Original Article

Papillary Urothelial Carcinoma

To Evaluate the Frequency, Gender and Age-Related Distribution of Papillary Urothelial Carcinoma

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ABSTRACT

Objective: To evaluate the frequency, gender and age-related distribution of papillary urothelial carcinoma.
Study Design: Cross sectional study
Place and Duration of Study: This study was conducted at the Department of Pathology, Basic Medical Science Institutes, Jinnah Postgraduates Medical Center Karachi from January 2009 to December 2016.
Materials and Methods: Total numbers of 247 cases of papillary urothelial carcinoma were reviewed and morphological diagnosis done on H&E; information regarding gender and age were recorded from archives. The data analyzed by SPSS version 21.
Results: Frequency of papillary urothelial carcinoma was 6.8%. Out of 247 cases 85.42% in male and 14.57% in female with male: female ratio of 5.8:1. Relatively more common in 5th & 6th decade's i-e 59% as compared to other age groups. Mean and median age of papillary urothelial carcinoma was 57.62 and 65 years noted.
Conclusion: Frequency of urothelial carcinoma was 6.8%. Amongst 247 cases 211 were in male gender and 36 cases in female sex with M: F ratio of 5.8:1. While according to age 85, 60, 57, 24, 17 and 04 cases were in 5th, 6th, 4th, > 7th, 3rd and less than 3rd decades, minimum and maximum age was 22 and 90 years respectively.
Key Words: papillary urothelial carcinoma, Frequency, Age, Decades, Gender, Male, Female

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INTRODUCTION

The urinary bladder malignancy has the highest ratio of fatality in urogenital cancer[1]. Globally it is the 2nd commonest urogenital neoplasm, showing major cause of morbidity and mortality [2]. Western countries data shows that it was the 4th and 8th most common malignancy in male and female gender respectively [3,4]. Worldwide incidence of urinary malignancy is more common in male than female sex, with higher male to female ratio [5,6].

In US up to 71,000 new cancer cases with 14,000 deaths were recorded in 2009. The incidences were 19.5 with 7.9 mortality per 1, 00,000 populations in European countries. Iranian data of 2008 showed that urinary bladder neoplasm was 13.03 and 3.32 per 1, 00,000 populations in male and female gender [7].

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Globally urinary bladder neoplasm were higher in Western Europe, North America, Australia, Netherland, Belgium, Poland, Iraq, Egypt and lower in Far Eastern and Asian countries [8,5,7,9,10] Approximately urinary bladder malignancies are considered 7% and 2% of new malignant lesion in male and female cancers respectively [7].

Shoukat Khanum Collective Cancer Registry [11] 1994-2013 data shows that urinary bladder cancer was the 10th with 3.05% common malignancy in both sex of adult age and 7th with 5.42% in adult male gender. Urinary bladder neoplasm's are rare before 40 years and commonly presentation occurs above 70 years of age [5].

Risk factors for urinary bladder malignancy were tobacco smoking accounts for 48% to 60% and 31% to 32% causes new cases in male and female gender respectively. Other risk factors are male gender, older age, naswar, aromatic amines, pelvic irradiation for other malignancies, and aromatic amines, pelvic irradiation for other malignancies, and physical trauma by stones, chronic infections either by instrumentation, schistosmiasis or human papilloma viruses, high quantity of coffee and alcohol consumption[12,8,5,7].

Occupational exposure that is rubber, dyes, carpenters, varnishes, petroleum worker and hair dresser were reported as a precursor of urinary bladder cancer [13-16].

Whereas high quantity of fluid intake, fruits, fiber diet, and vegetable uses are associated with a decrease incidence of urinary bladder neoplasm's.[4,17].

MATERIALS AND METHODS

The study was performed at the department of Pathology Basic Medical Sciences Institute, Jinnah Postgraduate Medical Center Karachi from 1st January 2009 to 31st December 2016. A total of 247 of Papillary Urothelial Carcinoma cases were included in this study. These patients were operated at Urology department of JPMC Karachi.

