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Hematuria to Bladder Cancer Management Timeliness: A Baseline Study at a Veterans Affairs Facility

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ABSTRACT

Bladder cancer is usually identified through the investigation of unexplained hematuria. Bladder cancer has importance to American veteran health care because of a recognized link to tobacco abuse. A retrospective medical record review conducted at a Veterans Affairs Medical Center determined the current time frames that local veterans wait between first noted hematuria and management of bladder cancer, with the goal of improving timeliness of diagnosis and management of new cancers. This study identifies several systems changes and educational opportunities to improve timeliness from the identification of hematuria through the management of new urothelial malignancies.

Keywords: bladder cancer, delay, hematuria, timeliness, veterans

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Bladder cancer affects 1 in 42 Americans in their lifetimes.[1] Men are approximately 3 times more likely to develop bladder cancer than women, and Whites more than Blacks or Hispanics.[2,3] An estimated 74,000 Americans will be diagnosed with cancer of the urinary bladder in 2015,[3] and 500,000 Americans are said to currently live with the disease.[1] The average age at diagnosis in the United States is 73 years.[2] Approximately 77% to 79% will survive more than 5 years after diagnosis, although Whites survive longer than Blacks after diagnosis.[1,3] Bladder cancer is strongly associated with tobacco abuse, and to lesser degrees, to aniline dyes, petroleum products, and other occupational exposures.[2,4]

Although blood in the urine is not usually caused by bladder cancer, the most common sign of bladder cancer is painless hematuria.[4-6] Approximately 80% of patients with bladder cancer will present with hematuria, whereas a minority experience only generalized voiding symptoms such as dysuria or urgency of urination.[4,6] Still a smaller minority of bladder cancers are first identified on imaging, such as computed tomographic scanning, magnetic resonance imaging, or ultrasound.[4,6]

Bladder cancer is a great concern to American veteran health care because veterans have higher rates of tobacco abuse and occupational exposures than the American nonveteran population.[7-9] Providing timely and effective cancer care in the current health care environment requires seamless coordination among patients, primary care providers (PCPs), and specialists using modern technology and specialized staff.[10-12] Despite health care's most coordinated technological and systems advances, patients may not receive timely access to care.[10,12] Veterans Affairs (VA) urology specialists give particular attention to the workup of hematuria to expedite bladder cancer management because of its nature as an aggressive disease. Coordination of bladder cancer care can also be complicated because of competing departmental demands for care and individual patient needs.

To evaluate the current time frames associated with bladder cancer care, this study evaluated the current practices in a VA Medical Center (VAMC) wherein hematuria is identified, leading to the identification and management of bladder cancer.

The aim of this study was to assess the timeliness by which patients with hematuria were identified, referred, and managed through diagnosis and management of bladder cancer. Results of the study were used to identify health system and provider-related factors that could expedite care.

METHODS

Design

A retrospective chart review was conducted in June 2014 of veterans who underwent bladder tumor resection in the focus facility in 2012 and 2013.

Setting

The project was conducted within the VA division of urology. The study reviewed care within the coordinating microsystems including primary care, related specialties at the VA, the operating room and supporting departments, and outlying VAMCs that refer to the local facility.

During the study period, the VAMC used the American Urologic Association (AUA) guidelines developed in 2001 for workup of hematuria, requiring 2 separate urinalyses showing 3 or more red blood cells per high-power field on microscopy for a patient to qualify for a urology referral.[13] The urology division also required that patients have completed imaging of the urinary system before their urology appointment, or the appointment was canceled until imaging was obtained. Urology providers then completed urologic evaluation, including evaluation of the bladder and urethra with a cystoscope. Those with findings suspicious for cancer underwent operative procedures to resect concerning lesions.

Sample

All veterans who underwent bladder tumor resections at the VAMC in 2012 and 2013 were identified through *Current Procedural Terminology* codes and were considered for inclusion in the sample. Exclusion criteria included surgical specimens without histologic evidence of urothelial cancer, cancers that were identified as recurrences, and cancers not proceeded by hematuria within 2 years before diagnosis.

Data Collection and Variables

Data were abstracted from the comprehensive VA electronic medical record (EMR) by the principal investigator using a data collection tool designed by the investigators. Demographic variables recorded included gender, age at diagnosis, home VA facility, and tobacco abuse history when retrievable, in pack years. Clinical variables were recorded including: the date of first hematuria as determined by urinalysis or by patient report within 2 years before diagnosis; in cases of gross hematuria, the date at which the patient reported the gross hematuria to a provider; date of first consultation request to urology; date of first scheduled urology appointment; date ultimately seen by urology; date of agreement for cystoscopy; date of cystoscopy; date of appointment for resection; date of actual resection of tumor; and date of final pathology report. Where applicable, dates for decision for cystectomy and the actual cystectomy procedure were recorded.

Data Analysis

After each point along the illness trajectory was recorded, times in days between points were calculated. Investigators identified the total time between initial hematuria and diagnosis of cancer with resection of the tumor as the diagnostic interval (DI). Each phase of the workup time frame was designated as a subinterval (SI). Median and interquartile (IQR) calculations were then identified for each DI and SI for the group. Statistical comparison of wait times was conducted using Excel (Microsoft, Redmond, WA).

Reduction of Participant Risk/Protection of Patient Health Information

The institutional review boards at 2 affiliated universities and the VAMC Research and Development Committee approved the project protocol with expedited review.

RESULTS

Sample Selection

The initial search of all surgical cases in the study time frame identified by the *Current Procedural Terminology* codes for bladder tumor resection retrieved 257 bladder tumor resection procedures. Fifty-eight additional procedures were identified whose surgical procedure names included the words *bladder tumor resection*. Exclusion criteria were applied to the initial group of 315. Eighty-two procedures were excluded as recurrences of disease. Another 152 cases did not show urothelial cancer; most were restaging biopsies of high-grade cancers that showed complete resections at earlier procedures, and thus showed no residual disease. Others were miscoded or did not otherwise include bladder tumor resections. Eight were excluded