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Urinary bladder cancer in adults, a histopathological experience from major hospitals in Lahore, Pakistan

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Abstract

Objective: This study aims to investigate the prevalence and clinicopathological attributes of urinary bladder cancer.

Methods: A retrospective examination was carried out at the University of Lahore teaching Hospitals, Lahore, Pakistan, analyze the tumors spanning from January 2015 to October 2023. Data were retrieved from histopathologic reports and scrutinized for variables such as age, gender, cryptoscopic findings, and histopathological features at the time of diagnosis.

Results: Among the 116 cases reviewed, 96 (82.7%) were male and 20 (17.3%) were female, with an average age of 62.4 ± 15.62 years (range: 20-115 years). Transitional cell carcinoma emerged as the predominant histological type, detected in 111 (95.7%) cases, followed by adenocarcinoma in 3 (2.6%) cases, and squamous cell carcinoma in 2 (1.7%) cases. Within the transitional cell carcinoma subgroup, 78 (70.5%) cases were superficial, while 33 (29.5%) were identified as muscle invasive. Furthermore, the majority (65%) of transitional cell carcinoma cases were of lower grade (grade I and II), with 39 (35%) cases classified as grade III.

Conclusion: Our findings from the University of Lahore teaching Hospitals, Lahore in major and minor portion was data was collected from different hospitals (Mayo Hospitals, Jinnah Hospitals, services hospital) of Lahore, regarding urinary bladder cancer exhibit concordance with earlier research, indicating consistency in the disease's manifestation and characteristics.

Keywords: Bladder cancer, Urothelial carcinoma, Pathological examination

Introduction:

Cancer remains a major global health challenge, with alarming statistics reported by the International Agency for Research on Cancer (IARC). According to IARC, there were 14.1 million new cancer cases and 32.6 million prevalent cases worldwide in recent years (Ferlay et al., 2013). This burden is disproportionately concentrated in less developed regions, where over half of the cases are reported, and projections indicate that cancer cases will increase to 22 million annually by 2030 (Bray et al., 2013). Among these cancers, urinary bladder cancer (UBC) holds significant importance. It ranks as the seventh most common cancer in males and the eleventh most common cancer overall (Stewart & Wild, 2014).

In terms of regional disparities, UBC incidence is higher in Europe, the United States, and Egypt, while it remains lower in regions such as sub-Saharan Africa, parts of Asia, and South America (Chavan et al., 2014). Particularly in Egypt, UBC prevalence is notably higher among males, with schistosomiasis being a significant risk factor (Khaled, 2013). Similarly, UBC is prevalent in certain Middle Eastern countries, including southern Iran, Jordan, and Bahrain (Masoompour et al., 2011). Interestingly, while the Kurdistan region of Iraq experiences a relatively low incidence of UBC, there has been a noticeable increase in cases in recent years, paralleling the rising cancer trends in the region (Othman et al., 2011).

Data from the Saudi Cancer Registry (SCR) reveals that 14,777 new cancer cases were recorded, with UBC ranking as the ninth most common cancer in males and fourteenth in females (Alshammari et al., 2015). In Pakistan, however, UBC is less common, with the Lahore region ranking eleventh out of thirteen in terms of incidence (Abomelha, 2004). While limited research has specifically focused on UBC in Lahore, a few studies have examined genito-urinary cancers in Punjab, making this study essential in exploring the frequency and clinicopathological characteristics of UBC in the region. This study aims to contribute valuable insights into this underexplored area of cancer epidemiology in Lahore and surrounding regions.

Methodology:

This retrospective inquiry was carried out at the department of pathology University of Lahore teaching Hospitals, Lahore, focusing on cases of bladder tumors spanning from January 2015 to October 2023. The hospital serves as a general tertiary care facility. This study included the patients who visited the urology outpatient's department (OPD) and underwent procedure such as cystoscopy bladder biopsy and or transurethral resections (TUR) of bladder growth. data extraction involved gathering information from hepatology reports, which was then analyzer for variable such as age, gender, autoscopic findings and histopathoglocal history at the time of data research study. Tumor staging and grading were conducted

following the guidelines outlines in the world health organization (WHO). The statistical analysis was also observed while apply SPSS 2022.

Results:

Study selections:

The depicted diagram outlines the journey of studies, beginning from the initial screening of titles and abstracts to the ultimate determination of inclusion or exclusion. We adhered strictly to predefined criteria for inclusion and exclusion in Figure 1, to ensure transparency and consistency. Two reviewers meticulously evaluated each study at both the title/abstract and full-text article stages, rigorously assessing eligibility for inclusion to maintain integrity and avoid plagiarism.

