Evaluating the Current Place of Radiotherapy as Treatment Option for Patients With Muscle Invasive Bladder Cancer in Belgium

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Abstract

Radiotherapy is a potent player in the treatment of different stages of bladder cancer. Although the place of radiotherapy is recognized by international guidelines, an underusage of radiotherapy in bladder cancer is confirmed in this Belgian survey. Awareness about the place of radiotherapy in bladder cancer must be increased.

Introduction: There is a gap between optimal and actual use of radiotherapy (RT) in muscle-invasive bladder cancer (MIBC). We investigated the opinions of radiation-oncologists, urologists, and medical oncologists on use of RT in different cases. Barriers and facilitators for applying guidelines were examined. **Material and Methods:** A web-based survey was developed at Ghent University Hospital and conducted from November 18, 2016 to July 17, 2017. The place of primary, adjuvant, and palliative RT was evaluated. Additional questions assessed the use of guidelines, barriers, and facilitators. **Results:** In total, 126 physicians (57 radiation oncologists, 41 urologists, and 28 medical oncologists) completed the survey. Significant differences in use of RT in the primary and adjuvant setting were observed between radiation oncologists and urologists. Younger age and presence of hydronephrosis are perceived as contraindications for RT in the primary setting. In the adjuvant setting, RT was mainly considered in case of positive surgical margins. All radiation oncologists and 96% of medical oncologists considered palliative RT for patients with painful bone metastases, whereas 21% of urologists did not ($P < .001$). Clinical decisions are mainly based on EAU guidelines. The most important reason for nonadherence to guidelines is external barriers (18%). One strategy to improve awareness of guidelines is a summary of guidelines on the website of national organizations (54%). **Conclusion:** There is controversy regarding the place of RT in MIBC, with a clear variation between professionals. Barriers and facilitators to use RT should be addressed, seeing the gap in RT utilization and predicted increase in patients requiring RT for MIBC.

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Introduction

A radical cystectomy (RC) is generally considered to be the golden standard for patients with muscle-invasive bladder cancer (MIBC). Depending on tumor characteristics and staging and whether or not neoadjuvant chemotherapy has been administered, adjuvant

chemotherapy is a treatment option, although no level 1 evidence exists for this approach.¹ In the metastatic setting, palliative chemotherapy and, more recently, immunotherapy are available to prolong survival. Immunotherapy is currently also tested as adjuvant treatment in clinical trials, but conclusions are not yet mature.

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Another important therapy for patients with bladder cancer is radiotherapy (RT). Evidence-based decision algorithms estimate that about 1 of 2 patients with cancer diagnosed with bladder cancer will require RT during the course of their disease.² Equally important is that by 2025 the need for RT for bladder cancer is predicted to increase by 21%, which would translate in bladder cancer ranking among the top 5 indications for radiotherapy in several European countries, among which is Belgium.³ Unfortunately, in spite of this evidence and despite international guidelines recommending RT at different stages of the disease, the actual utilization of RT for bladder cancer remains limited. In Belgium, for instance, only 18% of patients diagnosed with bladder cancer in 2009 to 2010 actually received RT, compared with the optimal of 47% computed for this specific patient population.⁴

This indicates that nowadays the majority of patients with MIBC who would benefit from RT are denied an effective treatment, with an important gap between the optimal and actual use of RT. Factors affecting optimal utilization of evidence-based treatment strategies, hence the adherence to clinical guidelines, are typically multifactorial. They may be embedded within the healthcare system itself (eg, lack of resources or inappropriate financial incentives), the practice environment (eg, incorrect referral patterns), the educational environment (eg, inadequate continuing medical education), the social environment (eg, inappropriate demands and/or beliefs created by the influence of the media), or the political environment (eg, dominance of short-term thinking in supporting cancer plans). Lastly, the introduction and implementation of optimal care will ultimately be driven by the interaction between practitioners and patients, who may have different demands or incentives towards a certain treatment strategy.^{5,6}

Little is known about the adherence to clinical guidelines in the setting of MIBC and about the incentives driving treatment decision. Therefore, we initiated this survey in which we assess: (1) the perceptions of urologists, radiation oncologists and medical oncologists on the place of RT in MIBC at different stages and (2) possible barriers for the application of clinical practice guidelines on RT in MIBC and define possible facilitators.

