

Hematuria: Nephrological or Urological —A Practical Approach



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Hematuria

Hematuria is defined as the presence of an abnormal quantity of red blood cells (RBCs) in the urine. Hematuria is a common clinical finding in primary care. The prevalence ranges from 2.5% to 20% and common causes include urinary tract infections (UTI), nephrolithiasis, benign prostate hyperplasia, urologic malignancies, and renal disease.¹ However, most clinicians are uncertain of what constitutes clinically relevant hematuria or when specialist assessment is appropriate. An independent Canadian survey revealed that of its general practitioner respondents, only 65% would refer an elderly male with painless hematuria to urology.² This finding reflects unfamiliarity with the management of hematuria.

Classification

Hematuria is typically classified as macroscopic or microscopic. Macroscopic hematuria is defined as urine that is visibly discoloured by blood, which can occur with as little as 1 ml of blood in 1 L of urine. Macroscopic hematuria is often alarming and will prompt the patient to seek medical attention. To avoid unnecessary distress and investigations, macroscopic hematuria must be differentiated from other benign causes of discoloured urine.³

Eliot's Case

Eliot, a 45-year-old man, presents with painless, gross hematuria and a negative urine culture. He was treated with a 10-day course of ciprofloxacin, and hematuria resolved. He comes to you in follow-up two weeks later and is asymptomatic. What would you do?

- Refer to nephrology
- Reassure and follow-up with urinalysis in six months
- Repeat urine culture
- Order urinalysis
- Refer to urology

The definition of microscopic hematuria varies. According to the Canadian Urological Association, it is defined as greater than 2 RBCs/high-power field (HPF) in two separate microscopic urine analyses in the absence of exercise, menses, sexual activity, or instrumentation.⁴ Repeat testing not only serves to confirm the persistence of hematuria but also takes into account the intermittent nature of hematuria found in some diseases.^{1,5} Microscopic hematuria can be easily detected in the office using urine dipstick. This test has a sensitivity of 95 to 100% and specificity of 65 to 93%.⁶ False positive results can occur with semen, myoglobin, and bacteria (Enterobacteriaceae, Staphylococcaceae and Streptococcaceae genera). Rarely, a false negative can occur with ingestion of ascorbic acid.



Take Home Message

- Hematuria is common and routine screening is not recommended
- Hematuria is usually transient and benign in younger patients; however, the risk of malignancy increases in patients over the age of 40
- All patients should have repeat urine analysis and a urine culture to exclude infection prior to hematuria evaluation
- All patients with persistent macroscopic hematuria should be referred to urology
- Microscopic hematuria with proteinuria is a reliable marker of glomerular disease and should trigger a nephrology referral
- In the absence of suspected glomerular diseases, patients with microscopic hematuria should undergo ultrasound and urine cytology
- Urology referral is indicated in abnormal urine cytology, patients over the age of 40, and any patients with risk factors

Presentation

The presentation of hematuria varies according to age, types of hematuria, and risk factors. Microscopic hematuria is often found incidentally during office evaluation of urinary tract infection symptoms and during routine health screening. Transient hematuria and UTIs are the most common causes of hematuria in patients under 40- years-of-age. One study found that up to 40% of patients with asymptomatic microscopic hematuria have no identifiable causes.¹ Macroscopic hematuria, especially if accompanied by visible clots, almost always indicates a lower urinary tract source. The risk of urological malignancies also increases above the age of 40. At present, routine screening for hematuria is not endorsed by any professional organizations.³

