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Retrospective analysis of urinary bladder cancer in regional cancer center of India

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Abstract

Objective: Bladder cancer accounts for 1.6% of total cancer cases and 1.3% of all cancer related mortality in India as per Globocan 2018. As there is scarcity of Indian data on bladder cancer, this study aimed to know demographic background, histology variations and oncological outcome in patients presenting with bladder cancer in our institute, ATRCTRI, Bikaner.

Material and methods: Retrospective data were collected through electronic medical records of bladder cancer patients registered in this institute from January 2019 to December 2019. Then 1 year follow up was done to estimate survival outcomes. Results: Out of 198 patients enrolled in the year 2019, mean age at presentation was 59 years with male-female ratio of 8.9:1. Histologically, 84% were transitional cells, 3.5% adeno carcinoma and 2.5% squamous cells were found. 64% had non-muscle invasive bladder cancer, 35% presents as muscle invasive and remaining 1% as metastatic bladder cancer. 2 years OS and DFS found to be 65% and 61% respectively.

Conclusion: Bladder cancer confers a significant disease burden due to habits of tobacco smoking and occupational exposure. Bladder cancer has a varied spectrum of presentation and patients presenting to our institute generally have a higher stage of disease compared with that in the west. Efforts to reduce the overall burden of urinary bladder cancer include scaling-up policies to reduce tobacco smoking and making high quality facilities for diagnosis and management which are accessible to less developed areas of India.

Keywords: Epidemiology, muscle invasive, non-muscle invasive, survival outcome, tobacco smoking, urinary bladder cancer.

Introduction

Bladder cancer is among the top ten most common cancer types in the world, with approximately 550,000 new cases annually. Approximately, 3% of all new cancer diagnosis and 2.1% of all cancer deaths are due to urinary bladder cancer.[1]

According to Globocan 2018 data, in India, it is the 14th most common cancer with 18,926 new cases in the year 2018-2019, comprising 1.6% of total cancer cases. Mortality rate is also high in bladder cancer, approaching 10,231 deaths in the year 2018-2019, accounting for 1.3% of all cancer related mortality.[2]

Bladder cancer is the sixth most common cancer in the United States, with median age at diagnosis being 73 years.[3]

Median age at diagnosis is above 70 years. Within two large cohorts separated by 15 years (1991-1992 and 2005-2010), researchers have recently demonstrated an increase in the median age at presentation of 4 years with an increase from 13% to 24% in the proportion of patients over 80 years old.[4]

Male to female incidence ratios varies between 2:1 to 3:1.[5]

Within the developed world, the overwhelming majority of bladder tumours are now TCC (transitional cell carcinoma), and the main known causative factor is tobacco (particularly cigarette) smoking, explaining half of the cases in men and one-third of cases in women in Europe. It could give insight into biologic mechanisms of disease. There are well known associations of squamous cell bladder carcinomas with Schistosoma haematobium infection in Africa, particularly in Egypt. Aromatic amines, polycyclic aromatic and chlorinated hydrocarbons, arsenic laced drinking water, cyclophosphamide exposure and a range of industrial chemicals have been implicated in urothelial carcinogens.[6]

Histology reveals more than 90% of bladder cancer is transitional cell carcinoma, other 5% are squamous, although it should be noted that squamous differentiation is often present in poorly differentiated TCCs. Other tumour types include small cell carcinoma, adenocarcinoma (particularly in urachal remnant), melanoma and carcinosarcoma.

Most cases (70%-80%) present with non-muscle invasive bladder cancer (NMIBC, stage Tis, Ta and T1) which is rarely lethal, but shows a high recurrence rate of 50%-70% after treatment by TURBT (transurethral resection of bladder cancer). In about 10%-20% of patients with NMIBC, the disease progresses to muscle invasion (≥T2 lesions) which can lead to metastasis and death. Muscle invasive have poor prognosis because of a very high rate of occult metastatic disease at the time of diagnosis. A minority of patients (<10%) present with metastatic disease, carrying a poor prognosis.[7]

While non-muscle invasive tumours are usually treated locally, treatment of muscle invasive tumours often involves a radical cystectomy or combination of chemo-radiation or both.

As there is scarcity of Indian data on bladder cancer, this study aimed to know demographic background, stage distribution, histology variations and oncological outcome in patients presenting with bladder cancer to a tertiary care cancer centre, ATRCTRI, Bikaner.

