Hematuria and Proteinuria

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What is man, when you come to think upon him, but a minutely set, ingenious machine for turning with infinite artfulness, the red wine of Shiraz into urine? —Izak Dineson

Learning Objectives:
1. Know the current American Academy of Pediatrics recommendations for screening urinalysis
2. Identify the most common causes of hematuria and proteinuria in the pediatric population
3. Describe the diagnostic approaches used to evaluate hematuria and proteinuria

Primary Reference:

CASE ONE:

Norm L. Pea is a 12-year-old boy who is new to your practice and here today for a well child check. His mother says, “Why didn’t you check his urine? Our old pediatrician checked one every year even though they were always normal.”

1. What are current AAP guidelines regarding screening urinalysis in asymptomatic children?

CASE continued:

Norm has a history of prematurity (30 weeks gestation) and NICU stay. Therefore, you move forward with screening UA. The urine dipstick shows a specific gravity of 1.015, pH of 6.5, and 2+ protein. The test is otherwise normal.

2. What are the three main mechanisms of proteinuria and the most common causes in children? What further history and physical exam might help you distinguish among these causes?

CASE continued:

Physical exam and growth are normal, and history is significant for NICU course of “feeding and growing,” with no known acute kidney injury or umbilical catheterization. Repeat urinalysis one week later again shows 2+ protein. There are no casts or other abnormal features seen on the microscopic examination of the urine.
3. What tests will you consider at this time?

CASE TWO:

Norm’s little sister, Pink, is 3-years-old and presents to your office with a very hysterical Mrs. Pea who says, “I think my daughter is peeing blood. Is it serious?”

4. Is it serious? What is your differential diagnosis for gross hematuria?

5. How does microscopic hematuria differ from macroscopic? How would your evaluation of microscopic hematuria differ from that of gross hematuria?

Additional References:
2. Bock GH. Screening UA should be based on specific conditions. AAP News. 2006;27(12): 18.
17. Primack W. AAP does not recommend routine urinalysis for asymptomatic youths. AAP News. 2010; 31: 16.

Resources:
1. Information on proteinuria for patients and families from American Academy of Family Physicians. 
2. Information on hematuria for patients and families from University of Michigan Health System. 
   http://www.med.umich.edu/1libr/pa/pa_hematuri_hhg.htm

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