



PROGRESSION & RECURRENCE OF SUPERFICIAL BLADDER CANCER: A SINGLE-CENTER STUDY

Urology

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ABSTRACT

Objective: To evaluate the progression and recurrence associated with superficial urinary bladder tumors.

Materials and Methods: Progression and recurrence of superficial bladder cancer were studied in 100 patients over 3 years using a scoring system based on the six significant clinical and pathological factors – number of tumors, tumor size, prior recurrence rate, T category, concomitant CIS, tumor grade. The data hence collected and then tabulated and was described using summary statistics.

Results: 74% of patients used to smoke. 84 % were male while 16% were female. High-risk group patients lied over >70 yrs. age group. 43 patients are of low-risk risk among them only 13 (30.23%) patients recur without any progression seen. 19 patients are of intermediate-risk group among them 8(42.10%) recur while only 1 patient progress. 38 patients are of a high-risk group, recurrence seen in 20(52.63%) while 8(21.05%) patients progress to the next level.

Conclusions: T1G3 patients >70 yrs age with tumors >3cm size tumor recur and progress frequently and it should be treated aggressively.

KEYWORDS

Intravesical Drug Administration, Smoking, Urinary bladder neoplasm

INTRODUCTION

Superficial “non–muscle-invasive” bladder tumors represent a heterogeneous group, including - papillary in and limited to the mucosa; high grade flat and confined to the epithelium; and invasive into the submucosa, or lamina propria [1]. Approximately 75-85% present with disease confined to the mucosa (stage Ta- CIS) or submucosa (stage T1) [2]. The goal of treatment is to reduce tumor recurrence and also to prevent tumor progression and the subsequent need for more aggressive therapy [3, 4].

We can categorize it based on risk groups – Low, Intermediate, and High. The Low-risk group (Grade 1 stage Ta/T1, single tumor) has a 37% chance of recurrence and 0% chance of progression. The intermediate-risk group (Grade 1 stage T1 multiple tumors, Grade 2 Ta/T1 single tumor) has a recurrence of 45% and progression of 1.8%. The high-risk group (Grade 2 stage T1, Grade 3 stage Ta/T1, CIS association) has a recurrence of 54% and progression of 15% [5].

It is time to stop classifying all these patients under the same heading, superficial, to properly convey the very different risk of progression to muscle-invasive disease that is present in these patients [6]. Nieder and Soloway [7] proposed a new nomenclature based on the pathological diagnosis and the likelihood of progression.

Since few evaluations of superficial primary bladder cancer risk groups have been done and the majority focused on recurrence, we performed our study to establish primary superficial bladder cancer risk groups, focusing mainly on recurrence and progression [8].

AIMS AND OBJECTIVES

To evaluate the progression and recurrence associated with superficial urinary bladder tumors

MATERIALS AND METHODS

This is a descriptive study, enrolling 100 patients with superficial urinary bladder tumors over the past 3 years.

Inclusion Criteria

All diagnosed cases of superficial bladder cancer
Patients who have undergone BCG instillation
Patients diagnosed as old cases of superficial bladder cancer and who are on follow-up

Exclusion Criteria

Patients who had muscle invasion diagnosed at presentation
Patients who had received previous radiotherapy or chemotherapy

Data was collected using case reporting forms by direct interview as well as by reviewing the case records, detailed history, and clinical examination, laboratory investigations, and imaging studies, biopsy, staging workup, treatment including records of operative details and postoperative histopathology collected. During follow up the status of cancer was assessed and recorded. The data hence collected and then tabulated and was described using summary statistics.

RESULTS

In the present study, comprising of 100 subjects the highest incidence was noted to be in the age group 40-70 years i.e., 60 (60%), and the lowest incidence was observed in the age group of fewer than 40 years i.e., 16 (16%). There were 24 subjects (24%) in the age group of more than 70 years. The majority of subjects presenting with superficial bladder cancer were males. Out of the total 100 subjects, 84 (84%) were male and 16 (16%) were female. The male predominance was noted in the ratio of male: female of 5.25:1.