Materials and Methods

Study Design, Participants, and Procedure

A web-based survey (aiming at radiation oncologists, urologists, and medical oncologists) was developed and pilot-tested at the Ghent University Hospital. Eligible participants were Belgian urologists, radiation oncologists, and medical oncologists. The survey was disseminated through the Belgian Association of Urology, Belgian College for Physicians in Radiation Oncology, and Belgian Society of Medical Oncologists, respectively. The survey was conducted from November 18, 2016 to July 17, 2017.

Survey Content

The survey consisted of 10 questions, divided into 3 separate sections. The first section consisted of general information to identify the characteristics of the respondents (type of hospital, clinical experience, and specialty). The second part included different cases to define the place of primary, adjuvant, and palliative RT in patients with MIBC. The third part consisted of closed-ended questions on the use of guidelines, possible barriers, and

facilitators for using RT in MIBC. The complete survey can be found in the [Supplemental Table 1](#) (in the online version).

Statistical Analyses

The χ^2 and Fisher exact test were applied to compare the answers of the different participants per specialty. A P -value $< .05$ was considered significant. Statistical analysis was performed using Statistical Package for the Social Sciences (SPSS, Chicago, IL) version 25.0.

Guidelines

The following guidelines were consulted to summarize current recommendations concerning the place of RT in MIBC: European Association of Urology (EAU),⁷ National Comprehensive Cancer Network (NCCN),⁸ European Society of Medical Oncology (ESMO),⁹ and American Urological Association/American Society of Clinical Oncology/American Society of Radiation Oncology/Society of Urologic Oncology (AUA/ASCO/ASTRO/SUO).¹⁰ An overview of the existing EAU, NCCN, ESMO, and AUA/ASCO/ASTRO/SUO guidelines and recommendations on use of RT in patients with MIBC is presented in [Table 1](#).⁷⁻¹⁰

Results

Study Participants

The survey was sent to 233 urologists, 231 radiation oncologists, and 240 medical oncologists. The overall response rate was 18% and 18%, 25%, and 12% for urologists, radiation oncologists, and medical oncologists, respectively. Finally 126 participants filled in the survey, of whom 41 (33%) were urologists, 57 (45%) were radiation oncologists, and 28 (22%) were medical oncologists. The majority of the participants were active in a nonacademic hospital (71%) and had more than 10 years of experience (67%), without significant differences between specialties. Respectively, 12% and 21% of the participants had < 5 years and 5 to 10 years of experience. This was again equally distributed between specialties.

Clinical Cases: Place of Radiotherapy in MIBC in the Primary Setting

One hundred twenty-two (97%) participants filled in the questions on 'place of RT in the primary setting:' 40 (98%) urologists, 55 (96%) radiation oncologists, and 27 (96%) medical oncologists.

[Figure 1](#) represents the percentages of all participants and per discipline separately considering RT in the primary setting per case, for 3 different scenarios.

In elderly patients, significantly more urologists would not offer RT as primary treatment compared with radiation oncologists (case 1: 'no' answered by urologists in 30% vs. radiation oncologists in 9%; $P = .012$).

In younger patients (case 2), reluctance toward RT increases as more than 50% of urologists and medical oncologists would not consider offering RT as primary treatment (case 2: 'no' answered by urologists in 78% and medical oncologists in 70% vs. radiation oncologists in 31%; $P < .001$). Also, the presence of hydro-nephrosis was considered to be a contraindication for primary RT by the majority of participants (case 3: 'no' answered by urologists in 83% and medical oncologists in 74% vs. radiation oncologists in 53%; $P = .03$).

