

# Transitional cell carcinoma of the bladder in young adult patients

Ercument Keskin<sup>1</sup>, Abdullah Erdogan<sup>1</sup>, Ibrahim Karabulut<sup>2</sup>

<sup>1</sup>Erzincan Binali Yildirim University Faculty of Medicine, Department of Urology, Erzincan, Turkey

<sup>2</sup>Health Sciences University Erzurum SUAM Department of Urology, Erzurum, Turkey

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## Abstract

**Aim:** Transitional cell carcinoma of the bladder (TCC) mostly affects the middle and old population as in other cancers. We aimed to present the results and clinical behaviors of patients treated with bladder TCC under the age of 40 years.

**Material and Methods:** Fifteen patients who were admitted to our clinic between 2005 and 2019 and diagnosed as TCC were evaluated retrospectively. Demographic characteristics, initial and follow-up transurethral resection pathologies, intravesical treatment and follow-up periods were evaluated. All patients underwent transurethral resection after ultrasonography (USG) and cystoscopy examination.

**Results:** The most common complaint was macroscopic hematuria (n:12.80%). Smoking rate was 66% (n:10). The mean age of the patients was 32.4 (19-39). Male / female ratio was 13/2. The mean follow-up period was 55 weeks. Ten patients (66%) had single focus and five (34%) had multiple focus tumors. In 10 patients, the tumor pathology TaG1, TaG3 in 3, T1G1 in one and T1G3 in one patient were reported. 4 patients received intravesical chemotherapy and four patients underwent intravesical immunotherapy (BCG). The recurrence rate was 53% (n:8) and the rate of progression was 13% (n:2) (TaG1-T1G3). None of the patients progressed to T2 disease.

**Conclusion:** Bladder TCC under 40 years of age usually presents as TaG1. Survival rates are high if follow-up and treatment protocols are followed. It should be kept in mind that there may be bladder tumors in young adult patients regardless of age.

**Keywords:** Bladder tumor; cystoscopy; hematuria.

## INTRODUCTION

Transitional cell carcinoma (TCC) is known as a disease of advanced age characterized by painless macroscopic hematuria. Although TCC of the bladder can be seen at any age, it is rarely seen in young patients, especially in the first four decades of life (1), with the median age being reported as 69 years in males and 71 years in females (2).

It is argued that TCC of the bladder is very rarely seen in individuals aged below 30 according to some sources and 30 according to others, and it is a superficial, low-grade disease (3). Therefore, although in clinical practice, in symptomatic patients aged over 40 years, diagnostic investigations are frequently undertaken, in younger patient groups, other diseases that manifest with similar symptoms are emphasized.

Age is suggested to be a risk factor for bladder cancer development (4). Bladder cancer is usually a disease of middle- or advanced-age people. Ninety percent of newly

diagnosed patients are 60 years or older, and it is rarely seen under the age of 35 years. In the US, the median age at diagnosis is reported to be 72 years (5).

In some studies, age has been shown to have prognostic significance in predicting recurrence (6). In the current study, we discuss the clinical and pathologic features of young patients with a bladder tumor followed up in our clinic.

## MATERIAL and METHODS

Fifteen young adult patients under 40 years of age who had undergone a transurethral operation in our clinic between 2005 and 2019 and were diagnosed with TCC of the bladder were evaluated retrospectively. For all patients, age, gender, smoking history, complaints at first presentation, and ultrasonography and cystoscopy examination findings were recorded. Initial and follow-up transurethral resection pathologies, intravesical treatment, and follow-up periods were also evaluated.

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Corresponding Author: Ercument Keskin, Erzincan Binali Yildirim University Faculty of Medicine, Department of Urology, Erzincan, Turkey, E-mail:keskinerc@hotmail.com

Transurethral resection was performed in all patients after ultrasonography and cystoscopy examination. The patients were followed up once every three months in the first year, once every six months in the following year, and once a year thereafter. In follow-up sessions, routine urine and biochemical blood analyses and ultrasonography and cystoscopy examinations were undertaken. Endoscopic tumor resection was performed in a patient with a recurrent tumor.

## RESULTS

The most common complaint among the patients was macroscopic hematuria (n=12.80%). Other complaints were diagnosed as dysuria, pollakiuria, pain, and USG in 1 patient. The smoking rate of the patients was 66% (n=10). The mean age of the patients was 33.7 (19-39) years. The mean follow-up period was 55 months. A single-focus tumor was detected in 10 patients (66.7%) and multiple foci of cancer in five patients (33.3%). After transurethral resection, the tumor pathology was reported as TaG1 in 10 patients, TaG3 in three patients, and T1G1 and T1G3 in one case each. Four patients received intravesical chemotherapy and a further four underwent intravesical immunotherapy with Bacille Calmette-Guerin (BCG). During the follow-up, the recurrence rate was 53% (n=8), and the rate of progression was 13% (n=2) (TaG1-T1G3). None of the patients progressed to the T2 disease (Table 1).