For purpose of classification, subjects were divided into age groups, it was noted that in less than 40 years age group 14 subjects were male while 2 subjects were females. In 40-70 years, age group 50 subjects were male while 10 subjects were female. In more than 70 years age group 20 subjects were male and 4 subjects belonged to the female population.

The majority of subjects included in the study were smokers. Out of the 100 subjects, 74 % were smokers while 26% were non-smokers. The subject was further classified according to sex distribution for smoking, out of 74 smokers out of which 68 (91.9%) were male and 6 (8.1%) were female, and while in the non-smoker group (n=26) 16 (61.53) were male and 10 (38.46) were female.

The subjects recorded in the current series were further classified according to the number of primary lesions and they were further tabulated about progression and recurrence. Single tumors were seen in 58 subjects out of which recurrence was there in 11 subjects and 2 progressed. On closely following 42 subjects with multiple tumors recurrence was seen in 30 subjects and while 7 progressed.

The subjects recorded in the current series were further classified according to the size of primary lesions based on tumor size i.e., less than one cm, 1-3cms and more than 3cms. The number thus obtained was further classified according to the recurrence and progression. Thirty subjects had tumors less than one cm out of which 13 subjects had a recurrence and one progressed, and 53 subjects had tumor size in between 1-3 cm out of which 15 had a recurrence and 3 progressed, and

17 subjects had tumor size more than 3cm out of which 13 having recurrence and progression occurred in 5 subjects.

Based on TNM classification lesions were classified as Ta, T1, and Tis. In our study 40 subjects (40%), had Ta lesion out of which 16 had recurrence (40%) and progression was in 2 (5%) subjects. T1 lesion was found in 42 (42%) subjects of which 18(42.85%) had recurrence while 5(11.9%) had progressed. Tis lesion was found in 18 (18%) subjects of which recurrence occurred in 7(38.89%) subjects while 2(11.9%) subjects had progression. [Fig-1]

Amongst all the subjects on correlating the tumor grade with recurrence and progression, we found that, of the subjects having grade I tumor (n=59), 13 (22.03%) subjects had a recurrence, and 2 (3.39%) had progression. In subjects with grade II (n=20), 15 (75%) had recurrence, and 3 (1.5%) had progression. While as in grade III (n=21), 13(61.09%) subjects had a recurrence, and 4(19.05%) subjects had progression. [Table-1][Fig-2]

Table 1: Distribution Of Subjects According To Tumor Grade Stage And Risk Groups And Their Correlation With Recurrence And Progression

Risk Group	No.	Recurrence (%)	Progression (%)
Low risk: Grade 1 stage Ta Grade 1 stage T1, single tumor	43	30.2%	00%
Intermediate risk: Grade 1 stage T1, multiple tumors Grade 2 stage Ta Grade 2 stage T1, single tumor	19	42.1%	5.26%
High risk: Grade 2 stage T1, multiple tumors Grade 3 stage Ta Grade 3 stage T1 Ca in situ association	38	52.6%	21.05%
Overall	100	41	9

