

MEditorial February 2010

“Red is the Color”

Recall the Beatle’s song “Red is the Color” [“...that will make me blue, in spite of you, it’s true... yes it is.”]. Red is undoubtedly the color of February, with Valentines’ Day, red roses, and American Heart Association Month.

Yellow is the color of urine; and red is abnormal. Even microscopic red (as well as white) blood cells entering the urine from their normal location in blood and bone marrow is abnormal. However, red blood cells in the urine or the condition described as “gross hematuria” (obvious urinary bleeding) does not always equal serious urologic or kidney disease.

It is easier to discover the reason for gross than microscopic blood in the urine. Some studies estimate that fewer than 1/3 of patients with microscopic blood will have a definite attributable cause. Also, most of that 1/3 will be found to have a cause that is not considered to be a major or life-threatening illness.

How do we define “microscopic blood” in the urine? Many feel that greater than 2 red blood cells per high power field (high power magnification under a microscope) warrants further evaluation. Some await the appearance of more microscopic blood. Others simply do a “dipstick” on the urine, e.g., in an office lab-- and feel any “blood pigment” showing up as a reaction on the dipstick is concerning.

In my practice, I seldom see significant urologic or kidney disease in patients with very low amounts of microscopic hematuria. I get more concerned when there

are @ least 10 (and sometimes more than 20) RBC's (red blood cells) per HPF (high power field); or if there is a clear progression in the number of RBC's on serial urinalyses. I might have a lower threshold for evaluation in patients who are at higher risk for serious pathology; this includes smokers, patients over 40, men greater than women, patients with worrisome family histories, patients with other or past urologic cancers, patients who are symptomatic with pain or significant urinary difficulties, and those with frequent infections, stones, etc. In lower risk patients with scant amounts of microscopic blood, it is not unreasonable simply to get follow-up urinalyses, e.g., three tests over a 3-6 month period, to get a broader perspective as to the level of concern.

A note about specimen collection. Rarely ingestion of certain dyes incl. those occurring in beets and certain laxatives can cause red urine without bleeding. Certain conditions such as vigorous exercise and/or viral illnesses can lead to microscopic hematuria; and these should prompt repeating the specimen days to weeks later. Mid-stream collections should be done in men and women to lessen the chance that mild inflammations, e.g., of the inner foreskin of men or the vagina/labia of women do not lead to a false suspicion that there is actually urinary bleeding. Especially in women and more so when there are white as opposed to red cells in the urine (or a history of treatment of such women for "recurrent infections" based on these results, despite the lack of symptoms), I feel it is important to get one or more catheterized urine specimens. In my practice, >50% of such situations with microscopic (especially white) blood cells in womens' urine turn out to be nothing, i.e., the catheterized sample shows few if any blood cells.

We should divide urinary bleeding (microscopic or gross) into renal (kidney) causes and urologic causes. The former are really medical conditions not apparent on radiographic studies or endoscopy (looking inside with a lighted instrument) of the urinary tract (usually cystoscopy, i.e., visualizing directly inside the bladder). These conditions often involve the glomeruli, or microscopic filtration apparatus,

within the kidney proper. Acute or chronic kidney disease often causes dysmorphic or “warped” red blood cells microscopically, protein in the urine, clumping of blood cells or “casts” and concurrent findings of hypertension and certain blood abnormalities, e.g., higher blood lipids; or certain urinalysis findings, e.g., inability to either properly dilute or concentrate the urine depending on the hydrational status of the patient. Kidney disease may or may not alter blood filtration (thereby elevating the blood test “creatinine”) in the short or long run. IgA nephropathy, a not-uncommon renal disease caused by an exaggerated immune response often occurring in relationship to a respiratory infection, rarely progresses to “renal failure”.

Once we decide a patient needs evaluation of gross or microscopic hematuria, what tests are appropriate? If medical renal disease is likely, tests are usually done under the domain of the person’s primary care doctor or a nephrologist (non-surgical expert on kidney disease). If a urologic cause is sought, the evaluation depends on the level of suspicion for serious disease. For example, screening the upper urinary tracts can be done with ultrasound—but this may miss certain types of kidney tumors and stones—so if these are possible, a CT scan 1st without then sometimes with intravenous dye (CT urogram) may be a better bet. Urine cytology, simply a special urine test sent to a pathologist, can help screen for the more malignant tumors of the bladder and inner urinary lining. Other similar tests on the urine, looking for certain tumor protein markers (e.g., “F.I.S.H.” test), can also be helpful but are expensive and questionably more reliable than cytology. Cystoscopy, usually with a flexible instrument in the office, will detect almost all bladder cancers and can be done under local anesthetic with or without sedation, depending on the circumstance and pain threshold/anxiety level of the individual. Occasionally, blood in the urine requires tests done in the operating room under anesthesia, incl. urinary tract (usually bladder) biopsies, injections of contrast up the ureters (the urinary tubes leading to bladder from kidneys) and ureteropyeloscopy (introducing a very thin rigid or flexible telescopic instrument from bladder toward kidneys).

As stated, although many patients with red urine will NOT be found to have serious disease: some of the “significant” urologic’ illnesses discovered are the following: infections (yes, certain bacteria can make the urinary lining hemorrhage); urinary stones; prostate enlargement; cancers of the bladder and urinary lining of the upper GU tracts; kidney tumors; radiation damage to the bladder; and excessive anticoagulation. The latter is becoming more common, with many (especially elderly) patients on aspirin, Plavix, Coumadin, etc. One cannot assume that gross bleeding occurring on these drugs only represents too much blood thinning—many such patients do have significant urologic pathology “unmasked” or revealed sooner than it otherwise would be, due to the anti-coagulation.

If you have microscopic or gross blood in the urine, do not panic or assume the worse. Stay calm, consult your regular doctor and perhaps a urologist; and go about an evaluation in a logical and systematic fashion. The word “sanguine” which means optimistic, has a linguistic derivation from the root word for bleeding, so remain optimistic.

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