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Outcomes and Healthcare Resource Utilization of Patients Receiving Definitive Versus Non-Definitive Treatment for Muscle-Invasive Bladder Cancer: a Real-World Analysis within the Veterans Affairs System

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INTRODUCTION

- Approximately 50% of patients with muscle-invasive bladder cancer (MIBC) do not receive definitive treatments (DT), including radical cystectomy (RC) or chemoradiation (CRT), despite established survival benefits[1-4].
- Retrospective real-world data were used to better understand and compare demographic, clinical characteristics, survival outcomes, and healthcare resource utilization (HCRU) and associated costs among patients with MIBC receiving DT vs. no definitive treatment (NDT).

METHODS

- Patients from the United States Veterans Affairs System diagnosed with MIBC between 2010-2019 were identified via a validated natural language processing (NLP) model analyzing pathology reports of transurethral resection of bladder tumor (TURBT) and supplementary chart review[5].
- Index date was defined as the first date of MIBC diagnosis. All eligible patients had baseline periods of ≥12 months pre-index and follow-up periods of >3 months post-index.
- Baseline characteristics were summarized and compared by omnibus (i.e., global) tests.
- The impact of treatment groups on overall survival (OS) was visualized by unadjusted Kaplan-Meier plot and tested by a multivariable Cox model with time-dependent covariates.
- All-cause and bladder-cancer specific (BC-specific) HCRU and associated costs were summarized on a per-patient per-year (PPPY) basis, and differences across treatment groups were assessed by omnibus (i.e., global) tests.

Urothelial Cancer

RESULTS

- We identified **1,524 patients with MIBC**, of whom **650 received NDT**, **740 were treated with RC**, and **134 were treated with CRT**.
- **Patients who received NDT were older at MIBC diagnosis** (median age in years: 78 [NDT], 68 [RC], 72 [CRT]; p<0.001).
- **An OS advantage was observed for patients receiving DT vs. NDT** in both unadjusted Kaplan-Meier plot (**Figure 1**) and the multivariable Cox model (adjusted hazard ratios (HR): 0.49 [RC], 0.65 [CRT]; both, p<0.001).
- **Patients receiving NDT had lower, but nevertheless substantial unadjusted all-cause and BC-specific total costs** compared to those receiving DT (**Table 1**).
- Inpatient HCRU and costs were highest for patients receiving RC. Outpatient HCRU and costs were highest for patients receiving CRT (**Table 1**).