All specimens in the form of TURBT and Cystectomy were included, whereas poorly fixed and inadequate tissue, bladder tumor other than Papillary Urothelial Carcinoma and metastatic tumors were excluded. Formalin fixed, paraffin embedded blocks, surgical pathology, clinical records and Hematoxylin & Eosin slides were used.

The relevant clinical information and others data were collected. Section were taken and stained with H&E. All slides were studied under light microscope using scanner (4x), low power (10x) followed by high power (40x). The data was analyzed by using Statistical Package for Social Sciences (SPSS) version 21.

RESULTS

Table No 1; Frequency of papillary urothelial carcinoma between 2009 to 2016

Years	Total no of malignancy from all sites	Number of urothelial carcinoma	Percentage %
2009	590	27	4.57
2010	648	36	5.55
2011	550	32	5.81
2012	510	25	4.90
2013	428	35	8.17
2014	323	26	8.04
2015	272	38	13.97
2016	304	28	09.21
Total	3625	247	6.81

Table; 1 showed total numbers of malignant biopsies from all sites received in the department of pathology during the mentioned time period. Total malignant lesions were 3625 and the urothelial carcinomas were 247 cases. Frequency of urothelial carcinoma was 6.81% over a period of eight years.

Table No.2: Distribution of papillary urothelial carcinoma according to gender (n-247)

Gender	Number of urothelial carcinoma	Percentage %	M:F
Male	211	85.42	5.8:1
Female	36	14.57	
Total	247	100	

Table 2, elaborate the distribution of papillary urothelial carcinomas according to gender. Out of 247 cases, male were 85.42% & 14.57% cases were of female sex.

This data showed male: female ratio of 5.8:1.

Table No.3: Distribution of papillary urothelial carcinoma according to various age groups (n= 247)

Age [years]	Number of urothelial carcinoma	Percentage	Cumulative index
20 to 30	04	01.61	04
31 to 40	17	06.88	21
41 to 50	57	23.07	78
51 to 60	85	34.41	163
61 to 70	60	24.29	223
More than 71	24	09.71	247
Total	247	100	

Table 3; demonstrates the distribution of malignant urothelial lesions from 2009 to 2016 in various age groups. Amongst 247 cases, majority i-e 85 (34.41%) cases were found between 51 to 60 years of ages, followed by 60 (24.29%) & 57 (23.07%) cases in 61 to 70 & 41 to 50 years respectively.

The mean age was 57.62 years, median age was 65 years. The minimum age was 22 years while maximum age was 90 years noted.

DISCUSSION

Our eight years data of PUC diagnosed on H&E showed the frequency of 6.8%. This figure was comparable to the studies who reported 7.6%, 5.4%, 5.43% and 4.6% by AFIP Cancer Registry (1992-2001), Khan et al (1997)[18], Shaukat Khanum Collective Registry [11] (1994-2013) and American Cancer Registry (2007-2012) respectively. These variations could be due to sample size difference and time duration of sample collection.

An interesting observation was a progressively increased frequency every year. This could be due to the reason that the low socioeconomic community that reports to our center is becoming more aware of health issues.

In present study of 247 cases of PUC showed male predominance i-e 85.5% cases & 14.5% cases in female gender, with male: female ratio of 5.8:1. Globally various male: female ratio were noted i-e 1.1:1 in Eastern Africa, 2.1:1 in South Africa, 5:1 in North Africa and 5.1:1 in Southern Europe reported by Salehi et al (2011)[7], Scelo (2007), Yavari (2009), Pakistani study of Badar et al (2009) 5:1 [20], (Puente et al 2003) noted male: female ratio of 4:1 in United State, 6.7:1 in Spain and 7:1 in Italy.

Our figures were comparable to Indian study by Biswas et al (2013) [4] who reported 86% of male, 14 % of female sex and male: female ratio of 6:1. Korean study

by Choi et al (2007) [1] noted male: female ratio of 6.5:1. Japanese study by Liu et al (2013) [2] showed 77% &23% in male and female gender. Chinese study by Zhang et al (2012) [19] showed male: female ratio of 5:1. A Pakistani study by Mansoor et al (2011) [3] reported 88% &22% in male and female sex with male: female ratio of 8:1. These variations could be due to less females reporting to hospital, ignorance, illiteracy and preference to male gender for diagnosis and treatment in our population.