Table 1 Overview of Existing Guidelines on Place of radiotherapy in Muscle Invasive Bladder Cancer According to the EAU, NCCN, ESMO, and AUA/ASCO/ASTRO/SUO

Primary Radiotherapy				
Guidelines	Patient 1: Age 80 Years; pT2 cN0 cM0; Grade 3 TCC; No Hydronephrosis; No Comorbidities	Patient 2: Same as Patient 1 Except for Age 70 years	Patient 3: Same as Patient 1 Except for Hydronephrosis	Evidence/ Recommendation
EAU	In a highly selected patient population, long-term survival rates of multimodality treatment are comparable to those of early cystectomy			LE: 2b
	In patients aged > 80 years with MIBC, cystectomy is an option			LE: 3
	Offer multimodality treatment as an alternative in selected, well-informed, and compliant patients, especially for whom cystectomy is not an option			GR: B
	Offer radical cystectomy in T2-T4a, N0M0, and high-risk non-MIBC			GR: A
NCCN	Offer multimodality treatment (concurrent radiochemotherapy after TURB) as an alternative for radical cystectomy			LE: 2A
	For non-cystectomy candidates, offer concurrent radiochemotherapy or RT or TURB alone			
ESMO	Concurrent chemoradiotherapy or RT alone is most successful for patients without hydronephrosis and without extensive carcinoma in situ			III,B
	The approach of organ preservation therapy for MIBC is a reasonable option for patients seeking an alternative to cystectomy and a palliative option for those who are medically unfit for surgery. The preferred treatment is a tri-modality combination of TURB plus RT and chemotherapy			
	Criteria determining whether patients are ideal candidates for bladder preservation are: early tumor stage (including high-risk T1 disease, T2 < 5 cm), visibly complete TURB, absence of associated CIS and ureteral obstruction, and adequate bladder capacity and function			
AUA/ASCO/ ASTRO/SUO	For patients with newly diagnosed non-metastatic MIBC who desire to retain their bladder and for those with significant comorbidities for whom radical cystectomy is not a treatment option, clinicians should offer bladder preserving therapy when clinically appropriate			GR: C
Adjuvant Radiotherapy				
	Patient 1: Age 65 Years; pT3b pN0 cM0; R1; Neoadjuvant chemotherapy; No neobladder	Patient 2: Same as Patient 1 Except for With Neobladder	Patient 3: Same as Patient 1 Except for Tumor Stage pT3a pN2 (2/12) cM0; R0	Evidence/ Recommendation
EAU	There are only very limited, old data on adjuvant RT after RC. Advances in targeting and reducing the damage to surrounding tissue may yield better results in the future. In locally advanced BC (T3-T4, N0/N1, M0) the local recurrence rate seems to decrease with postoperative RT.			NA
	Offer adjuvant ciplatin-based combination chemotherapy to patients with pT3/4 and/or pN+ disease if no neoadjuvant chemotherapy has been given			GR: B
NCCN	Based on pathologic risk factors (pT3-4, positive nodes, positive margin or high-grade): consider adjuvant RT, or if no neoadjuvant treatment was given, chemotherapy			LE: 2A
ESMO	Although there is still insufficient evidence for the routine use of adjuvant chemotherapy in clinical practice (I,A), it is likely that high-risk patients (extravesical and/or node-positive disease) that have not received neoadjuvant chemotherapy will benefit most from adjuvant chemotherapy.			NA
AUA/ASCO/ ASTRO/SUO	Eligible patients who have not received cisplatin-based neoadjuvant chemotherapy and have non-organ confined (pT3/T4 and/or N) disease at cystectomy should be offered adjuvant cisplatin-based chemotherapy			GR: C

