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## **An Evaluation of Urinary Bladder Carcinoma with Respect to Age, Sex, Stage and Grade**

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**Abstract:** The study was designed to assess the urinary bladder carcinoma with respect of patient's age, sex and stages and grades. A total of 100 cases of diagnosed (for last five years) patients (mean age 58.05±11.96 years) of urinary bladder carcinoma visiting various hospitals in private sector in Karachi were selected on the basis of their biopsies were seen for staging and grading of the tumor and the information obtained were correlated with each other. From the total cases males were 79% and females were 21%. The most common age group involved in this malignancy i.e., 38% was found to be 60-69 (64.5±6.36) years old. Most of the cases reported were from grade II (47%) and the second most common grade was grade III (36%). As far as staging is concerned, out of 100 cases only pT1 and pT2 were reported that were found to be 63 and 37%, respectively. It can be concluded that, male to female ratio was remained 3:1. The prevalence of cancer increased with age and reached at maximum at the age group of 60-69 years. Biopsies showed the most common grade i.e., grade II (47%) and most common stage i.e., pT1 (63%).

**Key words:** Carcinoma bladder, stage, grade, age, sex

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### **Introduction**

Bladder cancer is a disease in which the cells lining the urinary bladder lose the ability to regulate their growth and start dividing uncontrollably (Rath, 1992). Although the exact cause of bladder cancer is not known, smokers are twice as likely as nonsmokers to get the disease. Hence, smoking is considered the greatest risk factor for bladder cancer (Pashos *et al.*, 2002). People living in urban areas and workers who are exposed to certain chemicals that are used in the dye industry and in the rubber, leather, textile and paint industries are believed to be at a higher risk for bladder cancer (Itoku and Stein, 1992; Shirai, 1993).

The disease is three times more common in men than in women (Adrian, 1998; Pelucchi 2002). However, some researchers claimed the decline of this ratio from 4:1 to 2.6:1 (Schubert and Steinert, 1978) due to the exposure of increased risk factors among females. Caucasians are at an increased risk. The risk of bladder cancer increases with age (Pashos *et al.*, 2002). Most cases are found in people who are 50-70 years old. Bladder cancer is one of the most common human cancers, constituting about 6 and 2% of all cancers among males and females, respectively. Over 90% of all bladder cancers are transitional cell carcinomas, with most of the remainder being squamous cell carcinomas (Burin *et al.*, 1995). Bladder cancer strikes most often among individuals between the ages

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of 50 and 70. The average age at diagnosis is 65 years. It may also occur in people who are younger than 40 years of age related to the presentation, stage and grade of the tumor. The follow-up pattern of younger people will be similar as like as older people (Kutarski and Padwell, 1993). Superficial tumors have a better prognosis in subjects under the age of 30. Invasive tumors are more frequent and often advanced, suggesting a marked potential for progression. Their prognosis depends on tumor stage and is not correlated with age (Aboutaieb *et al.*, 1998).

Latency periods to develop Bladder Cancer can reach 50 years (Itoku and Stein, 1992). The five-year relative survival rates are 41%, for males and 35% for females (Paneau *et al.*, 1992). The TNM system is generally accepted for staging bladder tumors (Cotran *et al.*, 1999); a tumor that is limited to the mucosa and lies flat is Tis (a carcinoma in situ); a tumor that is papillary and limited to the mucosa is pTa and a tumor that penetrates the lamina propria but not the muscle layer is pT1. If the tumor invades muscle it may be staged from pT2 to pT4 according to the depth of infiltration of muscle tissue or the extent to which the surrounding tissue is affected. Tumors that invade the bladder muscle are highly malignant and have a strong potential to metastasize preferentially to regional lymph nodes, lungs, liver and bone (Itoku and Stein, 1992; Adrian, 1998). The current system of grading uses only three different grades: Well differentiated, moderately differentiated and poorly differentiated (or Grade I, II or III). It is still used in general discussions about cancer. Some pathologists will use a 4-level grading system, I, II, III and IV. Either system is acceptable, or the pathologist will always note how many levels they use by declaring the cancer as an II/III or II/IV. While the grade of the tumor is important in deciding the treatment strategy, staging is a more important prognostic indicator in bladder cancer. About 90% of cancers of the bladder involve transitional cells. Other types of cells that cause bladder cancer include squamous cell cancers or adenocarcinomas. Transitional-cell cancers of the bladder can be further divided into 'papillary' or 'solid' tumors. Papillary are usually low grade and usually grow towards the inside of the bladder, not towards the muscle lining. The solid tumors are usually high-grade and invade the bladder muscle very early (Ross *et al.*, 1996).

The aim of present study was to determine the prevalence of Urinary Bladder Carcinoma with respect of sex, age, stage and grade concerned with the past reported cases of more than five years in a various private medical complexes and hospitals in Karachi city.

