Differential Diagnosis

A useful mnemonic for the differential diagnosis of hematuria is **HITTERS**—etiologies include **H**ematologic or coagulation disorders, **I**nfection, **T**rauma, **T**umor, **E**xercise, **R**enal disorder, and **S**tones. Gynecologic sources may need to be excluded in women. The passage of clots often localizes the source of bleeding to the lower urinary tract. Gross hematuria in adults represents malignancy until proven otherwise.

- **Bladder cancer:** Hematuria and irritative voiding symptoms are consistent with this diagnosis, and the patient’s cigarette smoking and possible occupational exposure to industrial solvents are risk factors. However, the finding of right CVA tenderness is unusual and could be a sign of upper urinary tract disease.
- **Urolithiasis:** Despite the presence of hematuria and CVA tenderness, this very common diagnosis is unlikely in the absence of sudden, severe colicky flank pain. Pain may migrate to the groin and is not alleviated by changes in position.
- **BPH:** The patient’s urinary symptoms are classic for this diagnosis except that hematuria (if present) is usually microscopic. Again, CVA tenderness may signal upper urinary tract pathology.
- **Prostate cancer:** As above, this diagnosis is plausible but is hard to reconcile with the presence of CVA tenderness (could postulate metastasis to a right posterior rib).
- **Renal cell carcinoma:** The classic triad is hematuria, flank pain, and a palpable mass. Constitutional symptoms may be prominent. The patient’s other urinary symptoms may be due to coexisting BPH.
- **Glomerulonephritis:** The absence of hypertension or signs of volume overload (e.g., edema) argues against intrinsic renal disease. However, remember that IgA nephropathy is the most common acute glomerulonephritis and most commonly presents with an episode of gross hematuria. Presentation is usually concurrent with URI, GI symptoms, or a flu-like illness.
- **UTI:** This can cause hematuria but is uncommon in males. The patient has no other symptoms to suggest acute infection.

Diagnostic Workup

- **Genital exam:** To exclude a gynecologic source of bleeding in women.
- **Rectal exam:** To detect masses as well as prostatic enlargement or nodules.
- **UA:** To assess hematuria, pyuria, bacteriuria, etc. Dysmorphic RBCs or casts are signs of glomerular disease. The absence of hematuria does not rule out urolithiasis.
- **Urine culture:** To exclude UTI.
- **Urine cytology:** Has variable sensitivity in detecting bladder cancers, depending on the tumor’s grade and stage. Examine three voided samples to maximize sensitivity.
- **BUN/Cr:** To evaluate kidney function.
- **PSA:** The serum level correlates with the volume of both benign and malignant prostatic tissue. Can be normal in about 20% of patients who have nonmetastatic prostate cancer.
- **U/S—renal/transrectal:** Can detect bladder and renal masses and stones, but is operator dependent and is less sensitive in detecting ureteral disease. Transrectal U/S is used to help stage prostate cancer and to guide prostatic biopsy.
- **Cystoscopy:** The gold standard for the diagnosis of bladder cancer.
- **CT—abdomen/pelvis:** To evaluate the urinary tract. Can identify neoplasms and a variety of benign conditions such as stones.
- **IVP:** Provides an assessment of the kidneys, ureters, and bladder but is generally being replaced by CT—urogram to avoid contrast administration.