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Radiotherapy in the Metastatic Setting			
	Patient 1: Age 75 years; pT4 pN1 cM1; Visceral Metastases; 1 Painful Bone Metastasis	Patient 2: Same as Patient 1 Except for No Painful Bone Lesions; Lymph Node Recurrence in the Right Obturator Region With Pain Radiating to the Right Leg	Evidence/ Recommendation
EAU		Cisplatin-containing combination chemotherapy can achieve median survival of up to 14 months, with long-term disease-free survival reported in $\approx 15\%$ of patients with nodal disease and good PS	GR: 1b
NCCN	Systemic therapy or RT	Systemic therapy or chemoradiotherapy (if no previous RT) or RT	LE: 2A
ESMO	Cisplatin-containing combination chemotherapy with GC or MVAC is standard in advanced surgically unresectable and metastatic patients fit enough to tolerate cisplatin (I,A).median survival in these patients is about 14 months, long-term disease has been reported in about 15% of patients, in 20.9% with lymph-node-only disease compared with only 6.8% with visceral metastases		NA
	Palliative RT may be used to reduce symptoms such as pain or bleeding.		

Abbreviations: AUA/ASCO/ASTRO/SUO = American Urological Association/American Society of Clinical Oncology/American Society of Radiation Oncology/Society of Urologic Oncology; EAU = European Association of Urology; ESMO = European Society of Medical Oncology; GC = gemcitabine; GR = grade of recommendation; LE = level of evidence; M = metastasis; MIBC = muscle-invasive bladder cancer; MVAC = methotrexate, vinblastine, adriamycin, and cisplatin; N = nodes; NA = not available; NCCN = National Comprehensive Cancer Network; PS = performance status; pT = pathologic tumor stage; RT = radiotherapy; T = tumor; TURB = transurethral resection of the bladder.

For none of the cases a significant difference in practice pattern between participants working in an academic versus a nonacademic hospital was observed.

Clinical Cases: Place of Radiotherapy in MIBC in the Adjuvant Setting

One hundred nineteen (94%) participants filled in the questions on 'place of RT in the adjuvant setting:' 39 (95%) urologists, 55 (96%) radiation oncologists, and 25 (89%) medical oncologists.

Figure 2 represents the percentages of all participants and per discipline separately considering RT in the adjuvant setting per case.

Again, most differences were found between urologists and radiation oncologists.

For case 1, presenting a patient with MIBC treated with RC and having a microscopically involved surgical margin, 49% of the urologists would advise against adjuvant RT compared with 20% and 16% of the radiation oncologists and medical oncologists, respectively ($P = .001$).

When patients present with a neo-bladder, the majority of the participants do not consider adjuvant RT with a rise against RT of more than 20% in all groups (case 2: 'no' answered by urologists in 67% and medical oncologists in 64% vs. radiation oncologists in 40%; $P = .008$).

In case of positive pelvic lymph nodes, 65% of radiation oncologists would consider offering adjuvant RT compared with 41% and 44% of the urologists and medical oncologists, respectively ($P = .09$).

Overall, there were no significant differences in practice between participants working in an academic versus a nonacademic setting, although physicians working in an academic hospital would be less reluctant in offering adjuvant RT in case of the presence of neo-bladder (case 2: 'definitely' answered by participants working in an academic setting in 25% vs. participants working in a nonacademic setting in 7%; $P = .03$).

Clinical Cases: Place of Radiotherapy in MIBC in the Metastatic Setting

Again, 119 (94%) participants filled in the questions on 'place of RT in the metastatic setting:' 39 (95%) urologists, 55 (96%) radiation oncologists, and 25 (89%) medical oncologists.

Figure 3 represents the percentages of all participants and per discipline separately considering RT in the metastatic setting per case.

All radiation oncologists and 96% of medical oncologists would consider offering palliative RT to patients with painful bone metastases. In contrast, 21% of urologists would not refer a patient with a painful bone metastasis to the radiation department for palliative RT ($P < .001$).

Patients with MIBC with pain caused by a lymph node recurrence are still considered to be candidates for palliative RT by 98% of radiation oncologists compared with 87% and 84% of urologists and medical oncologists, respectively ($P < .001$).