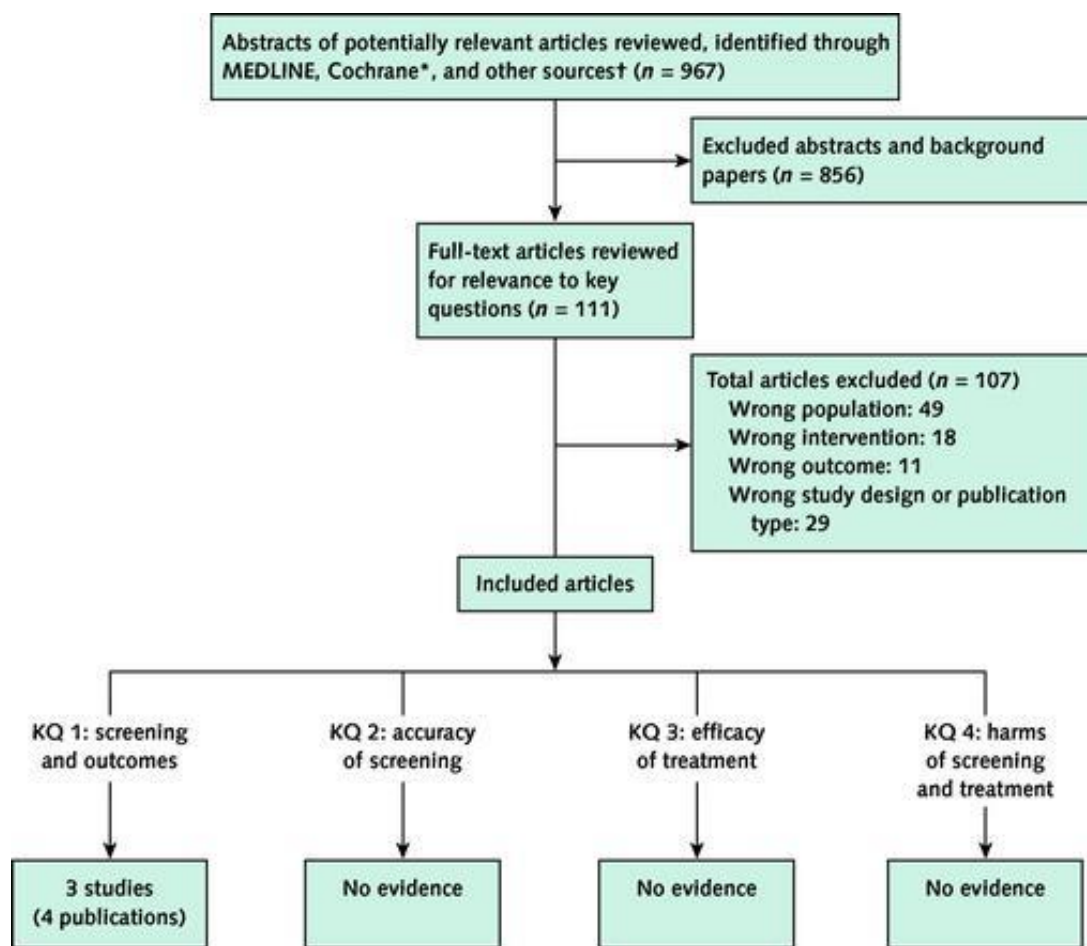


Fig 1: The evidence of summary of selection of studies

Among the 118 cases identified 94 (81%) were male and while 16 (19%) were females resulting in males to female’s ratio 5:7:2. The mean age across all cases was 63.5±16.43 years, with ages ranging from 18 to 90 years. Males had mean age of 60±14 years while females had a mean age of 43±15 years. This majority of cases (47%) were observed in the age group of 58-75 withing 8.5% in the <42-year age group and 11% in the > 78 years age group. The predominant histopathological types were transitions cell carcinoma accounting for 94% of cases, followed by adenocarcinoma (2.8%) and squamous cell carcinoma (1.9%).

Among TCC cases 69% were categorized as superficial while the 28% were muscles invasive. The male to females ratios for the TCC was 6.5:2 with the highest occurrence in the 58=75 years. With mean age of the 60±15 years. Most of the TCC cases (63%) were of lower grade (grade 1 and grade 2), while the 33% were of grade 3. Papillary configuration was predominant (62%) followed by solid nodule or mixed (papillary and solid) configurations (33%).

Table 1: showing data of frequencies and percentage among the urinary bladder cancer patients.

Histopathologic Diagnosis	Frequency	Percentage (%)
Transitional Cell Carcinoma	111	94
Adenocarcinoma	4	2.4
Squamous Cell Carcinoma	2	3.7
Total	117	100

Adenocarcinoma and squamous cell carcinoma (SCC) cases were 45±110 year and 62±15 year, respectively. Adenocarcinomas were common in males (64%) compared to females (32%) with gender ration 2:1. All cases were moderately differentiated, conversely all SCC cases were observed in females’ patients and hundred percent were characterized by poorly differentiate tumors. The Table 1 shows the histological types and frequency distribution of patients with bladder tumors. The transitional cell carcinoma and adenocarcinoma percentage can be observed in table 2.