**Table 1. Demographic characteristics and results of the patients**

PARAMETER	NUMBER OF PATIENTS Total: 15 (100)
Female/Male n (%)	2 (13.3) / 13 (86.7)
Age Mean±sd	33.73 ± 5.68
Follow-up duration Mean±sd	55.2 ± 32.9
Smoking Yes/No n (%)	5 (33.3) / 10 (66.7)
Single focus/Multiple foci n (%)	10 (66.7) / 5 (33.3)
Pathology n (%)	
TaG1	10 (66.7)
TaG3	3 (20)
T1G1	1 (6.7)
T1G3	1 (6.7)
Recurrence Yes/No n (%)	7 (46.7) / 8 (53.3)
Progression Yes/No n (%)	13 (86.7) / 2 (13.3)

## DISCUSSION

According to the statistics, bladder cancers are the second most common urological cancers, and they constitute an important cause of mortality and morbidity. In recent years, a 50% increase has been observed in the incidence of this tumor (7). In the US, bladder cancer is the fourth most common cancer in men and the ninth most common in women (8). In western countries, the male-to-female ratio in this disease ranges from 2:1 to 4:1 (9). Although the incidence of bladder cancer is higher in males, the prognosis is reported to be worse in women (10).

More than 90% of bladder cancer is urothelial carcinoma, and 70-80% cases are non-invasive cancers at the time of initial diagnosis (11). Although bladder cancer can be seen at any age, it rarely occurs in young adults; therefore, etiological factors and prognosis are rare in the young adult population are a topic of interest among researchers. A review of the literature also reveals cases of bladder tumor in people aged below 40 years, young adults, and children. In a case series of Aydin et al. (12), the youngest patient was 20 years old. Of the 26 cases in the case series of Aboutaieb et al., eight were under 30 years, and the youngest case was aged 20 years (13). TCC of the bladder is rarer at age 20 or younger. Evaluating patients aged below 40 years, Özbey et al. reported that the youngest case was 19 years old (14). Other young cases of TCC reported by Ikeda et al., Laurenti et al. and Yarmohammadi et al. were an 18-year-old girl, 13-year-old boy, and a nine-year-old girl, respectively (15-17). Similarly, Çift et al presented two cases under 20 years of age (18). Apart from these case reports, there are also studies describing young patients with a bladder tumor other than TCC, such as carcinosarcoma, leiomyosarcoma, sarcomoid carcinoma, papilloma, and adenomatous polyp (19). The youngest patient we followed up in this study was 19 years old.

Two criteria are very important in the follow-up of bladder tumors: tumor recurrence and tumor progression. Bladder cancer is a heterogeneous disease with recurrence rate of 50-80% and progression rate of 5-50% (20). Therefore, the main aim in the treatment of bladder cancer is the prevention of recurrence and progression after transurethral tumor resection. In order to facilitate the assessment of short-term and long-term recurrence and progression risks, in 2006, the European Association for Cancer Research and Treatment identified parameters that allow urologists to easily calculate individual risks for each case. These clinical and pathological parameters are number of tumors, tumor size, previous rate of recurrence, T-stage, presence of carcinoma in situ, and tumor grade (21). There are only a limited number of studies assessing these risk factors by age and gender.

Bladder cancer has a well-differentiated histology in adolescents and young adults and less symptomatic manifestation. Genetic and molecular changes in bladder tumors in this population are not compatible with the clinical behavior and histology grades in middle-aged and elderly people (22). In young cases, the prognosis is much better because the disease is seen in the form of more superficial, low-grade tumors; however, the degree of progression risk is similar to that of the elderly (23). Consistent with the literature, the pathology results of 13 of our patients were reported as Ta and were observed as superficial and low-grade.

Patients with bladder cancer usually present with macroscopic hematuria or are diagnosed when further investigations are undertaken due to microscopic hematuria. In a clinical trial of 26 series, Irkilata et al.

reported that 23 cases were diagnosed based on the presence of macroscopic hematuria while the diagnosis was incidental in a total of three cases; two during the investigation of the cause of dysuria, pollakiuria, and pelvic pain, and one microscopic hematuria (24). In the current study, 12 patients presented with macroscopic hematuria and one patient was diagnosed incidentally during ultrasonography (Figure 1).



**Figure 1.** Figure: Ultrasonographic appearance of a bladder tumor

In the US, 20% of bladder cancers have been shown to occur after long latent periods (30 to 50 years) due to occupational exposure (25). However, this is probably related to cumulative doses, and the latent period can be shortened with more intensive exposure. Individuals reported to have an increased risk of bladder cancer due to their occupations include auto industry workers, painters, truck drivers, drill operators, leather workers, metal workers, machinists, and those that involve exposure to organic chemicals, such as dry cleaners, paper industry workers, rope and string makers, dental technicians, barbers or beauticians, doctors, clothing industry workers, and plumbers (26). In the sample of the current study, two patients were auto industry workers and one patient was a painter.

It is known that at early ages, bladder tumors do not show any difference in terms of etiologic factors. TCC of the bladder cases under 30 years of age have been reported in excessive smoking and tea and coffee consumption, and exposure to cyclophosphamide and benzidine analogs (27). In our sample, the rate of smoking was 66%, and these patients were strongly recommended to quit smoking.

In the European Urology Association guidelines, patients with bladder cancer are divided into low-, medium- and high-risk groups. It is recommended that for patients with non-muscle-invasive bladder tumors, these risk groups and scoring systems should be evaluated and in addition to TUR-MT, intravesical chemo-immunotherapy should be performed in order to reduce recurrence and progression rates (28). In our study, intravesical chemotherapy was

applied to four patients and intravesical immunotherapy with BCG to four patients.

## CONCLUSION

In young adult patients, TCC is usually seen as TaG1. Survival rates are high if the recommended follow-up and treatment protocols are followed. It should be kept in mind that bladder tumors may be present in young patients regardless of age.

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*Ercument Keskin ORCID:0000-0001-9618-8252}*

*Abdullah Erdogan ORCID:0000-0001-6817-2106*

*Ibrahim Karabulut ORCID:0000-0001-6766-0191*

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