

Table III Tumor Grading

Grade	No. of Pts.
I	40
II	52
III	06
I&II	03
Not specified	05
Total	106

Table IV Response Rate of BCG Therapy

Follow up period	Complete response	Failure
One year	60 (78.9%)	16 (21.1%)
5 years	49 (64.4%)	27 (35.6%)

Increased voiding frequency was the most common symptom. It was mild in 50% moderate in 15% and severe in 5%. Burning micturition in 55% cases. These cases were reassured and treated symptomatically. Their symptoms were relieved within 1-2 days. Serious complications following BCG therapy were seen in 6 patients (7.8%). They included gross haematuria in 4 patients (5.2%) and tuberculous cystitis in 2 patients (2.6%). Gross haematuria warranted discontinuation of therapy while tuberculous cystitis was treated with antitubercular agents. None of the patients reported systemic reaction like malaise, fever or systemic tuberculosis.

Discussion

Traditional treatment of superficial bladder cancer is endoscopic resection. If tumor is completely resected and histopathology shows no muscle invasion, then check cystoscopy is done at regular intervals to detect any recurrence. The use of intravesical BCG offers more effective control of recurrence than intravesical chemotherapy^{5,4,6,7}. Initially BCG was employed as intradermal injection along with intravesical instillation. But it has been proved that intradermal injection does not contribute to effectiveness of BCG⁸. In their first clinical trial, Morales et al used 120mg BCG arbitrarily. Since then almost all centers are using high dose i.e. 60-120mg. Complete response was obtained in 84% of this high risk group and all patients developed irritable bladder symptoms^{9,10,11}. In our study low dose (20 mg) BCG has shown reduction in recurrence rate (78.9% and 64.4% at one year and 5 year follow up period respectively) comparable to that obtained by others using high dose (60-120mg). Among the complications, the irritable bladder symptoms are most common but not in all cases (70%). Two patients developed tuberculous cystitis one year after BCG therapy which was proved histologically and treated with ATT. Systemic toxicity such as fever, malaise was not seen in any case. These observations indicate that low dose BCG is as equally effective in controlling the tumor recurrence as high dose but with relatively mild and less frequent irritable symptoms and is free from systemic toxicity.

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Low Dose BCG in the Management of Superficial Transitional Cell Carcinoma of Urinary Bladder

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76 patients with recurrent superficial bladder tumor were treated with low dose intravesical BCG therapy (20mg) between July 1987 to March 1995. Low dose BCG therapy prevented recurrence of superficial bladder tumors in 78.9% at one year and 64.4% at 5 years follow up period. One patient developed distant metastasis in bone although there was no local recurrence after BCG in 3 years.

Key Words : BCG therapy, superficial bladder tumor, recurrence.

Natural behaviour of transitional cell carcinoma of bladder exhibits heterogeneity. These tumours can be classified into two major categories: superficial and muscle invasive. Approximately 70% of the cases present with superficial tumors. Most of these superficial tumors remain limited to mucosa and submucosa. Only about 20% of these acquire aggressive character. Recurrence rate of superficial bladder tumor after first resection is about 70%¹. Various forms of therapeutic modalities have been employed to reduce the incidence of recurrence. These include topical intravesical chemotherapy (such as thiotepa, doxorubicin), hydrostatic pressure, radiation therapy, and immunotherapy. The efficacy of BCG in preventing the recurrence of superficial bladder tumor was first reported in 1976 by Morales et al². The use of BCG is not without side effects. Most of the reports maintain the use of high dose of BCG (60-120mg)³. However, the optimal dose of BCG remains to be defined⁴. The present study was conducted to see if low dose of BCG is as adequately effective.

Patients and Methods

This study spans over the period from September 1987 to March 1995. All patients of both sexes and any age who presented with bladder tumor were evaluated for inclusion in the study. After endoscopic resection, histopathology revealed superficial bladder tumor (Tis, Ta, T1) in 106 cases which constituted the study group. All these underwent regular check cystoscopy after three months. When there was recurrence, repeat endoscopic resection followed by intravesical BCG instillation was done. In cases with multi focal or incompletely resected tumor or CIS BCG instillation was done at initial presentation. According to this criterion, 76 patients, required BCG therapy. Treatment was carried out in outpatient department. Under aseptic measures, patient was catheterised (12 Fr Nelaton catheter) and 20mg of BCG Vaccine (Tice, Pasture, 'Glaxo Cannught strains.) constituted in 50ml normal saline was instilled into empty bladder and catheter removed. Voiding was held for ½ hour to as long as the patient could hold. The procedure was repeated every week till six doses were administered. Patients

were monitored for any complications. The tumor response was assessed by check cystoscopy. Complete response was defined as negative cystoscopy and/or histology. Failure was defined as positive histology and tumor progression as muscle invasion and/or metastases.

Results

The age and sex distribution of 106 patients who presented with superficial bladder tumors is shown in Table I. Tumors staging is described in Table II and tumor grading in Table III. Tumor response among the 76 patients who received BCG is shown in Table IV. Complete response to therapy was seen in 60 patients (78.9%) at one year follow up and in 49 patients (64.4%) at 5 years follow up. Among 27 patients who developed tumor recurrence during 5 years follow up period, 8 patients had stage I and grade II tumor, 14 patients had stage I and grade III/IV tumor and 2 patients had stage II and grade II tumor. One patient developed distant metastasis although he had no local recurrence after BCG therapy. Among 3 patients who had residual growth at the time of initial therapy two became tumor free and developed no recurrence after repeat BCG therapy with 60mg weekly for 6 weeks. One patient required cystectomy after failure of BCG therapy.

Table I Age and Sex Distribution

Age	Male	Female	Total
30-39	04	02	06
40-49	13	02	15
50-59	44	05	49
60-69	30	01	31
70-79	01	01	02
80-89	03	00	03
Total	95	11	106

Table II Tumor Staging

Stage	No. of Pts.
Ta	63
T1	36
Tis	03
Tis+Ta	04
Total	106