Table 2: Giving the expression of type and frequency distribution with balder tumors.

Variable	Transitional Cell Carcinoma	Adenocarcinoma	Squamous Cell Carcinoma
Gender			
Male	94 (84.7%)	2 (66.7%)	-
Female	17 (15.3%)	1 (33.3%)	2 (100%)
Age			
Mean age (years)	62.6	47.5	63.5
Age specific groups			
< 40	12 (10.8%)	1 (33.3%)	-
40-49	9 (8.1%)	-	-

Variable	Transitional Carcinoma	Cell Adenocarcinoma	Squamous Carcinoma	Cell
50-59	21 (18.9%)	1 (33.3%)	1 (50%)	
60-69	27 (24.3%)	1 (33.4%)	-	
70-79	30 (27.1%)	-	1 (50%)	
> 80	12 (10.8%)	-	-	
Total	111 (100%)	3 (100%)	2 (100%)	

Discussion:

Lahore, like many regions globally, is undergoing rapid urbanization and industrialization, leading to an increase in modern diseases, including cancer. Although cancer rates remain relatively low in Lahore compared to Western countries, recent trends suggest a steady rise in cancer prevalence. Urinary bladder cancer (UBC), while relatively uncommon in Pakistan according to the Pakistan Cancer Registry (PCR), has been observed to show an increasing incidence in the region, prompting the need for more localized data (Mubarak et al., 2014).

Globally, UBC primarily affects males, a trend consistent with reports from the World Health Organization (WHO) and the Pakistan Cancer Society (PCS) (Bray et al., 2013; Stewart & Wild, 2014). In line with global data, studies from Egypt, India, Malaysia, Nigeria, and other regions have also demonstrated a male predominance in UBC cases (Khaled, 2013; Kong et al., 2010). Our study similarly reveals a predominance of UBC in males, with a male-to-female ratio of 4:1, a pattern often linked to schistosomiasis (Zaghloul, 2012). This finding aligns with previous research indicating a male-dominated incidence in UBC, as well as the influence of environmental factors such as schistosomiasis, particularly in Egypt (Khaled, 2013).

The age distribution of UBC cases also reflects global trends, with higher prevalence among elderly patients. This observation is consistent with studies by Mubarak et al. (2014), who reported a mean age of 56 years for UBC patients in southern Pakistan, and Mansoor et al. (2011), who noted a median age of 60 years in cases of superficial bladder cancers. Similarly, studies from Malaysia report a mean age of 64 years (Kong et al., 2010). However, studies from Nigeria and Tanzania have documented lower mean ages of 50 and 53 years, respectively, which may be influenced by regional factors such as schistosomiasis (Anunobi et al., 2010; Rambau et al., 2013). The

declining incidence of schistosomiasis has contributed to an increase in the mean age of UBC patients globally (Salem & Mahfouz, 2012).

Regarding histological types, transitional cell carcinoma (TCC) remains the most common form of UBC, with studies worldwide reporting TCC rates ranging from 88% to 93% (Ploeg et al., 2010). Our study similarly found TCC to be the predominant histological type. However, in schistosomiasis-endemic regions, such as parts of Africa, squamous cell carcinoma (SCC) is more commonly observed, likely due to the association between schistosomiasis and the development of SCC (Zaghloul, 2012). In our study, we also observed a small proportion of SCC and adenocarcinoma (AC), which concurs with recent findings from other studies (Ploeg et al., 2010; Vaidya et al., 2013).

When it comes to grading and staging, our study found a predominance of low-grade TCC and superficial tumors, a trend also observed in other studies (Mubarak et al., 2014; Mansoor et al., 2011). However, variations exist in the distribution of high-grade and muscle-invasive cases across different populations (Ploeg et al., 2010). Adenocarcinoma (AC) tends to affect younger patients, while SCC is more frequently observed in females, particularly in regions with a high incidence of schistosomiasis (Zaghloul, 2012).

In conclusion, while UBC remains relatively uncommon in Lahore, our study provides critical data on the clinicopathological features of UBC in the region. Further research is necessary to monitor the trends in UBC incidence and its association with environmental and socio-economic factors. This will help to better understand the rise in UBC cases in Lahore and contribute to improving early detection and prevention strategies in the region.

Conclusion:

Our hospitals base pathology experiences regarding urinary bladder cancer are in line with the epidemiological data provided by WHO and SCR as well as recent hospitals bases studies worldwide. This study serves as foundational reference for UBC data specific to the Lahore regions. However, to gains a deep understanding of this conditions further large scale multi center hospitals-based pathology studies as strongly recommended.

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