Material and Methods

This was a retrospective study conducted at Acharya Tulsi Regional Cancer Treatment And Research Institute, Bikaner. All patients diagnosed with bladder cancer, after an initial evaluation and work up,

registered in our hospital from January 1, 2019 to December 31, 2019 were taken. Data were collected from electronic medical records of these patients and 2 years follow up was done telephonically. Survival was estimated by Kaplan-Meir analysis. SPSS version was used for analysis.

Results

Total 198 patients got enrolled in the year 2019. This accounts for 1.9% of total cancer cases registered in the year 2019.

Median age of patients at diagnosis was 59 years. The youngest patient was 28 years old and the oldest was 81 years old.

Out of 198 patients, 178 (90%) were male and 20 (10%) were female. Male female ratio was 8.9:1 in this institute (Figure 1).

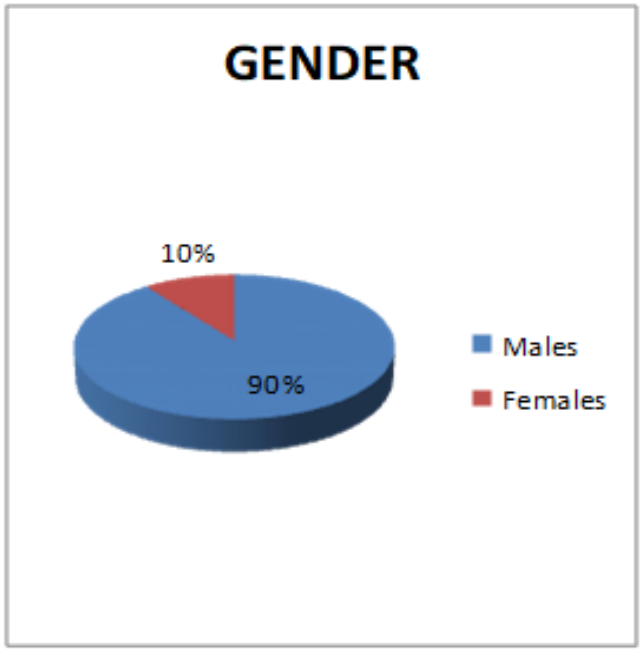

Figure 1: Gender distribution of urinary bladder cancer.

Histologically, 167 patients had transitional cell histology, 7 showed adenocarcinoma histology and 5 cases were of squamous histology. Remaining were undifferentiated, small cell and spindle cell (Figure 2). There were 57 cases of papillary and 141 of solid tumour.

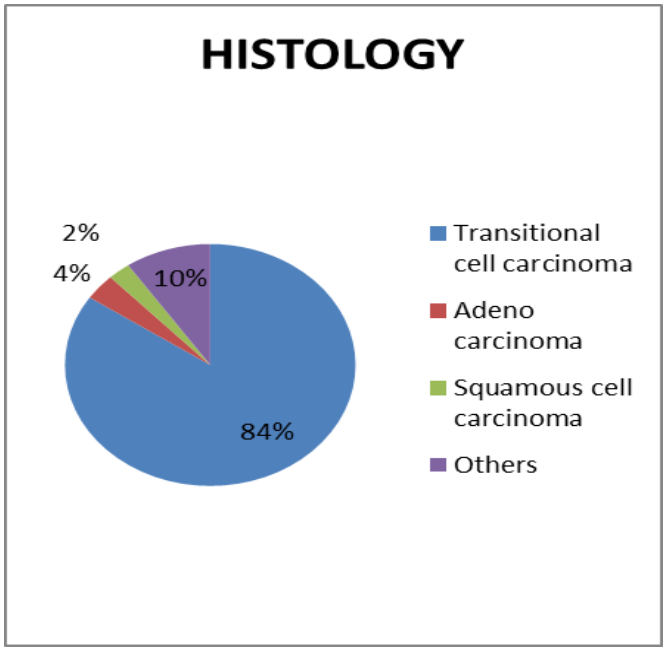

Figure 2: Histology distribution seen in urinary bladder cancer.

Out of 198 patients registered, 69 patients were NMIBC. They undergone TURBT and almost all indicated patients received 40 mg of intravesical Mitomycin-C within 6-8 hrs of resection. 7 patients received intravesical immunotherapy with BCG for 1 year in intermediate risk and for 3 years in high risk. Regular surveillance cystoscopies were also done.