Again, no significant difference in practice was observed for the presented cases in the metastatic setting between participants working in an academic versus a nonacademic hospital.

Results on the Use of Guidelines, Possible Barriers, and Facilitators for Using RT in MIBC

An overview of the answers given by all participants on guidelines, barriers, and facilitators for using RT in MIBC is presented in Table 2.

Clinical decisions for patients with MIBC are most often based on the EAU guidelines. Other sources for decision-making not mentioned in the table are up-to-date textbooks, Erlangen, and AUA guidelines.

Other barriers, in addition to those reported in Table 2, encountered for patient referral to the radiation department are case-dependent ($n = 1$), patient-specific choice ($n = 1$), fear of toxicity ($n = 1$), and no access to clinical trials ($n = 1$).

Figure 1 Representation of the Percentages of All Participants and per Discipline Separately Considering Radiotherapy in the Primary Setting per Case

Discussion

With this Belgian survey, answered by urologists, radiation oncologists, and medical oncologists, we assessed the current place of RT in MIBC. Additional information on use of guidelines and barriers to adhere to guidelines was collected.

Although surgical techniques have improved and Enhanced Recovery After Surgery protocols are gradually implemented, morbidity after radical cystectomy remains substantial.^{11,12} Multimodality bladder-sparing therapy (BST), consisting of chemoradiation after (maximal) transurethral resection of the bladder (TURB) is an alternative for surgery. Until now, there has been no direct comparison between both treatment options. One randomized trial was prematurely closed owing to poor patient accrual.¹³ Nevertheless, similar survival outcomes between both treatment strategies have been reported recently.¹⁴ Other prospective trials have confirmed long-term disease control with intact

bladder with BST.¹⁵⁻¹⁷ Based on these publications, international guidelines confirm that BST can be offered to highly selected patients as an alternative for RC (Table 1). Ideal candidates for BST are patients with T2 disease and complete removal after TURB.^{18,19}

Our survey revealed that age was an important factor in the decision-making whether or not to offer BST for a patient with T2 disease. Neither the EAU, NCCN, ESMO, nor the AUA/ASCO/ASTRO/SUO guidelines, however, indicate that younger age is a contraindication for BST.⁷⁻¹⁰ In a systematic review, both overall and cancer-specific survival as well as perioperative mortality worsened with increasing age when RC was the treatment of choice. Worse outcome in octogenarians was suggested to be the result of a suboptimal radical treatment.^{20,21} In this older population, BST is an excellent alternative for less aggressive and consequently non-curative surgery. This is confirmed by a recently published registry-

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Figure 2 Representation of the Percentages of All Participants and per Discipline Separately Considering Radiotherapy in the Adjuvant Setting per Case

based analysis in which similar survival after surgery and BST was observed in patients aged ≥ 80 years.²²

In addition to younger age, the presence of hydronephrosis was seen as a contraindication for BST based on the low number of participants considering BST in an 80-year old patient with a T2 MIBC and hydronephrosis. Tumor-associated hydronephrosis is indeed associated with low rates of complete response and consequently low rates of bladder preservation. Therefore, hydronephrosis is seen as a contra-indication for BST (Table 1).^{15,19}

A recent small retrospective analysis performed by Chiang et al evaluated the pattern of failure in patients with MIBC, treated with a BST, who had unfavorable characteristics such as hydronephrosis. Higher rates of distant metastases and worse survival were observed in these patients, although the bladder preservation was not inferior when compared with patients without hydronephrosis.²³ For patients who refuse or are deemed unsuitable for an RC, a BST should

thus not be denied even in the presence of tumor-associated hydronephrosis.

