

Clinical benefit to regionalization of care for muscle invasive bladder cancer

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In a recent issue of the *Journal of Urology*, Ryan *et al.* (1) report the outcomes of a retrospective cohort study using the National Cancer Data Base (NCDB) that sought to characterize the relationship between distance traveled for treatment and overall mortality for patients with muscle invasive bladder cancer (MIBC). Inclusion criteria included cT2-cT4aN0M0 disease, palliative care not used as the primary goal of treatment, and distance from treatment facility ≤ 250 miles. A total of 34,729 patients with MIBC were analyzed, with a subset analysis performed on 11,059 patients undergoing radical cystectomy (RC).

Approximately 79,000 new cases of bladder cancer are diagnosed annually in the United States (2). The current standard of care for node-negative, non-metastatic MIBC is neoadjuvant chemotherapy followed by RC, with bladder preservation therapy consisting of chemoradiation (CRT) also an option for a subset of patients (3). Among patients receiving definitive treatment, over 90% of patients with MIBC are treated with RC, with only about 9% of patients receiving CRT-based bladder preservation therapy (4). RC is a complex surgical procedure with a 90-day post-operative mortality of up to 9% (5). Due to data that demonstrates lower morbidity and mortality associated with surgical procedures performed at high volume facilities and with high volume surgeons (6,7), there has been a push to centralize the institutions performing complex surgical procedures with the goal of creating more high volume facilities with expertise in treating these cases, resulting in regionalization for certain cardiac and oncologic

procedures, including RC (8,9).

There is data to suggest that regionalization of RC, with this procedure performed primarily at high volume institutions by surgeons with greater clinical experience, may lead to improved quality of care. Patients undergoing RC at higher volume facilities or under the care of higher volume surgeons have improved 90-day post-operative mortality, long term survival, and decreased hospital stay, suggesting that regionalization may lead to superior quality of care as well as decreased health care costs (5,10,11).

Moreover, there is data to suggest that patients traveling a greater distance to receive care at specialized medical centers may have superior clinical outcomes when compared to patients receiving treatment at local institutions, possibly due to a higher quality care. A study from the University of Chicago demonstrated that patients enrolled on Phase II curative intent chemoradiation protocols for head and neck cancer traveling a greater distance to the treatment facility had a decreased risk of death (12). An investigation using the NCDB showed that amongst patients undergoing definitive surgery for gastrointestinal cancers, patients traveling a greater distance for the surgical procedure had improved 90-day postoperative mortality and 5-year overall survival when compared to the treatment received by patients living closer to the surgical facility (13). A similar report using the NCDB also demonstrated reduced overall mortality amongst patients traveling a long distance for treatment of prostate cancer, regardless of whether they were managed with surgery, radiation therapy, or multimodality

treatment (14).

However, regionalization can also present challenges for patients seeking treatment for bladder cancer by creating barriers to accessing care and making it more challenging for a subset of patients to receive the required treatment. A study from all inpatient admissions from New York State's Department of Health revealed that due to centralization of care, fewer hospitals were providing cystectomy to patients, causing bladder cancer patients to travel a greater median distance in order to obtain a RC (15). A greater distance from a patient's place of residence to treatment facility is associated with both a greater likelihood of metastatic disease at diagnosis as well as a greater interval between diagnosis and initiation of treatment (16,17). An increased distance to the treatment facility has also been associated with a decreased utilization of recommended chemotherapy or radiation therapy (18,19), suggesting that geographic distance can be a barrier to receiving oncologic treatment.

It is in this context that the present study by Ryan *et al.* sought to determine the relationship between travel distance and mortality for patients with MIBC (1). The authors hypothesized that a greater distance to the treatment facility would lead to worse overall mortality. However, the results demonstrated an inverse relationship among all patients between distance travelled and overall mortality, as patients who travelled either an intermediate distance (12.5–49.9 miles) or long distance (50–250 miles) had reduced mortality when compared to patients traveling a short distance (<12.5 miles) for treatment.

When stratifying patients by stage, the improvement in mortality with greater travel distance was present for patients with stage T2 disease, but not with either T3 or T4 staged MIBC. Additionally, there was no difference in mortality by travel distance observed in the subset of patients undergoing RC.

Patients who traveled further for care were more likely to receive a higher quality of treatment, defined as treatment meeting the NCCN guidelines. Patients traveling either an intermediate or long distance were more likely to receive treatment at an academic facility, to receive RC at a high volume hospital, and, if receiving RC, were more likely to receive neoadjuvant chemotherapy.

There are multiple possible explanations of the improved survival observed amongst patients traveling further distances for treatments. It is possible that since greater travel distance was associated with receipt of treatment of a high volume facility, these patients received treatment by surgeons with greater experience and possibly with superior surgical quality.

Additionally, these institutions may have offered higher levels of staffing and increased access to multidisciplinary care. However, the finding that no difference in survival was observed amongst patients undergoing RC would suggest that surgeon experience and surgical quality may not have had an impact on survival, as patients undergoing surgery locally had similar overall survival to those traveling further for their surgical procedures. Another possible explanation would be that larger institutions may be better equipped to manage more biologically aggressive and advanced MIBC. However, the difference in survival was restricted to patients with T2 disease, and not T3–4 disease, suggesting that outcomes for patients with more advanced disease were similar, regardless of distance traveled. As Ryan *et al.* point out in their report, a limitation of their study is that distance traveled may be a surrogate for the will to live, or personal characteristics such as social support or increased awareness of health orientation which may select for patients more likely to survive (12,20). Patients who are able to travel may also be healthier and have less medical comorbidities, which may predispose them to superior outcomes, regardless of the treatment facility. Therefore, the observed difference in overall survival may be due to a selection bias, with more favorable patients more likely to travel further distances for care.

The push to improve the quality of care for patients has spurred the regionalization of complex oncologic surgical procedures. While the centralization of institutions offering oncologic treatment has created barriers towards accessing care with many patients now having to travel further to receive treatment, the present study suggests that amongst patients with MIBC, those who travel further distances for definitive treatment may have improved overall survival. The reasons for the decreased mortality observed in this set of patients are likely multifactorial, and may be partially due to treatment quality related factors at high volume institutions or due to a selection bias, with healthier patients having a greater likelihood to travel. The underlying causes for the observed decrease in mortality amongst patients traveling require further exploration.

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Footnote

Conflicts of Interest: The authors have no conflicts of interest to declare.

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