



## Urothelial carcinoma in young adults-Single centre experience

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### General Note



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### ABSTRACT

*Introduction:* Bladder cancer has been one of the most common urological malignancies. As per Indian cancer registry data, it is ninth most common cancer among men. Debate exists in the literature regarding the clinical behavior of bladder urothelial neoplasms in younger patients when compared with older patients. In this study, we share our experience with the clinical behavior

of the disease in young adults. *Materials and Methods:* From August 2017 to Feb 2020, data was retrospectively collected from the hospital information system on urinary bladder cancer patients. All Patients presented as bladder mass on radiological investigation underwent transurethral resection of the bladder tumor (TURBT). Pathological grading of the bladder tumour was done by using new World Health Organization (WHO) and International Society of Urological Pathology (ISUP) Classifications. *Results:* A total of 27 young adults were included in the study who patients presented with bladder cancer. Non-muscle invasive disease was more common as compared to muscle invasive disease. A total of 6 patients underwent a radical cystectomy and standard pelvic lymph node dissection with urinary diversion. 9 patients were put on Bacillus Calmette-Guérin (BCG). Remaining patients were treated as per their histological features. *Conclusion:* Bladder cancer in young adult population usually presents as urothelial carcinoma with spectrum of bladder carcinoma similar to adult population and should be offered same management as adults.

**Keywords:** Bladder tumour, Young adults, TCC Urinary Bladder.

## 1. INTRODUCTION

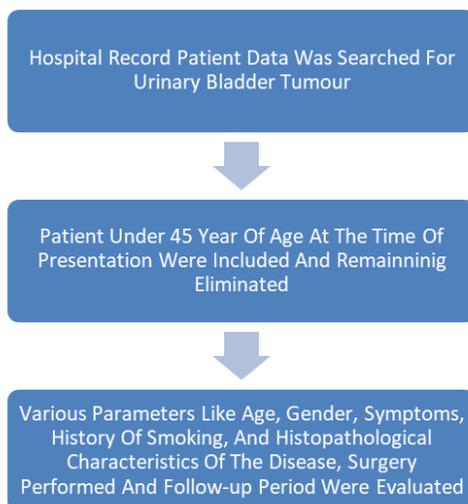
Bladder cancer has been one of the most common urological malignancies. Indian cancer registry data showed it to be the ninth most common cancer accounting for 3.9% of all cancer cases among men (Gupta et al., 2009). The median age of diagnosis of bladder urothelial carcinoma is 69 years in males and 71 years in females, but the disease can occur at any age (Lynch and Cohen, 1995; Walsh, 2002). A total of 40 to 45% of newly diagnosed bladder cancers are high-grade lesions, more than half of which are muscle-invasive at the time of diagnosis (Messing et al., 1995). Usually, the peak incidence is most commonly known to occur in the sixth decade. Most studies have quoted that < 1% of cases develops in the first four decades of life (Yossepowitch et al., 2002; Benson et al., 1983; Witjes et al., 1989; Javadpour et al., 1969; McGuire et al., 1973 and Johnson 1978).

There is a debate in the literature regarding the clinical behavior of bladder urothelial neoplasms in younger patients when compared with older patients. Young adult patients were defined as patients diagnosed with TCC urinary bladder less than 45 years of age (Migaldi et al., 2004). Some earlier studies have observed a similar natural history in younger and older patients (Johnson et al., 1978; Wan et al., 1989; Kutarski and Padwell, 1993 and Kurz et al., 1987) while others have observed more favorable pathologic characteristics and improved clinical outcomes in the younger cohort (Benson et al., 1983; Madgar et al., 1988; Fitzpatrick et al., 1986; Witjes et al., 1989). In this study, we share our experience with the clinical behavior of the disease in young adults.

## 2. MATERIALS AND METHODS

### Patient population

From August 2017 to Feb 2020, data from all the patients with bladder cancer entered on the hospital information system and in the case records were retrospectively evaluated for age, gender, symptoms, history of smoking, and histopathological characteristics of the disease. Patient's inclusion criteria were patients diagnosed with TCC urinary bladder under 45 years of age. All the older patients were excluded (Figure 1).