## **Materials and Methods**

A total of 100 diagnosed (for the last five years or more) patients having transitional cell urinary bladder carcinoma visiting for follow-ups during the year 2003-2004 in various medical complexes and hospitals of private sector in Karachi. Patients were selected at random for the present study after informed consent was obtained. They were interviewed and their previous records were taken. Patients with non-transitional cell carcinoma were excluded. Their urinary bladder biopsies were taken and were studied for the grades and stages. Patients were also studied in order to determine the sexual dominancy and its ratio and their ages. The biopsy material having carcinoma of urinary bladder was interpreted by TNM (Tumor, Node, Metastasis) system and WHO/ISUP system for staging and grading, respectively (Adrian, 1998; Cotran *et al.*, 1999).

## **Results**

Males were 79% and females were 21% (Table 1). It is seen that the prevalence of urinary bladder cancer increases gradually from 30 years till 59 years as shown in the Table 2. Out of 100 patients, 8%

Table 1: Sex differences in patients of carcinoma bladder

Gender	Patients (%)
Males	79
Females	21

Table 2: Occurrence of carcinoma bladder in different age groups

Age group (years)	Patients (%)
30-39	8
40-49	17
50-59	22
60-69	38
70-79	12
80 and above	3

Table 3: Distribution of stages in patients of carcinoma bladder

Stage	Patients (%)
PT 1	63
PT 2	37

Table 4: Distribution of grades in patients of carcinoma bladder

Grade	Patients (%)
I	13
II	47
III	36
IV	4

were found to have this malignancy at the age of 30-40 ( $34.5 \pm 6.36$ ) years. Among the age groups of 40-49 ( $44.5 \pm 6.36$ ) and 50-59 ( $54.5 \pm 6.36$ ) years the prevalence was found 17 and 22%, respectively. The most common age group involved in this malignancy found to be 60-69 ( $64.5 \pm 6.36$ ) years old i.e., 38%. After the age of 69 years the prevalence was declined remarkably to 12 and 3% among the age groups of 70-79 ( $74.5 \pm 6.36$ ) and above 80 ( $84.5 \pm 6.36$ ) years, respectively (Table 2).

As far as stage is concerned out of 100 cases only PT1 and PT2 were reported that were found to be 63 and 37%, respectively (Table 3). No case from PT3 and PT4 was seen at that random trial. Most of the cases reported were from grade II (47%) and the second most common grade was grade III (36%). Grade I and IV were remained 13 and 4%, respectively (Table 4).

## Discussion

Urinary bladder carcinoma is a common malignancy through out the world not only, but also in Pakistan. Our patients showed the tumor with a significant sex difference i.e., Men are three times more likely to develop bladder cancer than women (Landis, 1998; Cohen and Johansson, 1992) and that has been found similar (Table 1) with the previous results obtained through the researches conducted through out the world. Although the average age in both males and females was observed slightly less than the expected age i.e., 58 years instead of 65 years. It could be due to less life expectancy in our country or due to the increased risk factors as Karachi is one of the most polluted city and the people use to do their chores with increased occupational risks. Present results show about 8% of cases below the age of 40 years so as it was said that this malignancy is rare below 40 years is not true, however, it could be proposed that Bladder cancer may occur at any age, but it is much more common in patients over 50 years old (Kantoff, 1990). As the carcinogens require time to develop this cancer and needs repeated and heavy exposure of risk factors. According to our results, the chances for getting this tumor are increasing with age as it has also been established previously

(Schubert and Steinert, 1978), But that chance is going to be inclined till the age of 60-69 years and then a remarkable decline of the presence of tumor is being observed in late 70s and 80s (Table 2). This decline is due to the less population that reaching to this age (Landis, 1998). Results also show that Bladder cancer strikes most often among individuals between the ages of 50 and 70 (60%). It could be proposed that the increase incidence of Urinary bladder cancer among males is due the increase risk factors like smoking habit (Kalble, 2001) that is more common in males than females, heavy exposure to the industrial chemicals like Arylamine (Pashos *et al.*, 2002; Kantoff, 1990; Ross *et al.*, 1996), hair dyes (Andrew *et al.*, 2004), O- toluidine (Markowitz and Levin, 2004), metals, paints, mines (Kogevinas *et al.*, 2003) textiles and pollution etc (Landis, 1998). The link between Urinary Bladder Cancer in women and occupational hazards has little recognition probably because studies addressing these issues have predominantly been done in men (Mannetje *et al.*, 1999).

Majority of the patients with bladder cancer have superficial disease (pT1-63%) and our results matched with previously conducted researches (Table 3). Invasive stage i.e., pT2 comprises of 37%. We did not find any case from pT3 and pT4 stage in that random trial. The most common grades seen were grade II and III i.e., 47 and 36%, respectively (Table 4). The less number of cases in Grade IV raises different reasons. Either the patients died before reaching to that grade or they have been successfully treated (Itoku and Stein, 1992).

In conclusion this study has shown that there is a clear predominance of males over females with respect to the occurrence of Carcinoma of Urinary Bladder. The incidence increases as the age advances and it peaks between 50-70 years. The decline seen after that shows either death of the patients due to this cancer or other disease or the patients have been treated successfully but this could be unlikely as it is one of the aggressive tumors responsible for deaths and have poor prognosis. Most of the cases reported were from pT1 stage i.e., 63% and the most common grades found were grade II and III i.e., 47 and 36%, respectively.

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