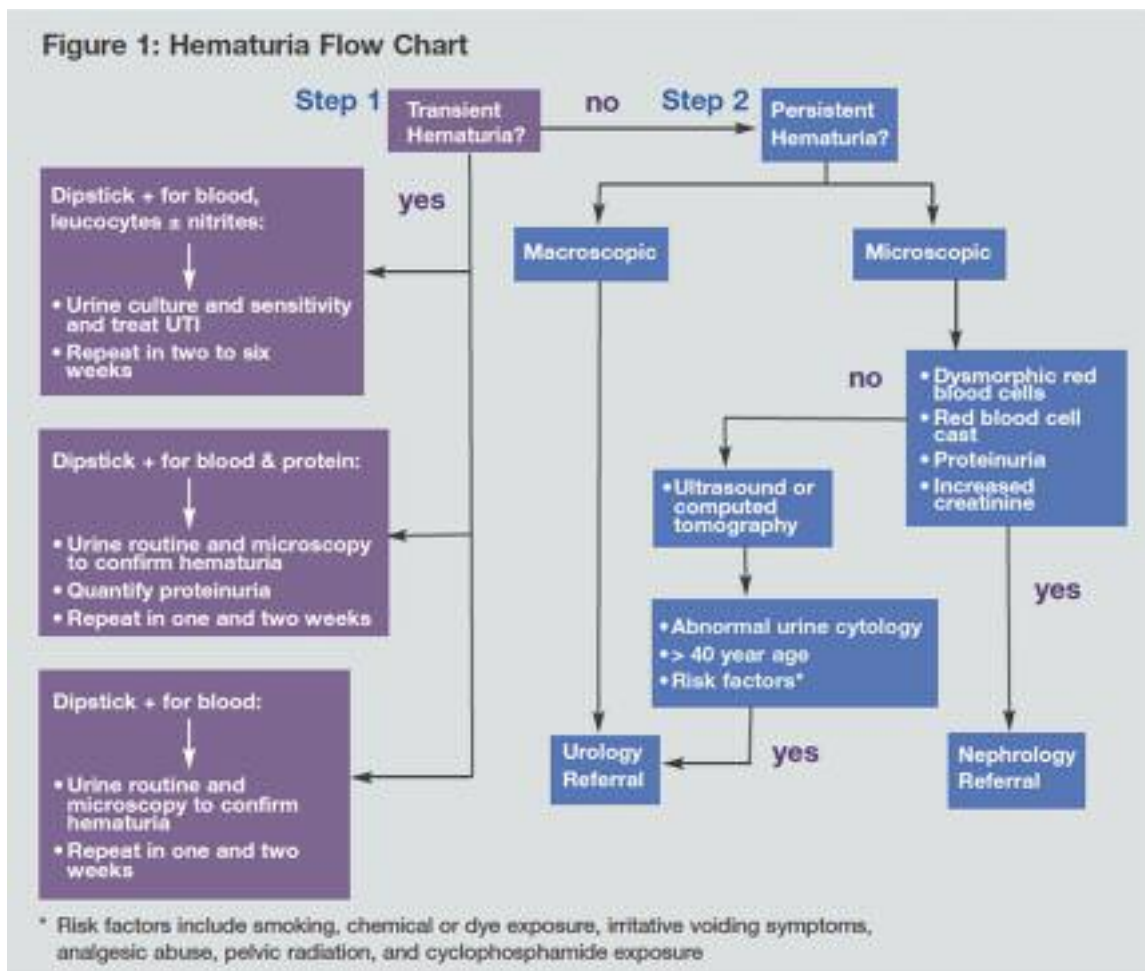
Approach to Hematuria

When hematuria is suspected, it is of utmost importance to rule out transient causes using two-out-of-three urine samples. Macroscopic hematuria is a worrisome presentation and a full evaluation of upper and lower urinary tracts is recommended.⁴

The approach to microscopic hematuria, however, is less straight forward. The first step is to distinguish glomerular (dysmorphic) versus extra-glomerular (isomorphic) hematuria. Unfortunately, this requires microscopic examination of centrifuged urine sediment, which is not practical in a family practice setting. A practical approach is to look for parameters associated with glomerular disease, such as proteinuria and elevated creatinine. Therefore, the presence of hematuria with proteinuria is the most reliable marker for glomerular diseases and should trigger a nephrology referral.

In the absence of suspected glomerular diseases, the Canadian Urological Association recommends that all patients with microscopic hematuria be investigated with ultrasound and urine cytology.⁴ Urology referral is indicated for all patients over the age of 40, those with abnormal urine cytology, and any patients with risk factors for urological malignancies. These risk factors include smoking history, occupational exposure to chemicals or dyes, history of irritative voiding symptoms, analgesic abuse, a history of pelvic irradiation, and cyclophosphamide exposure.⁴ In patients with negative investigations, repeat urine analysis and cytology every 6 to 12 months for up to three years is recommended. Blood pressure should be monitored during each visit, as the development of hypertension can indicate underlying glomerular disease.

Figure 1: Hematuria Flow Chart



Conclusion

Hematuria is a common clinical presentation in the primary care setting and is generally benign in younger populations without risk factors. However, for at-risk populations, hematuria requires further investigation. We have developed a simple stepwise approach for the management of hematuria (see Figure 1) to facilitate appropriate nephrology and urology referral and evaluation.

References

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