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Patient Care

Review Article: The Safe and Economical Care of Ta Bladder Cancer

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Abstract

Introduction: Stage Ta bladder cancer accounts for around half of all new cases of urothelial bladder cancer. It shows heterogeneous behavior with a 5-year recurrence rate of 31% to 78% and a progression rate of 0.8% to 45%. Optimal management is crucial to achieve safe and yet economical long-term outcomes. We provide an overview of such management.

Methods: Using AUA, NCCN®, EAU and ICUD-EAU guidelines as the basis of this nonsystematic review we performed PubMed® searches to update the literature in this field and expand on topics of particular interest or controversy.

Results: This study provides an overview for the practicing urologist of safe, economical care of stage Ta bladder cancer with regard to risk stratification, preoperative and perioperative care, subsequent adjuvant treatment, surveillance, recurrence management and long-term outcomes. While these recommendations are already incorporated in current guidelines, some aspects deserve further discussion or have been the subject of relevant research subsequent to guideline publication.

Conclusions: The traditional view that stage Ta bladder cancer is invariably synonymous with low risk disease requires reevaluation. Modern management of stage Ta bladder cancer depends on initial risk stratification that allows for subsequent management based on a number of evidence-based guidelines. Given the usual long clinical course of stage Ta bladder cancer, such an approach ensures not only safe but also economical care of this group of patients.

Key Words: urinary bladder; carcinoma, papillary; evidence-based practice; practice guideline; risk

Abbreviations and Acronyms

AUA = American Urological Association

CIS = carcinoma in situ

CTU = computerized tomography urogram

EAU = European Association of Urology

ICUD = International Consultation on Urological Diseases

IVT = intravesical chemotherapy

MIBC = muscle invasive bladder cancer

NCCN = National Comprehensive Cancer Network®

NMIBC = nonMIBC

TaBC = stage Ta bladder cancer

TURBT = transurethral bladder tumor resection

UBC = urothelial bladder cancer

UTUC = upper tract urothelial cancer

Urothelial bladder cancer is the fifth most common cancer in Western societies, accounting for 69,000 and 180,000 new cases per year in the United States and European Union, respectively.[1] Emerging patterns of cigarette smoking and occupational carcinogen exposure mean that the incidence of UBC is increasing globally.[2] However, there has been little improvement in outcome in patients with UBC since the 1980s,[3,4] possibly reflecting complex patient pathways and treatments combined with a lack of therapeutic advances.[4]

As a result of the chronic clinical course of NMIBC, its prevalence relative to MIBC, and the risks of recurrence and progression that necessitate long-term cystoscopic surveillance and frequent interventions, the associated cumulative costs of NMIBC are considered to be greater than those of MIBC.[5,6] It is also evident that the care of patients with NMIBC varies considerably by region[7] and by physician.[8]

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Indeed, the latter has more influence on the cost of NMIBC care than disease stage or grade.[9]

TaBC, defined as noninvasive papillary carcinoma of the bladder,[10] accounts for 48% to 53% of all new UBC cases,[11,12] a proportion that has remained stable for 20 years.[11,13] TaBC shows heterogeneous behavior with a 5-year recurrence rate that varies from 31% for a solitary G1pTa tumor less than 3 cm to 78% for a recurrent, multifocal G3pTa tumor greater than 3 cm with CIS.[10] The progression rate of these tumors is 0.8% and 45%, respectively.[10] Although conventionally TaBC has been labeled as low risk NMIBC, 30% of patients have high grade or G3 disease[13] and more than 11% progress and may eventually die of bladder cancer.[14,15] Therefore, there is a need to stratify TaBC cases for optimal treatment.

This review provides an overview of the safe, economical treatment of patients with TaBC based on a validated risk stratification scheme, such as that proposed by the EAU guidelines on NMIBC.[10]

Methods

This nonsystematic review specifically focuses on issues related to TaBC. We reviewed the AUA, NCCN, EAU and ICUD-EAU guidelines[16–18] along with articles obtained by PubMed searches of relevant search terms to account for more recent evidence in this field. We used these data in conjunction with our consensus opinion as experienced urologists to review the safe, economical care of TaBC. Recent detailed economic assessments of UBC practice, as exemplified by the studies by Svatek[6] and Mowatt[19] et al, were incorporated into our consensus opinion. Recapitulating such analyses was considered to be beyond the scope of this review, especially given the significant geographical variation (see table).

Defining NMIBC Risk Categories

In 2006 the EORTC (European Organisation for Research and Treatment of Cancer) published risk tables to predict recurrence and progression in individual patients based on an algorithm using a number of clinical and pathological factors, including tumor number, tumor size, prior recurrence rate, T stage, CIS presence or absence and grade.[20] The tables were based on an analysis of data from historical trials, although others suggested that when used as part of modern NMIBC management, they overestimate recurrence and progression.[21] However, to our knowledge there is no better risk categorization tool to date.

Originally intended to be used as an aid to discussing treatment options with patients, the tables were subsequently used by the EAU NMIBC guidelines committee as the basis for the recommendation to categorize NMIBC as low risk—primary, solitary, Ta, low grade/G1, less than 3 cm and no CIS; high risk—any of T1, high grade/G3, CIS and specifically recurrent multiple tumors greater than 3 cm Ta G1/2; and intermediate risk—all other tumors.[10]

Although the concept of high risk NMIBC has been in use for some time, it is no longer appropriate to consider all other NMIBCs as a single homogeneous group. Risk categorization should be considered an essential first step in the safe management of all TaBC cases. In addition, there is a need to recognize a state of progression before muscle invasion so that tumor behavior can be appropriately characterized and managed. Therefore, the concept of biological progression was recently defined by the IBCG (International Bladder Cancer Group) as an increase in T stage from CIS or Ta to T1, development of T2 or greater, lymph node (N+) disease or distant metastasis (M1), or an increase in grade from low to high.[22]

Preoperative Care

Urine Cytology and Urinary Markers

After initial identification of a papillary bladder tumor, additional urine cytology and urinary markers have limited value in the preoperative management of TaBC since they are unlikely to alter subsequent surgical management.[18] However, they may have an important role during followup, as discussed.

Upper Tract Studies

The incidence of synchronous UTUC is unclear but it is likely to be low since the incidence of metachronous UTUC in TaBC is very low at 0.3%.[23] Nevertheless it was suggested that multifocal NMIBC carries a higher risk of UTUC.[24] All patients with UBC should undergo ultrasound of the urinary tract as part of the initial investigations. This is sufficient to identify significant upper tract disease such as renal cell carcinoma, stones and UTUC. Further imaging with computerized tomography, magnetic resonance imaging or

Table.
Bladder cancer care costs

	Costs (€)				
	United States*	United Kingdom	Sweden	Germany	Italy
Office cystoscopy	163	520	165	–	–
TURBT	4,348	2,362	2,200	2,500	2,242
Single 40 mg mitomycin C dose	219	87	–	–	–
6-wk bacillus Calmette-Guérin	528	630	–	–	975
Cystectomy	23,451	8,090	20,570	15,419	7,222

*Medicare rates.
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