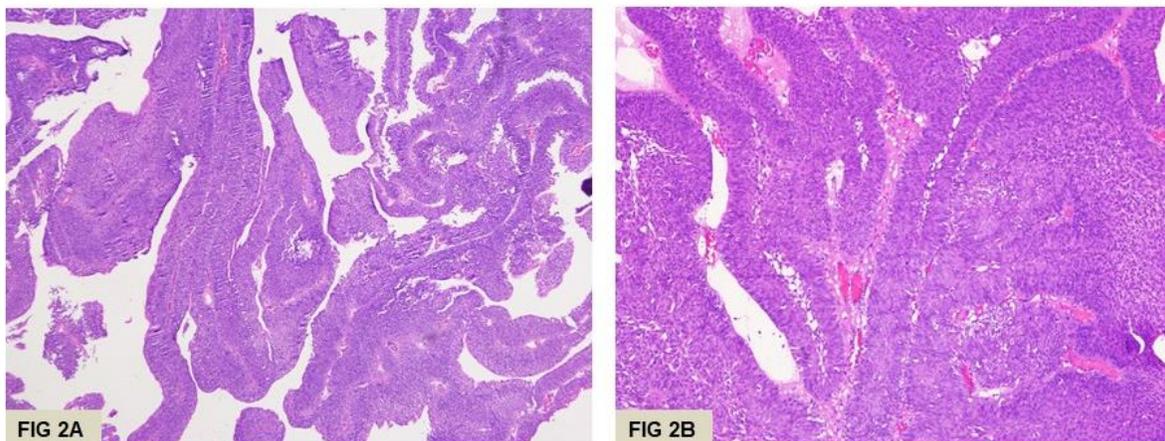
**Figure 1** Algorithm of the study

### Treatment

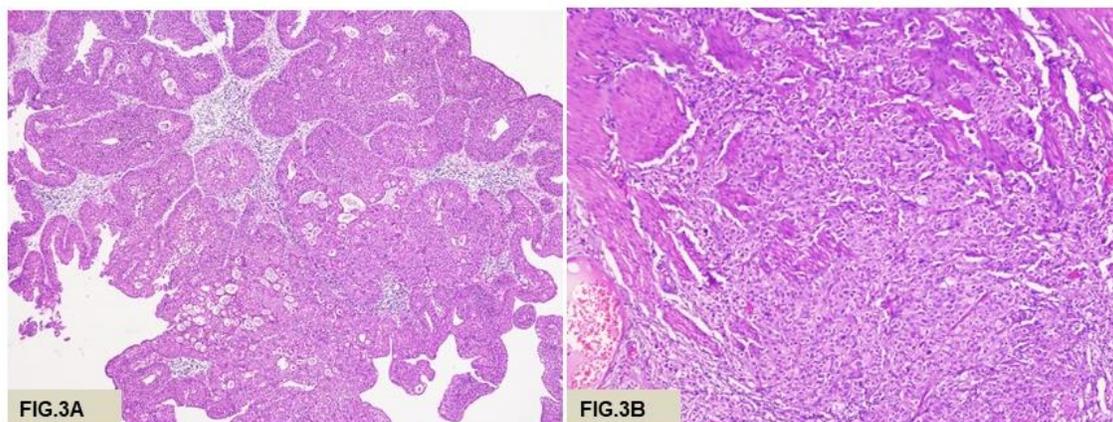
All Patients presented as bladder mass on radiological investigation under went transurethral resection of the bladder tumour (TURBT) using Glycine (1.5%) or normal saline as an irrigant after the work-up. A deep biopsy was taken separately in every patient to include the detrusor muscle.

### Pathology

Pathological grading of the bladder tumour was done by using the new World Health Organization (WHO) and International Society of Urological Pathology (ISUP) classifications. Data were recorded as Ta for papillary, urothelial-confined carcinoma, T1 for lamina-invasive carcinoma, and T2 for muscle-invasive carcinoma. Grades of the tumour were defined as high grade or low grade depending on their characteristics (Figure 2 & 3).



**FIG 2A & 2B : Non invasive papillary urothelial carcinoma; low grade** showing predominantly ordered delicate papillae with minimal crowding , minimal loss of polarity and mild cytological atypia with no invasion beyond the basement membrane.



**FIG 3A & 3B : Invasive papillary urothelial carcinoma; high grade** showing fused papillae and invasive masses of urothelial cells with disordered architecture, loss of polarity and marked cytological atypia infiltrating into the muscularis propria .

