



Transurethral Resection of the Bladder Tumor Success Rates of Surgeons and Possible Causes of Differences Between Locals and Refugees

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Abstract

Objective: In our study, we examined the success rates of our surgeons and the criteria that define the success, and tried to reveal the possible causes of the differences in the success rates of transurethral resection of the bladder tumor (TUR-BT) in locals and refugees.

Materials and Methods: Between 2014 and 2018, 246 patients who underwent TUR-BT for the first time due to bladder tumor were evaluated retrospectively. Patients with urothelial carcinoma were included in the study. The patients were classified as muscle-invasive or non-muscle-invasive bladder cancer according to the stage, and as detrusor muscle positive and negative according to the pathology results. The patients were divided into two groups as locals and refugees. The surgeons were coded with numbers.

Results: The number of patients with positive detrusor muscle was 85 (52.1%) in locals and 55 (66%) in refugees. When all the cases were taken into consideration, it was found that the surgeons had significantly higher rates of detrusor muscle sampling in refugees compared to locals ($p=0.006$).

Conclusion: Our study suggests that the quality of the bladder tumor resection can be measured by the success or failure in sampling of the detrusor muscle in the first TUR-BT where the tumor is completely resected. The success rates of surgeons were higher in refugees. Despite the fact that they are the same group of patients, surgical treatment of the refugees without surgical stress seems to be the possible reason for being more successful.

Keywords: Bladder tumor, defensive surgery, detrusor muscle, TUR-BT

Introduction

Bladder tumor (BT) is the most common tumor of urothelial cancer. Approximately 75% of BTs are limited to bladder mucosa or submucosa at the time of initial diagnosis. Tumors in this category are called non-muscle-invasive bladder cancer (NMIBC). Tumors with detrusor muscle (DM) invasion are defined as muscle-invasive bladder cancer (MIBC) (1,2).

The standard treatment of NMIBC is intravesical instillation therapy according to the presence of risk factors following complete transurethral resection of the BT (TUR-BT). If the pathology after TUR-BT is reported as MIBC, the treatment approach changes completely and becomes radicalized (cystectomy, radiotherapy). The worse prognosis and the different treatment modality in MIBC indicate the importance of TUR-BT operation (3,4).

In addition to the standard risk factors for recurrence and progression of NMIBC, the quality of TUR-BT and surgical

style are significantly effective. The most important factors in evaluating the quality of TUR-BT have been defined as surgical approach, experience and obtaining adequate pathological material (DM sampling) (3,5).

The aim of TUR-BT is to make the histological diagnosis of the BT, to determine the tumor stage-grade, to determine all the prognostic factors such as the number and size of the tumor, muscle invasion (MI), and ultimately to remove the NMIBC completely (6,7).

If the initial resection is insufficient or there is no muscle tissue in the sample, re-TUR-BT should be performed within 2-6 weeks. In order to avoid applying re-TUR-BT, it is necessary to make a complete resection and a good tumor base sampling in the first resection. The leading causes of inadequate resection and low staging are tumor size, multifocality, inadequate equipment-surgical experience, surgeons avoiding the complications and being afraid of the complication management. Complications caused by TUR-BT are lower urinary tract symptoms, bleeding,

bladder perforation, urethral stricture and ureteral orifice obstruction. (7,8).

We have approximately 400,000 refugees in the province of Hatay. In addition to the refugees in our province, we also provide health services in Hatay State Hospital for patients referred from the field hospitals in Syria. The examination, treatment and surgeries of the refugees and locals are provided with equal opportunities without any discrimination. Although there are a large number of refugees in our country, the number of publications related to the surgeries in refugees is extremely limited. This research is the first surgical study comparing refugees and locals in Turkey.

In this study, we aimed to evaluate the factors determining the DM sampling by TUR-BT and therefore the success of the surgery on the individual surgeon level and patient groups in the treatment of patients with BT.

Materials and Methods

Patients who underwent TUR-BT due to BT in our clinic between 2014 and 2018 were evaluated retrospectively. In total, 246 patients underwent TUR-BT for the first time. Patients with urothelial carcinoma were included in the study. Patients were classified according to pathology results (positive or negative DM) and stage (MIBC or NMIBC). The patient groups were divided into two groups: local patients (LP) and refugee patients (RP). Tumor size was grouped as <10 mm, between 10-30 mm and >30 mm. Operative time was grouped as <30 min, between 30-60 min and >60 min. The surgeries performed by six different surgeons with similar experience in endoscopic bladder surgery were evaluated according to DM positivity in TUR-BT pathology samples, LP and RP, surgeon, specimen size (obtained from pathology reports) and operative time. In the imaging (CT,US) reports of 246 patients included in the study, tumor tissue was reported to be localized to the bladder. Surgeons were coded by numbering. Surgeons were evaluated statistically in terms of parameters such as detrusor muscle sampling, operative time, tumor size, and LP/RP. Surgeons used the same endovision system with the same resection elements (Karl Storz resectoscope and 30 degrees optics) during endoscopic BT resection. TUR-BT was performed under spinal anesthesia with premedication almost in all patients. General anesthesia was applied only to patients who were not suitable for spinal block.

