

GUIDELINES & PROTOCOLS

ADVISORY COMMITTEE

Hematuria – Microscopic Hematuria (Persistent)

Effective Date: June 1, 2004

Scope

This guideline deals with investigation of blood on dipstick urine testing and microscopic hematuria in adults (age 19 and over).

Microscopic hematuria is defined as the presence of more than 3 red blood cells (> 3 RBC) per high power field in the centrifuged urinary sediment.

RECOMMENDATION 1 Screening for microscopic hematuria is not recommended.

RECOMMENDATION 2 Incidental hematuria

If blood is detected on urine dipstick testing incidentally, confirm the finding after controlling for benign causes such as menstruation, exercise, sexual activity, urological instrumentation or prostate exam. If the repeat dipstick remains positive for blood, confirm with laboratory macroscopic and microscopic urinalysis (see appendix A).

RECOMMENDATION 3 Rule out infection prior to referral

Treat for urinary tract infection, if pyuria, bacteria or nitrites are present. Never assume that isolated hematuria represents a urinary tract infection.

RECOMMENDATION 4 Investigations

Persistent (two or more samples out of three) unexplained microscopic hematuria requires investigation prior to referral.

Laboratory: Serum creatinine (estimated glomerular filtration rate (eGFR) where available).
Cytology is a poor screening test. It should not be done in the initial workup.

Imaging: Renal ultrasound
IVP should only be done on the advice of a urologist, nephrologist or radiologist.

RECOMMENDATION 5 Anticoagulants

Anticoagulants, including aspirin, predispose patients to hematuria only in the presence of urinary tract disease. Patients on anticoagulants with hematuria should be investigated.

RECOMMENDATION 6 Referral

Refer patients with persistent asymptomatic hematuria to a nephrologist or urologist.

Nephrologist: Indications for a nephrology referral are: microscopic hematuria with proteinuria; systemic disease; abnormal sediment (≥ 5 -10 WBC/HPF; cellular or granular casts); or reduced renal function.

Urologist: All other patients should be referred to a urologist.

Table 1: Risk factors for Bladder Cancer

- Risk is negligible under 40 years, increases with age and is twice as high in men
- Smoking, past or present, including exposure to second hand smoke
- Past history of gross hematuria
- Previous urologic disease (e.g. renal calculi, urologic tumours)
- Occupational exposure to chemicals or dyes (e.g. benzenes or aromatic amines)
- Exposure to certain drugs (e.g. phenacetin, cyclophosphamide, HIV therapies)
- Systemic diseases (e.g. HIV, SLE-systemic lupus erythematosus, vasculitis, schistosomiasis)
- History of pelvic radiation

RECOMMENDATION 7 Follow-up

No cause will be found for microscopic hematuria in many cases.

Once investigated with no disease being found, follow-up cystoscopy for persistent asymptomatic microscopic hematuria is not warranted unless gross hematuria, significant increase in the number of red blood cells, or urinary tract symptoms develop.