Despite aggressive surgery, the outcome after RC remains poor with 5-year overall survival rates of only 50%.²⁴ Ultimately, 30% of the patients with $\geq$ pT3 tumors develop a pelvic recurrence.²⁵⁻²⁷ Local recurrences are often debilitating and painful and cause morbidity (lymphedema and venous thrombosis). It has also been suggested that occurrence of local and lymph node recurrence is linked to the development of distant metastasis.²⁸ Significant improvement in local-regional recurrence and a marginally significant improvement in disease-free survival are observed with adjuvant RT,²⁹ but severe toxicity hampered enthusiasm for implementing adjuvant RT after RC in daily practice.³⁰ Technological advancements in RT planning and positioning have resulted in better coverage of the target volume while sparing more normal tissue (mainly small bowel), as well as in a more precise delivery of

Figure 3 Representation of the Percentages of All Participants and per Discipline Separately Considering Radiotherapy in the Metastatic Setting per Case

the RT.³¹⁻³³ Therefore, the use of adjuvant RT in properly selected patients with MIBC is reconsidered in different ongoing prospective studies.³⁴

Risk factors for locoregional relapse after RC have been identified and include: $\geq$ pT3 stage and positive margins or < 10 lymph nodes removed.^{34,35} Additional analysis is required to define the impact of node positivity on locoregional failure.³⁴ Interestingly, although both the EAU⁷ and NCCN⁸ guidelines consider adjuvant RT as an alternative for adjuvant chemotherapy in patients with locally advanced MIBC (including node-positive patients), $> 50\%$ of the responding Belgian urologists do not consider adjuvant RT in any of the cases. For the majority of radiation oncologists and medical oncologists, the presence of a positive surgical margin was a reason for referral for adjuvant RT, whereas, surprisingly, the presence of positive lymph nodes was not. The presence of a neo-bladder hampered the motivation to refer a patient for adjuvant RT. Nevertheless the use of moderate-dose adjuvant RT after radical cystectomy with orthotopic neo-bladder reconstruction was proven to be feasible and safe in this setting.³⁶

The important role of RT in the treatment of painful bone metastases is well established irrespective of the primary tumor. Single fraction RT is nowadays standard of care for symptomatic and uncomplicated bone metastases.³⁷ Our survey confirmed that RT is a well-recognized palliative treatment. In case of a pelvic recurrence only, it has been suggested that the role of RT might exceed a sole palliative one for pain relief. For patients with local or lymph node recurrence, the prognosis is reserved with a median survival of 4 months.³⁸ If patients with isolated local or lymph node

recurrence are treated with external beam RT, 1-year survival significantly improves from 2% (no RT) to 27%.³⁷

Previous work identified the following barriers to physicians' adherence to clinical practice guidelines: knowledge (lack of awareness or lack of familiarity), attitudes (lack of agreement, lack of self-efficacy, lack of outcome expectancy), or behavior (external barriers).³⁹ According to our survey, external barriers such as absence of referral, lack of or negative experience with RT, and no belief in a positive effect of RT in MIBC were among the most commonly reported barriers for adherence to guidelines.

Another study by Pathman et al investigated an awareness-to-adherence model of the steps to clinical guideline compliance.⁴⁰ They found that the first important step in the adherence to clinical guidelines was the awareness of the guidelines.⁴⁰ In our survey, 12% of the participants answered that they were not aware of existing guidelines.

The next steps are agreement with the guidelines and, thereafter, adopting the guidelines and adhering to them at appropriate times.⁴⁰ In current international guidelines, recommendations on RT in MIBC are most often limited as being an alternative for other therapies such as RC in the primary setting and chemotherapy in the adjuvant and metastatic setting. This dubiety makes adherence to guidelines difficult. The majority of the participants answered 'probably' on most questions on primary and adjuvant RT. This reflects well the low grade of recommendations in the EAU, NCCN, ESMO, and AUA/ASCO/ASTRO/SUO guidelines.⁷⁻¹⁰ Nevertheless, according to our survey, providing a summary of

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Table 2 Overview of the Answers Given by All Participants on Guidelines, Barriers, and Facilitators for Using Radiotherapy in MIBC