The complications of TUR-BT reported by the surgeons were graded according to the Clavien classification, and LP/RP, tumor size and operative time were compared.

Statistical Analysis

Statistical analysis of the study was performed by R 3.4.3 program. Descriptive statistics for continuous variables in the study were expressed as mean, standard deviation, median, minimum and maximum values; and categorical variables were expressed as frequency and percentage. Yates chi-square and Pearson chi-square tests were used to compare categorical variables among groups. In all statistical analyzes, results with a p value less than 0.05 were considered statistically significant.

Results

In our clinic, 246 (233 male, 13 female) patients underwent TUR-BT between 2014-2018. The mean age of the LP was 62 years and RP was 66 years (range, 32-96). No statistically significant difference was found between LP and RP in terms of age ($p=0.217$) (Table 1). There was no statistically significant difference between LP and RP in terms of MI ($p=1.000$). There was no statistically significant difference between LP and RP in terms of tumor size ($p=0.335$). There was no statistically significant difference between LP and RP in terms of operative time ($p=0.682$).

There was no statistically significant difference between the surgeons in terms of TUR-BT numbers and the number of LP/RP operated ($p=0.421$). The number of patients with positive DM in TUR-BT specimen was 85 (52.1%) in LP and 55 (66%) in RP

		n	%
Gender	Male	233	94.7
	Female	13	5.3
Nationality	Locals	163	66.3
	Refugees	83	33.7
Age		Mean	Minimum-Maximum
	Locals	66	32-96
	Refugees	62	33-87

TUR-BT: Transurethral resection of bladder tumor

		Locals	Refugees	p
Pathological stage	Non-muscle invasion	138 (84.7%)	71 (85.5%)	1.000
	Muscle invasion	25 (15.3%)	12 (14.5%)	
Tumor size	<10 mm	29 (17.8%)	10 (12.0%)	0.335
	10-30 mm	61 (37.4%)	38 (45.8%)	
	>30 mm	73 (44.8%)	35 (42.2%)	
Pathology specimens	Detrusor muscle +	85 (52.1%)	55 (66.3%)	0.006
	Detrusor muscle -	78 (47.9%)	28 (33.7%)	
Operative time	<30 minute	24 (14.7%)	9 (10.8%)	0.682
	30-60 minute	88 (54.0%)	48 (57.8%)	
	>60 minute	51 (31.3%)	26 (31.3%)	
Surgeon	Surgeon 1	23 (14.1%)	11 (13.3%)	0.421
	Surgeon 2	36 (22.1%)	15 (18.1%)	
	Surgeon 3	23 (14.1%)	18 (21.7%)	
	Surgeon 4	31 (19.0%)	11 (13.3%)	
	Surgeon 5	20 (12.3%)	15 (18.1%)	
	Surgeon 6	30 (18.4%)	13 (15.7%)	

TUR-BT: Transurethral resection of the bladder tumor

(Table 2). When all cases were taken into consideration, it was found that the rates of TUR-BT DM sampling of surgeons were significantly higher in favor of RP compared to LP ($p=0.006$). There was no statistically significant difference between the surgeons in terms of DM positivity within the LP and RP ($p=0.194$ and $p=0.756$, respectively).

The complications of surgeons were evaluated according to Clavien classification, and significant data could not be obtained, as high-grade complication was rare. Only surgeon 1,2 and 5 reported an extraperitoneal bladder perforation due to obturator nerve reflex.

Discussion

Transurethral resection is defined as the gold standard for BT treatment. In the first TUR-BT, all visible tumors should be removed and the presence, depth and type of tumor invasion should be determined. Quality of TUR-BT affects the diagnosis, treatment and even the prognosis of BT. Defining the TUR-BT quality criteria is extremely important in determining the treatment plan. In clinical studies, there is a general acceptance that TUR-BT is successful if the staging of the disease is evaluated correctly, namely lack of misstaging or overlooked NMIBC lesions, and if there is no complication (9,10). In our study, we compared the TUR-BT success rates by evaluating DM sampling rates according to surgeons and patient groups. We have tried to reveal the possible relationship between the different success rates of TUR-BT and defensive surgical attitude according to surgeons and patient groups.

