



Comparison of BCG and Mitomycin in Treating Urinary Bladder Tumor

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ABSTRACT

Objective: Comparison of Mitomycin C and BCG in treating urinary bladder cancer to devise better agent with less complications and good outcomes.

Materials and Methods: The study was conducted at Mayo hospital, Lahore from January 2017 to January 2018. It included 60 patients suffering from urinary bladder tumor.

Results: The complications such as fever, hematuria and dysuria were more associated with BCG; however, it was found to be associated with less recurrence rate as compared to MMC.

Conclusion: BCG is more recommended to be used for treating urinary bladder cancer as compared to MMC.

Key Words: bladder cancer, BCG, MMC,

INTRODUCTION

Urinary bladder cancer is considered as ninth most common cancer in the world. It can be regarded as 4th most common in United States of America and stands 5th in Europe. Its prevalence is increasing day by day (Irie et al. 2003). Majority of patients arrive clinic with non invasive muscular disease, which is superficial in nature. It is a combination of tumors with various outcomes (Kassouf & Black 2017). At early stages, disease is remarked as lamina propria (T1) or tiurothelium (Ta). It has more prevalence among men as compared to women. Initially these tumors are managed by cystoscopic observation, which is followed by transurethral resection (TUR) and biopsy (Cockerill et al. 2015).

Mostly the entire tumor is resected; however, two third may recur despite complete surgical resection. To avoid recurrence, high risk patients are administered with adjuvant intravesical therapy (Jung et al. 2017). Mitimycin C (MMC) and Bacillus Calmete Guerin (BCG) are most common agents used for this purpose. Non-muscle invasive cancer has high recurrence rate after resection, which result in muscle invasive cancer (Zhu et al. 2013). The use of BCG against cancer was first revealed by Centanni and Rezzesi in 1926 A.D. Later on, various experiments were conducted to apply its use on lung cancer, colon cancer, elanoma and leukemia (Friedrich et al. 2007).

In treatment of superficial bladder cancer, various intravesicalcytotoxic agents are used including epirubicin, bleomycin, mitomycin C, adriamycin, cytosine-arabioside and thiotepa. The MMC is an antitumor antibiotic, which is highly applicable in superficial bladder cancer (Verdeja-Robles et al. 2018). It has recurrence rate of 7 to 81%. However, it has negative outcomes such as contact dermatitis and chemical cystitis. On the other hand, BCG is another agent used under nonspecific immunotherapy for bladder cancer from 1976 AD (Sutton et al. 2000). The recent development in field has suggested that high recurrence risk of tumors should be dealt with MMC, BCG, doxorubicin or epirubicin. BCG is considered best among these agents on basis of recurrence rate. However, it is more toxic than MMC. Some studies have indicated absurdity about BCG preference over MMC (Witjes et al. 2013). Thus, the purpose of present study is to compare outcomes of MMC and BCG in individuals of urinary bladder tumor. This will help patients to adopt better therapy in future and prevent recurrence.

MATERIALS AND METHODS

This study was conducted at Urology department of Mayo hospital. It included 60 patients, and lasted from January 2017 to January 2018. History for all patients was noted followed by clinical examination. Provisional diagnosis included ultrasound, plain X-ray abdomen, CT scan abdomen and pelvis. After diagnosis stage, preparation for cystoscopic biopsy and surgery was done. Followed by histopathology, either chemotherapy by MMC or immunotherapy by BCG was assigned for each patient. The age range for patients under study was 18 to 80 years. The patients with only Ta and T1 non muscle invasive tumor were included in present study, whereas, individuals with advanced bladder tumor were excluded.

RESULTS

Out of 60 patients, 50 (83.33%) were male and 10 (16.66%) were females. The selected drugs were administered on basis of disease stage. The individuals with T1, G1 and G2 were given with MMC. It was rendered as 40mg in 20ml normal saline followed by 6 hours of surgery. On the other



hand, 1 vial of BCG was diluted in 50 ml of normal saline and administered after 14 hours of surgery. The agent was maintained in bladder for about 2 hours. The drugs were affiliated with various side effects. Hematuria was evident in 5% and 3% patients administered with MMC and BCG. Dysuria was shown by 19% and 9% of MMC and BCG patients. Fever was present in 8% and 3% of BCG and MMC patients. Cystitis was developed in 43% and 32% of BCG and MMC patients. Recurrence rate was lower for BCG, which was only 1%.

DISCUSSION

Urinary bladder cancer is most common malignancy of urinary tract. It has prevalence of 19% in women, whereas, it is 6th common cancer in men. Majority of patients are diagnosed after the age of 60 years. Recurrence is a main issue faced by patient and surgeon after TUR. Its recurrence rate is estimated to be 80%. BCG and MMC are highly recommended for treatment of bladder cancer. Previous research works have indicated that treatment with BCG is better than that of MMC. These findings are similar to the present study.

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Many studies have referred to intensive side effects of BCG. Same was shown in present study. However, BCG has an advantage of reducing recurrence rate of tumor. In present study, cystitis after BCG was noted to be 43%. Similar findings were indicated by study of Di Stasi et al. However, hematuria was found less in present study as compared to previous research works.

Previous work by Correa et al showed recurrence rate of 38% affiliated with BCG. However, the recurrence rate in present work was found to be only 1%. Consequently, numerous studies have advocated use of BCG in reducing recurrence rate of bladder tumor. Although AUA Guidelines have recommended use of both agents, criteria of their use is still unclear for treating bladder cancer.

CONCLUSION

It can be concluded that use of Bacillus Calmette Gureau (BCG) is more recommended as compared to Mitomycin C, on the basis of low recurrence rate and hindering progress of cancer. However, MMC was affiliated with fewer side effects as compared to BCG.



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