Use of Guidelines: Possible Barriers and Facilitators for Using Radiotherapy in MIBC	
	All Participants (N = 119), N (%)
Which guidelines do you follow in your practice? Multiple answers possible.	
EAU guidelines	81 (68)
Institutional guidelines	43 (36)
ESMO guidelines	42 (35)
NCCN guidelines	40 (34)
National guidelines	14 (12)
Other	6 (5)
I do not follow guidelines	3 (3)
Which would be possible barriers for you to apply guidelines for radiotherapy on MIBC? Multiple answers possible.	
None relevant: I always follow	44 (37)
External barriers: no referral, difficult access, cost, health economics...	21 (18)
I have no experience with radiotherapy in MIBC	17 (14)
I'm not aware of existing guidelines	14 (12)
Other	14 (12)
I have negative experience with radiotherapy in previous practice	12 (10)
I do not believe that radiotherapy will improve the outcome of a patient with MIBC	12 (10)
I do not agree with guidelines	2 (2)
What in your opinion would improve the awareness of existing guidelines on the use of radiotherapy in MIBC? Multiple answers possible.	
Compact summary of guidelines on the website of the national organization	63 (54)
Latest update of existing guidelines by e-mail	60 (52)
Multidisciplinary oncological consultation	60 (52)
Dissemination through symposia	55 (47)
Short overview of current trials by e-mail	46 (40)
No need for improvement	10 (9)
Other	1 (1)

Abbreviations: EAU = European Association of Urology; ESMO = European Society of Medical Oncology; MIBC = muscle-invasive bladder cancer; NCCN = National Comprehensive Cancer Network.

available guidelines is regarded as being effective in increasing the awareness of potential role of RT in MIBC.

There are some limitations in this survey-based paper. At first, offering participants the possibility to answer 'probably' might be regarded as a weakness of the current survey. Another important limitation of our study is the low response rate, which is influenced by several factors. Survey fatigue will undoubtedly have negatively influenced the number of participants. Also, our survey was sent to all Belgian urologists, radiation oncologists, and medical oncologists regardless of their subspecialization in urology or oncology practice. Limited experience with treating patients with MIBC might

therefore have contributed to the low response rate. The response rate of our study is, however, in line with other surveys.⁴¹⁻⁴⁴ In the survey performed by Walker et al, the place of perioperative chemotherapy for bladder cancer was explored.⁴⁴ The response rate for urologists, medical oncologists, and radiation oncologists was 20%, 36%, and 31%, respectively.⁴⁴ When only including those physicians who treated > 10 patients with MIBC per year, the response rate increases to 34%, 47%, and 28% for urologists, medical oncologists, and radiation oncologists, respectively.⁴⁴ Given the low response rate, our findings should be interpreted with caution as they might not be representative for all Belgian urologists, radiation oncologists, and medical oncologists as a whole.

Third, this survey was limited to Belgian physicians. The results might therefore not be extrapolated to other countries. The answers on the clinical cases are in line with the important underutilization observed in the analysis conjointly performed by the Belgian College for Physicians in Radiation Oncology and the Belgian Cancer Registry.⁴ The more granular data in this survey, moreover, show that the underutilization applies to RT in all stages of MIBC, even, although to a lesser extent, in the palliative setting. Whether the lack of promoting RT in this setting (when compared to systemic treatments, for example) is a major cause of this underusage is a contemporary hot debate.

Conclusion

There is a lot of controversy regarding the place of RT in MIBC, with a clear variation between oncology professionals and a dependence of tumor- and patient-related factors. Barriers and facilitators to use RT for MIBC were identified and should be addressed, keeping in mind the actual gap in RT utilization and predicted increase in patients requiring RT for MIBC in the future.