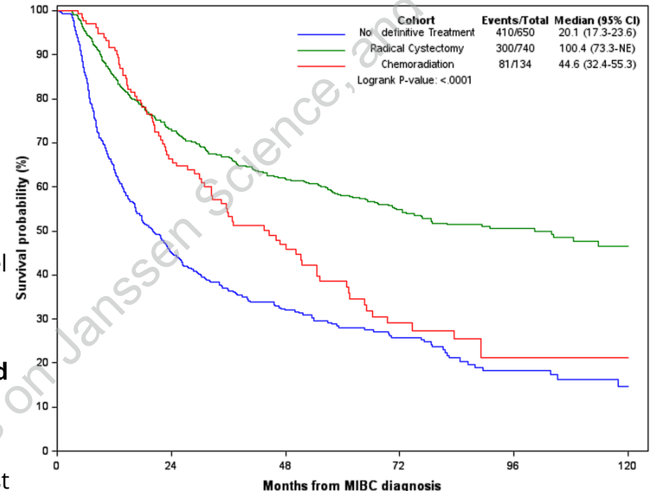

FIGURE 1: Unadjusted Kaplan-Meier plot of treatment groups

TABLE 1: Unadjusted all-cause and BC-specific HCRU and costs

Variable	Type	No Definitive Treatment (n=650)	Radical Cystectomy (n=740)	Chemoradiation (n=134)	p-value
Total Costs (USD), PPPY, Median (IQR)	All-cause	46,418 (18,885–106,638)	74,535 (37,415–158,778)	68,465 (37,255–146,860)	<0.001[a]
	BC-specific	9,299 (2,213–28,263)	24,513 (11,271–68,002)	14,085 (4,179–26,029)	<0.001[a]
Inpatient Visits					
Patients with ≥ 1 visit, n (%)	All-cause	411 (62.2)	721 (97.4)	104 (77.6)	<0.001[b]
	BC-specific	195 (30.0)	651 (88.0)	40 (29.9)	<0.001[b]
Number of visits, PPPY, Mean (SD)	All-cause	1.8 (2.6)	1.9 (2.4)	1.7 (2.3)	<0.001[a]
	BC-specific	0.5 (1.1)	0.7 (1.0)	0.3 (0.6)	<0.001[a]
Costs (USD), PPPY, Median (IQR)	All-cause	7,475 (0–46,380)	37,017 (15,199–98,875)	19,727 (1,353–62,217)	<0.001[a]
	BC-specific	0 (0–4,898)	18,518 (7,502–53,634)	0 (0–1,768)	<0.001[a]
Outpatient Visits					
Patients with ≥ 1 visit, n (%)	All-cause	645 (99.2)	739 (99.9)	134 (100.0)	0.13[b]
	BC-specific	614 (94.5)	730 (98.7)	132 (98.5)	<0.001[b]
Number of visits, PPPY, Mean (SD)	All-cause	59.8 (44.1)	63.3 (39.0)	90.3 (55.4)	<0.001[a]
	BC-specific	9.1 (10.1)	10.7 (11.8)	20.3 (19.4)	<0.001[a]
Costs (USD), PPPY, Median (IQR)	All-cause	25,776 (12,250–48,406)	24,362 (13,714–43,075)	39,918 (19,987–64,110)	<0.001[a]
	BC-specific	5,431 (1,655–15,601)	3,777 (1,274–10,433)	11,723 (3,361–22,073)	<0.001[a]

[a]Kruskal-Wallis p-value; [b]Chi-Square p-value. Costs were adjusted to the 2022 medical care component of the consumer price index. BC, bladder cancer. HCRU, healthcare resource utilization. USD, US dollar. PPPY, per-patient per-year. IQR, interquartile range. SD, standard deviation.

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KEY TAKEAWAY

Patients receiving NDT were older, had significantly worse survival, and incurred lower but still substantial costs compared to those receiving DT.

CONCLUSIONS

- Patients receiving NDT were older and had worse overall survival compared to those receiving DT.
- Although NDT was associated with lower total costs than DT, the overall costs remain substantial. However, these costs within the VA may not reflect those in other systems or populations (e.g., Medicare, Commercial) or costs within specific timeframes.
- Further studies are needed to evaluate other impacts of DT and NDT on patients including productive life-years lost and the physical and emotional burden.
- These findings highlight unmet needs among MIBC patients receiving NDT and underscore the requirement for more tolerable novel therapies to improve the prognosis of these patients.

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DISCLOSURES

RZ and SD have no disclosures to report. BL, RH, EOC, JG report employment with J&J. KK is a shareholder in J&J and CG Oncology. HS employment with J&J and ownership of J&J stocks. SB owns J&J stocks and was a J&J employee at the time of study. SJF consultant to Janssen, Astellas, Bayer, Pfizer, Sanofi, Sumitomo, Novartis, Astra Zeneca, Merck, and Eli Lilly. SBW reports advisory board and consultant fees from Janssen, Merck, Photocure, Valar Labs and serves as BJUI section editor. APM reports honoraria from UpToDate and is a co-creator of intellectual property owned by the University of Southern California related to a prognostic panel for urinary bladder cancer. JI, SM, JP, CE, AD report research funding paid to the lab by: Merck, Janssen, Exact Sciences, Astellas, Delfi Diagnostics, Guardant Health, Photocure, AstraZeneca Pharmaceuticals, Reinvestment Partners, Prostatype Genomics, Novartis, Vir Biotechnology, Coloplast corporation, Roche Pharmaceuticals

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