

## Hematuria -- Resident

### Educational Objectives:

- 1) Be able to define hematuria and interpret the results of urine dipstick testing.
- 2) Be able to use the patient's history and clinical context to help identify causes of microscopic hematuria.
- 3) Be able to use an algorithm when evaluating microscopic hematuria and know when to refer to urologist or nephrologist.
- 4) Know what initial imaging modalities should be ordered for the non-pregnant patient with microscopic hematuria.

### CASE ONE:

Mr. H. is a 23 year old African American man who comes to your office for a physical exam as part of a requirement for his commercial truck driver's license. The nurse obtains his vitals, completes a Snellen's eye test, and obtains a urine specimen as part of the requirement for his commercial license. He is then scheduled to see you in two days for his physical exam and completion of his paper work. The results of the urine test come back the next day positive for 1+ blood. No microscopic exam of the urinalysis is reported.

### QUESTIONS:

1. What is the definition of hematuria? How should a urine specimen be collected? What are the limitations of urine dipstick testing?
2. What are some important questions to ask in the history when a patient presents with hematuria?
3. Can you think of any additional questions to ask Mr. H. that would provide clues to a specific diagnosis?

### CASE ONE CONTINUED:

Mr. H returns to see you for his scheduled appointment. He admits to feeling a bit tired lately since he started taking a college course in the evening while working as a construction worker during the day. He denies any medication use except for a daily multivitamin and an occasional acetaminophen for muscle aches. He has no history of tobacco smoking and rarely uses alcohol. He has been running almost daily and doing some light weight lifting while training for a local road race. He has no known family

history of sickle cell disease, diabetes, or any kidney or bladder conditions in either of his parents and he is an only child.

On physical exam, he is a well-built, well-nourished man with a blood pressure of 140/86; otherwise the rest of his vitals and exam are unremarkable. You decide to obtain another urine specimen to have the urine sediment spun down and examined under the microscope.

4. What would you consider with each of the following results?

- a) No RBCs
- b) Dysmorphic RBCs or RBC casts plus proteinuria
- c) RBCs of uniform character or RBC clumps
- d) WBC clumps or pyuria +/- proteinuria

CASE ONE CONTINUED:

His urine microscopy shows 2 RBC/HPF that are of normal morphology in a first sample of the morning mid-stream clean catch urine after not exercising for 48 hours prior to the urine collection.

5. How should this patient be evaluated?

6. How would you approach this patient if he were an asymptomatic 45 year old smoker with BP of 140/90 and a urinalysis showing 15-20 RBC/HPF?

*Primary references:*

1. Patel JV, Chambers CV, Gomella LG. Hematuria: etiology and evaluation for the primary care physician. *The Canadian Journal of Urology*. 2008; 15:54-62
2. RAO Pk, Jones JS. How to evaluate 'dipstick hematuria' what to do before you refer. *Cleveland Clinic Journal of Medicine*. 2008; 75(3); 227-233

*Additional Reference:*

1. Kelly JD, Fawcett DP, Goldberg LC. Assessment and management of non-visible hematuria in primary care. *British Medical Journal*. 2009; 338: 227-232

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