

Microhematuria in an Older Man

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Abstract

We present a case of microhematuria that led to a diagnosis of urologic malignancy. We outline microhematuria diagnostic guidelines and their application, particularly as they apply to the primary care provider. With a proper workup, urothelial carcinoma and other pathologies can be detected and treated with more conservative and preventive approaches.

Key words: microhematuria, urologic malignancy, bladder cancer

An obese, 61-year-old man with no significant medical or surgical history and a 40 pack/year smoking history presented to the clinic with urinary urgency and frequency.

History

The patient presented to his primary care doctor for concerns of increased urinary urgency and frequency. He had noticed increased daytime frequency and urgency, without incontinence, gross hematuria, or retention in the 3 months prior. He did not experience any scrotal pain, dysuria, weakness of stream, or incomplete bladder emptying. There were

no other health concerns. He was taking no medications and was up to date on vaccinations and health maintenance. Additionally, the patient had a 40 pack/year smoking history along with a 20-year work history in the rubber industry.

Physical examination

The patient appeared obese with normal vital signs. Genital examination was completely benign with a normal phallus, urethral meatus, and scrotal exam; he had a normal digital rectal examination.

Diagnostic testing

Based on the patient's age, smoking

history, occupational exposure, benign physical examination, and symptoms, a urinalysis was ordered. No other laboratory tests were deemed necessary at the time. The urinalysis revealed microscopic hematuria with 29 red blood cells per high-powered field (RBC/HPF). Based on these results, a computed tomography (CT) urogram was ordered, which showed a renal pelvis filling defect (**Figure 1**).

Urology consultation was advised and arranged for the patient. He visited our urology clinic and underwent cystoscopy with transurethral resection of bladder tumor, as a suspicious area was found on cystoscopy (**Figure 2**). Additionally, right ureteroscopy was performed and confirmed no lesions consistent with the filling defect seen on CT urogram. Typically, we proceed with office-based cystoscopy; however, when patients have a bladder or ureteral pathology shown on CT scan or other imaging, office-based cystoscopy is unnecessary as the patient must have operating room-based cystoscopy.

Discussion

Bladder cancer is a common cancer in women and is the fourth most common malignancy in men.¹ In the United States,

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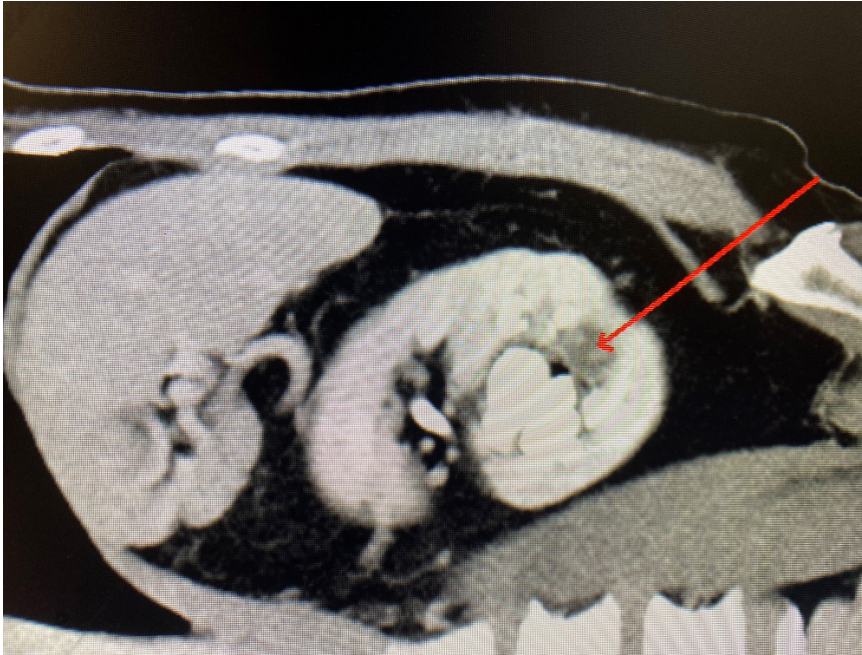