## 3. RESULTS

A total of 27 young adults were included in the study who patients presented with bladder cancer. The most common presenting feature was painless hematuria. The average ages of the patients were 36 years. There were only 2 females with TCC bladder and all remaining 25 patients were male. 24 patients had a history of tobacco abuse, 20 were smokers and 4 had tobacco chewing habits. 3

patients who were non tobacco addicts were working in the chemical industry. The non-muscle invasive disease was more common as compared to muscle-invasive disease in this population group. 4 patients had muscle-invasive bladder cancer and underwent radical cystectomy with urinary diversion. 11 patients were high grade non-muscle invasive tumours. Out of these 11 patients 2 underwent radical cystectomy with urinary diversion and 9 opted for bladder conservation approach. 2 patients who underwent radical cystectomy also had squamous differentiation in their urothelial carcinomas. 3 patients were diagnosed as papillary urothelial carcinoma and 1 had benign mesenchymal disease. 9 patients were put on Bacillus Calmette-Guérin (BCG) as induction therapy. Each patient received 120 mg of BCG weekly for 6 weeks. Grade 1 BCG toxicity was present in 1 patient but did not require stopping the therapy. 8 patients were low-grade urothelial carcinoma and were counseled about the disease.

A total of 6 patients underwent a radical cystectomy and standard pelvic lymph node dissection with urinary diversion. 5 patients underwent ileal conduit and 1 patient underwent orthotopic neobladder formation. Average follow-up period of all patients were 35.92 months with smallest follow up period of 7 months. Follow-up period was considered from the date of bladder tumour histopathology report. Urinary bladder tumour generally does not result in physical disability requiring rehabilitation like other life-threatening malignancies but repeated efforts were made to make patients aware of the potential carcinogens like tobacco, paints, and other chemicals and were counseled to abstain themselves from these products.

#### 4. DISCUSSION

Urothelial carcinoma of the urinary bladder presents as the most common neoplasm of the urinary tract. Usually, the peak incidence is most commonly known to occur in the sixth decade and it is noted in individuals younger than 45 years old. Most studies have quoted that <1% of cases develop in the first four decades of life (Yossepowitch et al., 2002; Benson et al., 1983; Witjes et al., 1989; Javadpour et al., 1969; McGuire et al., 1973; Johnson et al., 1978, whereas its incidence increases dramatically with an increase in age (Droller, 1986). In our study incidence was 51.84%, which was quite significant to report. Most patients had hematuria. However, 4 patients (14.81%) did not have a history of gross hematuria and were diagnosed with hematuria on microscopy. Urothelial carcinoma is the most common variant accounting for 90% of bladder cancer in the world literature. In our study, all of the patients had urothelial carcinoma and all had risk factors present in their history. 24 patients (88.88%) had history of tobacco abuse, 20 patients (74.07%) were smokers and 4 (4.81%) had a habit of chewing tobacco. Remaining 3 patients (11.11%) had a history of occupational exposure to chemicals. In two previous studies done by Morrison et al., 1984; Burch et al., 1989) it was suggested that Cigarette smokers have at least a four times higher incidence of bladder cancer (Burch et al., 1989) and smoking was strongly associated with young adult patients of the disease in our study. The male: female ratio in our study was 12.5:1, this shows the male predominance of urothelial bladder carcinoma; this ratio is quite higher than reports of Ozbey et al., 1999 and Kurz et al., 1987 but these studies are almost two to three decades old and recent data is not well known on this subject. Linn et al., 1998 has suggested that low-grade and low-stage tumors were more frequently present in younger individuals than their elderly counterparts (Linn et al., 1998). However, the same was not observed in our study. We had 7 more patients in high grade tumour group than low-grade tumours. This is coinciding to the usual belief in malignancy that aggressive biological behavior of cancer is noticed in younger age groups.

#### 5. CONCLUSION

Bladder cancer in the young adult population usually presents as urothelial carcinoma with a spectrum of bladder carcinoma similar to the adult population and should be offered the same management as adults. Awareness is needed among the public and further studies are required to understand the disease behavior and outcome.

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#### Author Contributions

VS: Conceptualized, performed the surgery, written and edited the manuscript. RY, MK, DS, SF, AA and RK: collected the data, assisted in analyzing the cases. MB and PD: helped in technical aspects of the surgery. All the authors reviewed the manuscript and agreed the same.

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This study has not received any external funding.

**Conflict of Interest**

The authors declare that there are no conflicts of interests.

**Informed consent**

Written & Oral informed consent was obtained from all individual participants included in the study. Additional informed consent was obtained from all individual participants for whom identifying information is included in this manuscript.

**Ethical approval**

The study was approved by the Institutional Ethics Committee.

**Data and materials availability**

All data associated with this study are available upon request to the corresponding author.

**Peer-review**

External peer-review was done through double-blind method.

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