In this study PUC were presented at various age ranges i-e 22 to 90 years which were the minimum and maximum age of presentation. The median age was 65 years and mean age was 57.62 years noted. The similarity was observed in Korean study by Choi et al (2007) [1]who reported the age ranges from 26 to 87 years with the mean age of 62 years. Indian study by Biswas et al (2013) [4] reported median age of 65-70 years. Iranian study by Salehi et al (2011) [7] showed mean age was 65 years. Japanese study by Liu et al (2013) [2] showed age ranges from 18 to 88 years with mean age of 61.4 years. Pakistani study by Mansoor et al (2011) [3] was claimed that the median age was 62 years.

In our study the majority of PUC cases were presented in 51 to 60 years of age i-e 34.4% followed by 24.3% cases in 61 to 70 years of age, collectively 58.7% cases in 51 to 70 years of age. These were comparable with the Chinese study by Zhang et al (2012)[19] showed 72.2% cases in >55 years of age while 27.8% cases in <55 years of age. Indian study by Biswas et al (2013) [4] who reported 63% cases of PUC were observed in 5th to 7th decades of life. These variations could be due to environmental and genetics' factors.

In present study the PUC were presented in various age groups, mostly of cases in chronological sequences 34.4%, 24.3 & 23.1% were observed in 51 to 60, 61 to70 & 41to 50 years of ages and collectively 82%cases were found from 5th to 7th decades of life. These were comparable with Indian study by Biswas et al (2013) [4] who reported 35.2%, 72.2% &18.2% in age groups 60 to 69, 50 to 59 & 40 to 49 years and collectively 81% cases were reported in 4th to 7th decades of life. Chinese study by Zhang et al (2012)[19] from 658 cases of PUC showed that majority of them were noted between 5th to 7th decades of life. Iranian study by Salehi et al (2011) [7] reported that majority of patients with PUC presented in 5th to 7th decades of life.

Tripathi et al (2002)[12] noted that the relative risks of PUC were increased from 1.0 to 1.65 in 5th and 6th decades of life.

According to age our study showed that the ratio of PUC was gradually raised as age group increased in year's i-e 06.88% in 3rddecades, 23% in 4th decades and in 5th decades 34.5% cases.

Our observation also showed that the ratio of PUC was decreased as age advanced i-e 34.5% in 5th, 24.3 % in 6th & 09.7% cases in 7thand above decades. These figures were comparable with United State SEER [21-22] study by Lynch (1998-2000) showed 14% cases in 5th, 26.8% in 6th & 32.6% cases in 7th decades of life. Kumar (2012)[23] also reported that 38.3% in 6th, 20% in 7th & 11.6% in 8thdecades of life. Altimari (2011)[24] who showed 89.5% cases in 6th decades and 86% cases 7th decade in of life. These variations may be due to difference in sample size.

CONCLUSION

During eight years period 3625 malignant cases from all sites were recorded out of which 247 cases were registered as PUC and the frequency was 6.81%. More common in male with the rate of 85.5% and 14.5% cases in female with male: female ratio of 5.8:1. The most common age group was 5th to 6th decade's i-e 59% as compared to other age groups.

Wide scale awareness through health education to the community, patients, physicians and counseling programs may help to ensure early presentation in the initial stage of the disease, in order to improve clinical outcomes with less morbidity and mortality.

Author's Contribution:

Concept & Design of Study:	Syed Muhammad Ishaque
Drafting:	Shaista Gul, Noshaba Rahat
Data Analysis:	Abdullah Jan, Ahsan ul Wadood
Revisiting Critically:	Syed Muhammad Ishaque, Shaista Gul
Final Approval of version:	Syed Muhammad Ishaque

Conflict of Interest: The study has no conflict of interest to declare by any author.

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