Original Study

General Adherence to Guideline Recommendations on Initial Diagnosis of Bladder Cancer in the United States and Influencing Factors

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Abstract

Despite the availability of at least 3 published guideline recommendations for the initial diagnostic workup of bladder cancer, a Surveillance, Epidemiology, and End Results (SEER) database analysis indicates that adherence to such guidelines is limited, and a minority of patients receives all the elements of workup for bladder cancer as supposed to be recommended. Better adherence to such guidelines could improve patient outcome in the future.

Background: Because international guidelines recommend best practices regarding staging of incident bladder cancer, we determined the adherence to such recommendations in the United States, performing a large retrospective database analysis. **Patients and Methods:** Patients with the diagnosis of urothelial cancer were identified in the Surveillance, Epidemiology, and End Results (SEER)-Medicare database between 1992 and 2007. Staging procedures were identified and analyzed. As reference for published recommendations, we used the American Urological Association (AUA), European Association of Urology (EAU), and National Comprehensive Cancer Network (NCCN) guidelines. Based on these sources, recommended initial staging of bladder cancer was analyzed. Of all 56,130 patients, 6148 (10.9%) had a cytologic examination, 29,677 (52.9%) had a standard urinalysis, 2882 (5.1%) underwent intravenous pyelography (IVP), 6950 (12.4%) underwent retrograde pyelography (RPG), and 8145 (14.5%) had computed tomography/magnetic resonance imaging (CT/MRI). **Results:** There was a significant trend over the years to a higher use of cytologic analysis, standard urinalysis, and CT/MRI. We observed a significant trend toward a lower rate of IVP and a stable use of RPG. The limitation of our study is that claims data are designed for payment processing, not quality measurement. **Conclusion:** Despite published recommendations on the initial diagnosis of bladder cancer, our data show that less than half of the included patients received all the elements thought to be required for an initial diagnosis of bladder cancer as recommended by guidelines. Greater adherence to recommendations may ensure optimal treatment strategies. Appropriate treatment is critical to patient outcomes, because evidence-based therapeutic management can be practiced only if an accurate assessment of the disease takes place at the time of initial diagnosis.

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Introduction

Carcinoma of the urinary bladder is the fifth most frequent malignant disease in the western world. In the United States, approximately 70,980 new cases of bladder cancer were diagnosed and 14,330 people died of this disease in 2009.[1] Based on rates from 2003 to 2005, 2.4% of men and women born today will be diagnosed with cancer of the urinary bladder at some time during their lifetimes. The relative survival rate at 5 years for 1996 to 2004 was 79.8%.[2]

There are tremendous stage-dependent differences in survival rates for patients with localized or metastatic tumors. Data from the National Cancer Institute show that the relative 5-year survival rate for patients with stage I-IV disease is 96.6%, 70.7%, 34.6%, and 5.4%, respectively.[3]

Furthermore it is also of great importance to diagnose upper urinary tract tumors at an early stage because outcomes of advanced upper urinary tract tumors are known to be poor. The literature shows that the 5-year cancer-specific survival for this tumor entity is < 50% for stage pT2/pT3 tumors and < 10% for stage pT4 tumors.[4,5]

A variety of guidelines and recommendations have been proposed by different organizations, including the American Urological Association (AUA), European Urological Association (EAU) and the National Comprehensive Cancer Network (NCCN),[6-8] for the appropriate diagnosis and treatment as well as surveillance of bladder cancer. Most published series on bladder cancer have focused on the follow-up of patients with bladder cancer rather than on the adherence to guideline recommendations for initial diagnosis.[9]

The concordant specific recommendations on the initial diagnosis and staging workup of bladder cancer given by the current different guidelines are shown in Table 1. Previous studies on US practice patterns regarding surveillance after the diagnosis of bladder cancer have identified significant variation and mismatch between surveillance intensity and grade and stage of disease.[10] A previous analysis performed by the Urologic Diseases of America project established baseline rates of diagnostic evaluation such as imaging and cytologic evaluation for all patients with bladder cancer but did not correlate patterns of care with published guidelines as they pertained to this issue.[11]

Population-based data regarding the pattern of initial evaluation for patients with newly diagnosed bladder cancer are scant. The purpose of the current study was to evaluate adherence to any or all of the measures for diagnosis of bladder cancer as outlined in the published guidelines from the AUA, EAU, and NCCN and to find parameters that are associated with adherence to such guidelines. Furthermore, the trend toward better or worse adherence to such guidelines over a time frame of 15 years was analyzed. We also sought to determine if adherence to recommended guidelines for diagnosis and staging had an impact on patient survival.

Methods
Data
Linked data from the SEER-Medicare program from 1992 to 2007 were used for analysis. The SEER data contain information on patient demography, pathologic features of the tumor, and cause of death. Medicare collects information on claims for covered and rendered services from the time of eligibility to death, time of acquiring the data, or end of a study. This linkage has the advantage of longitudinal follow-up of the claims for treatment of patients and outcomes of disease or treatment. The diagnoses of patients can be captured with the use of the International Classification of Diseases, 9th revision (ICD-9) diagnosis code. The health services rendered can also be captured with the use of the ICD-9 procedure codes or the American Medical Association Physicians' Current Procedural Terminology (CPT) codes.

Variables
Information on patient age in 5-year intervals, sex (male vs. female), race (white, black, Hispanic and other), SEER registry (as a proxy of location), degree of urbanization of location (rural vs.

Table 1	Recommendations for Initial Diagnosis of Bladder Cancer by 3 Different Guidelines		
Procedure	**AUA Recommendation**	**EAU Recommendation**	**NCCN Recommendation**
Urinalysis	Detection of microscopic hematuria	No specific recommendations	No specific recommendations
Urine Cytologic Analysis	"Cytology, either voided or upon barbotage, is an important adjunct in the diagnosis and surveillance of patients with urothelial carcinoma."	"Examination of a voided urine or bladder-washing specimen for exfoliated cancer cells has high sensitivity in high-grade tumors but low sensitivity in low-grade tumors. It is thus useful when a high-grade malignancy or CIS is present."	Recommended for initial workup
Cystoscopy	"Patients with suspicion for bladder cancer due to microscopic hematuria and irritative symptoms particularly those without evidence of infections, stones, or other causative factors, should undergo cystoscopy."	"The diagnosis of bladder cancer ultimately depends on cystoscopic examination of the bladder and histological evaluation of the resected tissue. In general, cystoscopy is initially performed in the office, using flexible instruments."	Office cystoscopy recommended
Upper Urinary Tract Studies	"Radiologic imaging is often performed in conjunction with cystoscopy and is part of the hematuria evaluation in the patient undergoing assessment for urothelial cancer. Common imaging techniques include intravenous urogram, retrograde pyelography, computerized tomography, and magnetic resonance imaging."	"Intravenous urography (IVU) is also used to detect filling defects in the calyces, renal pelvis and ureters, and hydronephrosis, which may indicate the presence of a ureteral tumor. The necessity to perform routine IVP once a bladder tumor has been detected is now questioned because of the low incidence of significant findings obtained with this method. In many centres, computed tomography (CT) urography is used as an alternative to conventional IVU."	Imaging of upper urinary tract system recommended

Abbreviations: AUA = American Urological Association; CIS = carcinoma in situ; CT = computed tomography; EAU = European Association of Urology; NCCN = National Comprehensive Cancer Network; IVU = intravenous urography.