was observed in age distribution of urothelial carcinoma as they mostly occurred in adults of at least 40 years old (p>0.05).

Table 4: Gender distribution of urothelial carcinoma grades.

Urothelial carcinoma grade	Gender (n=46)			p-value
	Male	Female	M:F	
Papillary urothelial neoplasm of low malignant potential	12 (50.0%)	12 (50.0%)	1:1	0.748
Low grade urothelial ca	4 (66.7%)	2 (33.3%)	2:1	
High grade urothelial ca	8 (50.0%)	8 (50.0%)	1:1	

Table 5: Age distribution of urothelial carcinoma grades.

Urothelial carcinoma grade	Age years (n=46; p = 0.202)					
	21-29	30-39	40-49	50-59	60-69	70+
Papillary urothelial neoplasm of low malignant potential	1 (4.2%)	1 (4.2%)	10 (41.7%)	5 (20.8%)	4 (16.7%)	3 (12.5%)
Low grade urothelial carcinoma	0 (0.0%)	0 (0.0%)	0 (0.0%)	2 (33.3%)	1 (16.7%)	3 (50.0%)
High grade urothelial carcinoma	0 (0.0%)	2 (12.5%)	2 (12.5%)	3 (18.8%)	4 (25.0%)	5 (31.3%)

DISCUSSION

The mean age of diagnosis of bladder carcinoma in this study is 56.9±13.9. This is comparable with studies done at Maiduguri, Kano and Ibadan.[19-21] However, in Benin, bladder carcinoma was said to be most common in the 7th decade of life as against 5th to 6th decade in many parts of Nigeria, including this centre.[22] This disease was not seen before 20 years of age in this study. This is the picture that is common worldwide. Bladder carcinoma is infrequently seen before 20 years. This may be related to the several years of exposure to environmental factors like smoking, aromatic amines, and chronic Schistosomiasis infestation, which are high risk factors in the development of the cancer. The most prevalent histological type is urothelial carcinoma, which is present in 83.6% of patients in this study.

This is consistent with findings in other parts of the country. An interesting report from the study on update of bladder carcinoma in Kano, North Western Nigeria is consistent with urothelial carcinoma as the most common histological type as opposed to earlier study done in same centre several years ago, in which Squamous cell carcinoma was predominant. The reversal in trend was due to aggressive treatment of Schistosomiasis, a disease known to cause squamous cell carcinoma in later years.[19,20] This tends to be the trend in most parts of the country at the moment.[19,21] In Africa, studies done in urban areas of Tanzania, and South Africa are in support of transitional carcinoma as most common histological type of urothelial carcinoma.[23,24] In North Africa, especially in Egypt and especially around the Nile river area, Squamous cell carcinoma predominates. The reason for this is due to heavy chronic bladder Schistosomiasis. Long term infestations of the bladder by Schistosoma haematobium lead to metaplastic transformation of the transitional epithelium to squamous epithelium. Dysplasia and ultimately malignant transformation over the years lead to infiltrating squamous cell carcinoma.[24] In the United State of America, like other Western Countries transitional cell carcinoma is the most predominant.[25] In Europe and North America, only 5% of bladder carcinoma are squamous in origin and 2% are adenocarcinoma.[26]

Patient with urothelial carcinoma present with high grade disease in 33.6% at the time of diagnosis. This is without gender bias and in the elderly at 7th decade of life. Male aged 70 years and above usually present with low grade urothelial carcinoma.

CONCLUSION

This study highlights the fact that bladder carcinoma is not common in our environment; only 55 cases were recorded in 8 years. Bladder carcinomas occur most frequently in the 5th decade of life with slightly higher occurrence in males. Urothelial carcinoma is the most recurring histological type of bladder carcinoma in our centre.

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