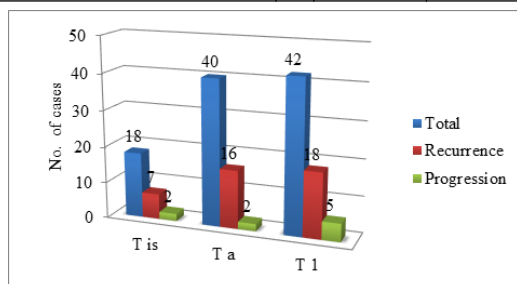


Figure 1: Correlation of TNM stage with outcome

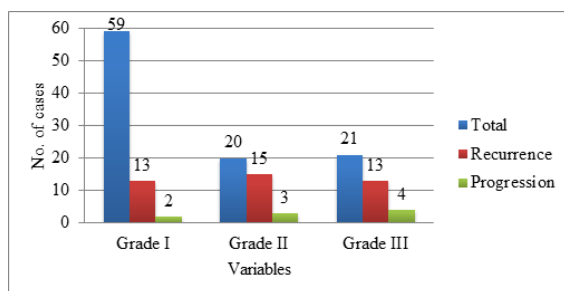


Figure 2: Pattern of Recurrence and Progression According to Tumor Grades

Postoperatively the subjects were scrutinized for intravesical BCG therapy based on tumor stage. None of the subjects with Ta lesion (n=40) were given BCG therapy. Recurrence was seen in 16 (40%) while progression was seen in 2 (5%) subjects. All the subjects with stage Tis (n=18) and T1 (n=42) received BCG therapy. In Tis recurrence was seen in 7 (38.89%) subjects and progression was seen in 2 (11.11%) subjects, while in T1 recurrence was seen in 18 (42.86%) subjects, and progression was seen in 5 (11.90%) subjects. Overall, in the subjects receiving BCG therapy (n=60), 25 (41.67%) had a recurrence and 7 (11.67%) had progression of the disease [Fig-3].

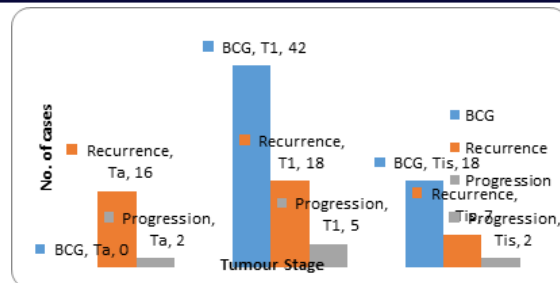


Figure 3: Comparison of Recurrence and Progression with & without BCG instillation concerning Tumour Stage

DISCUSSION

60% of patients in the study group belonged to the age group between 40-70 years. Male predominance was seen, with 84% of the subjects being male. L. Kiemeny et al. [9] conducted a study of over 1745 subjects in 1993 and reported similar incidence concerning age and sex 74% of cases were smokers and 26% were non-smokers [10]. In a meta-analysis of 11 studies comprising 2600 subjects of bladder cancer, it was reported that 90% of the cases were smokers [11].

Regarding tumor size, the highest progression was seen in the subjects with tumors > 3 cm while recurrence was seen more in the group having primary tumor size 1-3 cm. This data correlated with the study by Sylvester J.R. et al. conducted in 2006 [12].

On classifying lesions according to the pathological staging, recurrence was comparable in all three groups viz. T1 (40%), Ta (42%), and Tis (38%) and progression was equal in Tis (11.9%) and T1 (12%) and lower in Ta (5%). This data is contrary to the reported data as many studies have reported that Ta has the lowest recurrence rates [13].

After tabulating the subjects according to the tumor grade, the highest recurrence (75%) was seen in grade II disease and lowest (22%) in grade I. Highest progression (19%) was found in grade III disease and lowest (1.5%) in grade II. Erik Pasin. et al reported that the lowest progression and recurrence is seen in low-grade tumors and this correlates with findings of this study [14].

On evaluating the data of 60 subjects who received intravesical BCG therapy, we found that 41.67% had a recurrence and 7% had progression of the disease. The literature says that intravesical BCG instillation has beneficial effects on the recurrence and progression of bladder cancer. BCG therapy also decreases chances of muscle invasion and also increases the long-term percentage of subjects who remain disease-free [15,16].

Superficial bladder cancer can be categorized based on risk groups.

Low-risk group (Grade 1 stage Ta/T1, single tumor) - 37% chance of recurrence and 0% chance of progression.

Intermediate risk group (Grade 1 stage T1, multiple tumors, Grade 2 Ta/T1 single tumor) - Recurrence of 45% and progression of 1.8%

High-risk group (Grade 2 stage T1, Grade 3 stage Ta/T1, CIS association) - Recurrence of 54% and progression of 15%

CONCLUSION

The outcome of superficial bladder cancer depends on the number of tumors, size, prior recurrence rate.

- The most important prognostic factors for progression are the T category, grade, and the presence of CIS.
- T1/G3 patients, patients >70 yrs of age with tumors > 3 cm in size tumor recur and progress frequently and should be treated aggressively (i.e. Radical cystectomy).

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