To Dip or Not? That Is the Question

A pregnant woman comes in for her regular obstetrical visit; she is weighed, her blood pressure is taken, and her urine is dipped for glucose, leukocytes, and protein. Which of these actions, carried out dozens of times a day in the majority of offices providing prenatal care, is not based on evidence? Surprising to many, it is the obligatory urine dip. The practice of routine urine dips to detect glycosuria, proteinuria, leukocytes, and leukocyte esterase has long outlived any strong base of evidence to support the practice.

To understand why this very routine exercise is not evidence based is to understand the physiology of renal tubular function in pregnancy. The glomerular filtration rate increases in pregnancy; it is actually 50% higher than in nonpregnant women.1 The glucose load to the kidneys exceeds their capacity to transport it. The result of this phenomenon is the very common finding of glycosuria among pregnant women; approximately 50% will present with glycosuria at some point.2 Thus, glycosuria is not considered to be a clinically significant finding, nor is it considered an accurate screening or diagnostic tool for gestational diabetes.

Protein excretion also increases during pregnancy, as compared to the nonpregnant state. The increased protein excretion results in the common finding of trace proteinuria among non-pregnant women.1 The glucose load to the kidneys exceeds their capacity to transport it. The result of this phenomenon is the very common finding of glycosuria among pregnant women; approximately 50% will present with glycosuria at some point.2 Thus, glycosuria is not considered to be a clinically significant finding, nor is it considered an accurate screening or diagnostic tool for gestational diabetes.

DIAGNOSTIC TIPS

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Although routine screening for urinary tract infection (UTI) is not warranted in the nonpregnant woman, it is indicated during pregnancy. UTI is a major antecedent to preterm labor and preterm birth. Asymptomatic bacteriuria (ASB) affects between 2% and 13% of all pregnant women.3 Approximately 10%-30% of pregnant women with ASB will develop pyelonephritis; hence, the importance of screening.

The utility of the single urine dipstick in detecting ASB has been debated in the literature. A 2004 meta-analysis4 looking at the accuracy of urine dip to rule out UTIs noted that a dipstick test negative for both nitrites and leukocyte esterase was a valuable tool for ruling out ASB. A recent study5, however, emphasized what some earlier studies had noted: the single urine dipstick is a very poor predictor...
for detection of ASB. In their study, Mignini and colleagues noted high rates of both false-negative and false-positive urine dipsticks. In fact, the calculated probability ratio for the urine dipstick to predict ASB was only 6.95, and the negative predictability ratio was 0.50. They concluded that 46% of all pregnant women with ASB would not be detected if screened with urine dipstick alone.

The United States Preventive Services Task Force (USPSTF) concurs with the literature, noting that, as a result of the poor positive and negative predictive value of urine microscopy and urine dipstick for detecting ASB, neither of those modes can be recommended as a suitable alternative to the urine culture.

The urine culture, rather than the single urine dip, has been determined to be the gold standard for ASB diagnosis. The USPSTF recommends screening for ASB via urine culture obtained by clean-catch between 12-16 weeks of pregnancy, or at the first prenatal visit if that occurs later than 12-16 weeks (grade A recommendation). Recognizing that not all clinical sites have the resources to perform urine culture in the first trimester, urine dipslide has been suggested as an alternative. The urine dipslide method differs from the dipstick in that it is logistically closer to the traditional urine culture. The mode contains a slide covered with culture medium that is dipped into the urine sample, incubated for 24 hours, and then interpreted.

Obstetric practice is an area that is sometimes slow to change; the status quo is often maintained despite the presence of evidence to the contrary. Such is the plight of the routine urine dip. If providers who treat obstetrical clients truly want to offer evidence-based care, they will examine their practice of routine urine dipping and weigh the evidence.

References

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Erratum
The article “Eosinophilic Esophagitis: A Newly Recognized Clinical Entity” (March 2013, pages 129-135) contained an error. On page 133, the third sentence of the Leukotriene D4 Receptor Antagonists section should have said, “In a prospective, nonrandomized study of adult patients who received fluticasone for 6 months, montelukast was initiated afterward at 10 mg daily to see if the fluticasone dosage could be reduced.”