Figure 1. Filling defect



Figure 2. Bladder lesion

there are projected to be over 80,000 new cases of bladder cancer diagnosed²; worldwide, there are 500,000 new cases with about 200,000 yearly deaths.³ More than 1.6 million people are living with bladder cancer worldwide.³ It is more

common in men, and a history of smoking is the greatest-known risk factor.^{4,5} Additional risk factors include advanced age, male sex, genetic syndromes/known genetic mutations, chronic bladder irritation from infections or indwelling

catheters, and exposure to chemicals in the dye and rubber industries.^{1,2,6} Patients often present with gross hematuria, but patients can also present with isolated microscopic hematuria (urinalysis showing ≥ 3 RBC/HPF), irritative voiding symptoms, or even an incidentally found tumor on imaging.¹⁷ When patients present with urinary symptoms, a urinalysis is first performed. According to the American Urological Association guidelines for microhematuria, if a patient has microhematuria (≥ 3 RBC/HPF), the patient's medical history needs to be obtained and a physical examination needs to be performed, with a focus on identifying risk factors for urothelial cancer and nonmalignant causes.⁷

If the evaluation points to nonmalignant or gynecologic sources of blood, the evaluation should be directed by signs and symptoms, including a urine culture if infection is suspected. If positive for infection, the patient should be treated appropriately based on bacterial susceptibility, followed up with repeat urinalysis, and released from care if the microhematuria resolves. If the urine culture is negative and nonmalignant sources of microhematuria can be ruled out, patients are placed into different categories based on risk stratification.

The classifications are based on low, intermediate, and high risk with differing surveillance and treatment regimens for each. The risk stratification of patients is outlined in the **Table**. Low-risk patients should have a repeat urinalysis within 6 months or cystoscopy and renal ultrasound. If the patient has a negative urinalysis, a repeat urinalysis can be considered within 12 months. If negative at 12 months, the patient can be released from urological care. A cross-sectional imaging with urography or retrograde pyelogram can be performed if not done so previously, based on the discussion between the patient and urologist. The intermediate-risk group should undergo cystoscopy and renal ultrasound. If cystoscopic or renal ultrasound evaluation, or both, are positive for pathology, the patient should

Table. American Urological Association Microhematuria Risk Stratification System⁷

LOW (PATIENT MEETS ALL CRITERIA)	INTERMEDIATE (PATIENT MEETS ANY ONE OF THESE CRITERIA)	HIGH (PATIENT MEETS ANY ONE OF THESE CRITERIA)
<ul style="list-style-type: none"> • Women aged < 50 years; men aged <40 years • Never smoker or < 10 packs/year • 3–10 RBC/HPF on a single urinalysis • No risk factors for urothelial cancer (see below) 	<ul style="list-style-type: none"> • Women aged 50–59 years; men aged 40–59 years • 10–30 packs/year • 11–25 RBC/HPF on a single urinalysis • Low-risk patient with no prior evaluation and 3–10 RBC/HPF on repeat urinalysis 	<ul style="list-style-type: none"> • Women or men aged ≥60 years • >30 packs/year • >25 RBC/HPF on a single urinalysis • History of gross hematuria
<ul style="list-style-type: none"> • Additional risk factors for urothelial cancer (see below) 		

RISK FACTORS INCLUDED IN THE RISK STRATIFICATION SYSTEM:

- Age
- Male sex
- Smoking history
- Degree of microhematuria
- Persistence of microhematuria
- History of microhematuria

ADDITIONAL UROTHELIAL CANCER RISK FACTORS:

- Irritative lower urinary tract symptoms
- Prior pelvic radiation therapy
- Prior cyclophosphamide/ifosfamide chemotherapy
- Family history of urothelial cancer or Lynch syndrome
- Occupational exposures to benzene chemicals or aromatic amines (eg, rubber, petrochemicals, dyes)
- Chronic indwelling foreign body in the urinary tract

be treated as indicated. Finally, high-risk patients should undergo a cystoscopy and CT urogram. Cross-sectional imaging with urography or retrograde pyelogram should be performed if not done so previously.⁷

Patient outcome

During surgery, the patient was found to have one tumor at the dome of the bladder that was resected and sent for pathological evaluation. Pathology revealed a high-grade carcinoma in situ

bladder cancer, and the patient was set up for bladder instillations with bacille Calmette-Guérin weekly for 6 weeks and repeat cystoscopy, urinalysis, and cytology with a urology follow-up in 3 months. The patient returned to clinic and had a negative urinalysis, cytology, and cystoscopy. Follow-up should continue as determined by a urologist.

With a proper workup, urothelial carcinoma and other pathologies can be detected and treated with more conservative and preventive approaches.

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