There were 127 patients diagnosed with MIBC in the year 2019. This included patients with a histopathological and radiological confirmation of muscle invasive or locally advanced disease (T3 N+). 54 (42.51%) of them underwent some form of definitive treatment, 44 patients (81.48%) underwent definitive chemoradiation and 8 (14.81%) underwent radical cystectomy with pelvic lymph node dissection. Mostly patients well tolerated gemcitabine and platins as neoadjuvant or adjuvant chemotherapy. Some received MVAC (methotrexate, vinbalstine, adriamycin and cisplatin) chemotherapy regimen.

Remaining 2 patients presented as metastatic. The metastatic sites were lungs, bone and liver. They were treated by palliative management and best supportive care. Zoledronic acid was given to bone metastasis patients.

On a median follow up of 18 months, 30 patients were lost to follow up. 128 (64.64%) patients were alive and 40 (20.20%) patients expired due to malignancy. Estimated 2 years OS was 65% and 2 years DFS was 61%.

Discussion

Bladder cancer is 2nd most common genito-urinary malignancy after prostate in males. And there are only a few centres in India where high volumes of bladder cancer are being treated. So, there is scarcity of epidemiological data on bladder cancer.

In this study, total 198 patients were enrolled from January 2019 to December 2019. Median age at presentation was found to be 59 years (range 28-81 years) as supported by other literature. Gupta et al published a series of 561 bladder cancer patients treated between 2001 and 2008 at SGPGI, Lucknow. The mean age was 60.2 ± 4.4 years (range 18-90 years).[8]

Yeole and Jussawalla reported data collected from the Bombay Cancer Registry and found that bladder cancer was very uncommon in the first three decades of life. However, after the age 30, the incidence rates increase with age in long linear fashion in both sexes.[9]

Male- female sex ratio in our study was found to be 8.9:1 (90% males versus 10% females) as suggested by Indian literature. Biswas et al, published a retrospective epidemiological study of 88 patients diagnosed with carcinoma bladder at the departments of urosurgery and pathology from CNMC and H, Kolkata, from December 2007 to November 2009. The median age of bladder cancer was 65-70 years. Moreover, there was a male preponderance (86.4% male versus 13.6% females).[10]

The Indian figures differ from the Western literature in two aspects. First, the difference in the incidence of smoking among Indian males and females is much more prominent (74% versus 22%) than in the West. Second, the incidence of bladder cancer per se is much more predominant in Indian males (8.9:1). The difference is lesser in the Western series (3:1 -4:1). The excess frequency of bladder cancer in men versus women is explained by the smoking habits of men and estrogen-progesterone hormonal influence in the female reproductive life.

Bladder cancer has a wide spectrum of presentation with indolent low grade NMIBC at one end and aggressive MIBC on the other. In this series, we have tried to capture this spectrum on a 1 year time line with their 1 year follow up. Almost one-third of bladder cancer patients (34.84%) that present to us are NMIBC. This is much lesser than that in the western countries where three-fourth patients are NMIBC.[11]

In this study, 84% had transitional histology, 3.5% had adeno carcinoma and 2.5% were of squamous cell histology. This is not same as reported in literature where 3-5% showed squamous cell carcinoma and 1% of adeno carcinoma.[12]

In our study, OS and DFS estimated after 2 years was 65% and 61% respectively. This is same as reported in literature. Prakash G, et al did an audit on demographic data of 1 year cases of bladder cancer patients registered at Tata Memorial Hospital, Mumbai in 2013 which showed estimated OS and DFS at 3 years was 63% and 57%.[13]

The major limitation of this study is short follow up of 18 months and defaulted cases who either not received treatment at our institute or after treatment not coming

for follow up. This is a trend often seen in developing nations where a structured referral system is not available and patients often flip-flop between oncologists, non-oncology physicians and their family doctors and hence end up being treated by multiple physicians.

Conclusion

Bladder cancer confers a significant disease burden, particularly in industrialised nations. Incidence patterns are dependent on shifting patterns of tobacco smoking, occupational landscapes and access to healthcare.

In conclusion, two demographic trends are largely responsible for increasing urinary bladder cancer occurrence in India: overall population growth and aging of population. With increasing levels of development in lesser developed areas, better health care facilities will become available, which is expected to increase survival and subsequently prevalence. Bladder cancer has a varied spectrum of presentation. Bladder cancer patients presenting to our institute generally have a higher stage of disease compared with that in the west. Efforts to reduce the overall burden of urinary bladder cancer include scaling-up policies to reduce tobacco smoking and making high quality facilities for diagnosis and management which are accessible to less developed areas of India.

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