Clinical Practice Points

- In international guidelines, RT is recognized to be a treatment option for patients with bladder cancer in the primary, adjuvant, and palliative settings. However, it actually has been suggested that there is a gap between optimal and actual use of RT in MIBC.
- Our survey, conducted among radiation oncologists, medical oncologists, and urologists, confirms the underusage and differences in use of RT in the primary and adjuvant setting between radiation oncologists, medical oncologists, and urologists despite international recommendations. In the palliative setting, these discrepancies are less pronounced.
- Barriers and facilitators to use RT should be recognized and addressed. Awareness of the place of RT must be increased seeing the gap in RT utilization and predicted increase in patients requiring RT for MIBC.

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Disclosure

The authors have stated that they have no conflicts of interest.

Supplemental Data

Supplemental tables accompanying this article can be found in the online version at <https://doi.org/10.1016/j.clgc.2018.07.026>.

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The Current Place of Radiotherapy in Muscle Invasive Bladder Cancer

Supplemental Table 1 Overview of Questions Asked to the Participants of the Survey

Demographic Characteristics	
Please specify the type of hospital you practice in	Academic hospital
	Non academic hospital
Please specify your general clinical experience	< 5 years
	between 5 and 10 years
	> 10 years
	I have no experience
Please specify your speciality	Urologist
	Radiation Oncologist
	Medical Oncologist
Place of radiotherapy in the primary setting	
Would you consider (chemo)radiotherapy as an alternative for radical cystectomy in MIBC as a bladder-sparing treatment in following cases?	
Patient 1: Age 80 years - pT2 cN0 cM0 - grade 3 TCC - No hydronephrosis - No comorbidities	No
	Probably
	Definitely
Patient 2: Same as patients 1 except for: Age 70 years	No
	Probably
	Definitely
Patient 3: Same as patient 1 except for: Hydronephrosis	No
	Probably
	Definitely
Place of radiotherapy in the adjuvant setting	
Would you consider radiotherapy as an adjuvant treatment after radical cystectomy for MIBC in following cases?	
Patient 1: Age 65 years - pT3b pN0 cM0 - R1 - Neo-adjuvant chemotherapy - No neobladder	No
	Probably
	Definitely
Patient 2: Same as patient 1 except for: With neobladder	No
	Probably
	Definitely
Patient 3: Same as patient 1 except for: Tumor stage pT3a pN2 (2/12) cM0 - R0	No
	Probably
	Definitely
Place of radiotherapy in the metastatic setting	
Would you consider radiotherapy as a palliative treatment for metastatic MIBC in following cases?	
Patient 1: Age 75 years - pT4 pN1 cM1 - visceral metastases - 1 painful bone metastasis	No
	Probably
	Definitely
Patient 2: Same as patient 1 except for: no painful bone lesions - lymph node recurrence in the right obturator region with pain radiating to the right leg	No
	Probably
	Definitely
Guidelines on MIBC	
Which guidelines do you follow in your practice? Multiple answers possible.	EAU guidelines
	ESMO guidelines
	NCCN guidelines
	National guidelines

	Institutional guidelines
	I do not follow guidelines
	Other
Which would be possible barriers for you to apply guidelines for radiotherapy on MIBC? Multiple answers possible.	I'm not aware of existing guidelines
	I have no experience with radiotherapy in MIBC
	I have negative experience with radiotherapy in previous practice
	I do not agree with guidelines
	I do not believe that radiotherapy will improve the outcome of a patient with MIBC
	External barriers: no referral, difficult access, cost, health economics...
	None relevant: I always follow
	Other
What in your opinion would improve the awareness of existing guidelines on the use of radiotherapy in MIBC? Multiple answers possible.	Compact summary of guidelines on the website of the national organistaion
	Latest update of existing guidelines by e-mail
	Short overview of current trials by e-mail
	Dissemination through symposia
	Multidisciplinary oncological consultation
	No need for improvement
	Other

Abbreviations: EAU = European Association of Urology; ESMO = European Society of Medical Oncology; MIBC = muscle-invasive bladder cancer; NCCN = National Comprehensive Cancer Network.