In many clinical studies, it has been shown that the success of TUR-BT is parallel to the presence of DM in the specimen. Detection of DM in specimen is relatively easy and allows us to evaluate the quality of resection much earlier than findings in the first control cystoscopy. Tumor base sampling was standardized in TUR-BT to obtain DM. The absence of DM in the first TUR-BT shows a poor quality resection and re-TUR-BT should be performed within 2-6 weeks (11).

In our study, although there was a significant difference in the presence of DM in specimen between LP and RP, we did not find a relationship in terms of age, gender and operative time. In this case, it is understood that DM sampling varies depending on the surgical attitude more than the individual characteristics of the patients. The surgeons do not appear to act with the necessary surgical self-esteem during the surgery in LP group. In studies, it was shown that 30-50% of the pathology samples do not contain DM (3,12).

Residual tumor and high early recurrence rates following low-quality TUR-BT can be explained by the individual effect of surgeons as well as the variability in TUR-BT quality. In our study, we evaluated the DM sampling rate of six different surgeons by TUR-MT and the differences between LP and RP. There was no significant difference between surgeons in the rate of DM sampling in RP (55-81%). Similarly, there was no significant difference in LP (34-66%). When all cases were taken into consideration, it was found that surgeons had significantly higher rates of DM sampling in RP compared to LP. The fact that there was no significant difference between LP and RP in terms

of muscle invasion and tumor size indicates that the tumor structure of the two groups is similar. It is possible to interpret the higher rates of DM sampling in RP by lack of surgical stress and defensive surgical attitude directed by the anxiety of complications.

In a study of 209 NMIBC patients, Del Zingaro et al. (13) reported that the high surgical volume was predictive for recurrence and progression. However, in our study, DM positivity was not correlated with tumor size among surgeons or groups (LP,RP). Similar results have been reported showing that the surgical volume did not have a significant effect on recurrence or progression rates, as in our study (14). Brausi et al. (15) reported that there was a difference between the clinics in the success of TUR-BT and that this was due to surgical experience rather than tumor characteristics. In a study of residual tumors, Herr (10) detected residual tumor in 83% of patients with negative DM in the first TUR and 74% of patients with positive DM. While similar success rates are expected among the groups of patients with the same tumor characteristics and operated by surgeons with equivalent surgical experience, the most probable cause of statistically significant differences is the complication avoidance reflex. Contrary to this attitude of surgeons, no serious complications were observed in both groups. This shows that defensive surgical attitude does not have a significant data and literature support. It has been determined that experienced surgeons sample more positive DM and that lack of DM positivity predicts the earlier recurrence risk independently (17). Dalbagni et al. (16) reiterated that the quality of TUR-BT can be measured by determining the completeness of the resection, the ability to obtain resection specimen and the recurrence at the resection site (17).

In our study, we aimed to reveal the importance of DM sampling in TUR-BT and the factors affecting it, such as tumor size and surgical attitude. In the study of Mariappan et al. (11), 67% of 365 TUR-BT patients had DM positivity. In multivariate analysis, large tumors, high-grade tumors, and surgical experience were found to be independently associated with DM positivity in resected samples (11).

Complications after TUR of the bladder have been reported in about 5-6% of patients. The frequency of complications is higher in large tumors, multifocal tumors and tumors in the bladder dome and is also dependent on the surgeon's experience. The most common complication is bleeding and occurs in 2.5% of cases. A more serious complication is bladder perforation and has been reported in 1-3% of patients. Perforation may occur as a result of obturator nerve stimulation with muscle contraction and rapid movement of the lower extremity (18,19).

In our study, TUR-BT complications of the surgeons were evaluated according to Clavien complication classification, and high-grade complications (Clavien stage 3-4) were rare, so significant data could not be obtained. Only surgeon 1,2 and 5 reported an extraperitoneal bladder perforation due to obturator nerve reflex. These results are consistent with the literature.

Study Limitations

The main limitations of the study are retrospective nature of the study, and lack of follow-up of residual tumor, recurrence and prognosis.

Conclusion

The absence or presence of DM in the first complete TUR-BT sample can be considered as an indicator of resection quality by independently predicting the presence of residual tumor related to the surgeon's experience. The success rates of surgeons in TUR-BT between LP and RP are high in favor of RP and this seems to be most likely due to failure to achieve the necessary depth of sampling by providing sufficient surgical confidence to avoid complications. Surgeons should keep in mind that there is no difference between LP and RP in terms of high degree complication rates and that the surgical attitude does not cause a difference between the groups. Although there are many studies evaluating TUR-BT success rates according to surgical experience in the literature, our study is the first study that showed different surgical attitudes to patient groups.

Ethics

Ethics Committee Approval: Because of the study was designed as retrospective study, ethics committee approval was not obtained.

Informed Consent: Because of the study was designed as retrospective study, informed consent was not taken from the patients.

Peer-review: Externally peer-reviewed.

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