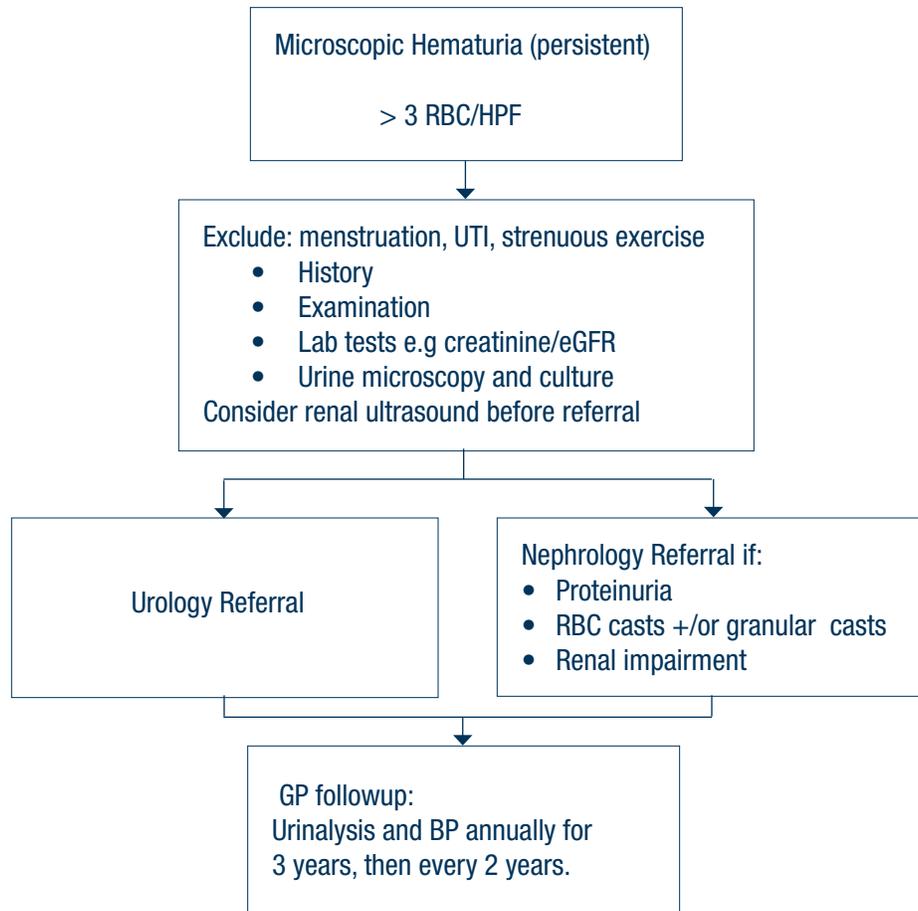
When no specific cause for microscopic hematuria is found, perform urinalysis and measure blood pressure annually for three years, then every two years.

Appendix A: Lab Sample:

For routine urinalysis, a midstream specimen collected in a clean container without prior cleansing of the genitalia provides a satisfactory sample. If the specimen is likely to be contaminated by vaginal discharge or menstrual blood, repeat the sample later.

Ideally, the specimen for routine analysis should be examined while fresh. If this is not possible, then it should be refrigerated until examined. Because it is concentrated, the first specimen voided upon rising is the preferred specimen for routine urinalysis. Red cells and casts are more likely to deteriorate if the urine specific gravity is low (<1.015) or the pH high (≥ 7.0). However, a randomly collected specimen is more convenient for the patient and is usually acceptable for most purposes.

Investigation of Microscopic Hematuria in Adults



Rationale

1. Screening is not recommended due to the low incidence of significant urological disease.¹
2. Incidence of underlying renal or bladder malignancy in those over 40 with microscopic hematuria increases with age (average age 60) and bladder cancer is twice as common in men than in women. There were 320 diagnosed cases and 130 deaths among men and 130 cases and 65 deaths in women in British Columbia in 1999.²
3. Medications such as anticoagulants and NSAIDs may cause hematuria.³ Never assume that microscopic or gross hematuria is benign in this group.
4. The sensitivity and specificity of ultrasound for the detection or exclusion of renal malignancies is 96% and is comparable to IVP. Ultrasound is preferred because of lower morbidity and costs.⁴
5. Most studies of dipstick testing for blood report sensitivities ranging from 91-100% and specificities ranging from 65-99% when hematuria is variably defined as 2 to greater than 5 red blood cells per high power field.⁵ A positive dipstick should be confirmed by microscopy because the dipstick may be sensitive enough to detect hematuria at less than 3 red blood cells per high power field. In one study, 16.4% of patients had a positive dipstick result but less than 3 RBC per high power field.⁶
6. Microscopic analysis can distinguish between dysmorphic red cells (renal parenchyma) and isomorphic red cells (urinary collecting system) providing initial direction for appropriate referral and investigation.⁷
7. Microscopic hematuria is not an appropriate screening test for renal cell carcinoma (RCC). Most (81% of T1 and 73% T2) RCC patients did not exhibit hematuria.⁸
8. Considerable disagreement exists between recommendations from population-based studies and referral based studies as to the prevalence of significant disease in patients with microscopic hematuria.^{9,10}

References:

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Sponsors

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