

Hematuria

Symptoms

- Visible blood or clots in the urine (*gross* or *visible* hematuria)
- Invisible blood in the urine seen only under the microscope (*microscopic* hematuria) or via a dipstick
- Blood staining the underwear or appearing on toilet tissue

Underlying causes

There are many causes of hematuria. The presence of hematuria does not always indicate a serious problem, as there are many benign causes, including stones, urinary infections, and prostate enlargement. However, the presence of hematuria should be thought of as a “red flag” that mandates a careful evaluation to rule out serious and life-threatening causes including cancers of the kidney and bladder.

Evaluation

- Urine culture
- Urine cytology
- Imaging: ultrasonography, computerized tomography, magnetic resonance imaging, retrograde studies
- Cystoscopy

Urine Culture A lab test to see if bacteria are present in the urine, and if so, which specific type of bacteria and which antibiotics are most appropriate to treat the infection.

Urine Cytology A lab test similar to a Pap smear in which a urine specimen is examined microscopically by a pathologist. Within the urine are exfoliated cells that line the urinary tract—these cells are carefully scrutinized for abnormalities running the gamut between normal and malignant with atypical cells indicative of a mild abnormality.

Ultrasonography A sonogram (ultrasound) is a non-invasive means of imaging the urinary system using sound waves. It involves no needles, contrast injection, or radiation, and requires no preparation. This test can be performed in the office setting.

Computerized tomography: CT scanning is a very sophisticated means of imaging the urinary tract and the other structures of the abdomen and pelvis. It is performed at an imaging center and may require the use of oral and/or intravenous contrast.

Magnetic resonance imaging MRI is also an extremely sophisticated means of imaging the urinary tract and the other structures of the abdomen and pelvis. It uses a strong magnetic field rather than x-rays to provide remarkably clear and detailed pictures of internal organs and tissues, with images provided in multiple orientations.

Retrograde Studies This is an image of the collecting system of the urinary tract (the kidney tubes and renal pelvis). This is obtained by the urologist at the surgical center or operating room. Cystoscopy is used to access the ureteral orifices, which are injected with contrast material to visualize the collecting system.

Cystoscopy A narrow-caliber flexible instrument is used to directly visualize the urethra, bladder neck, and bladder in the female, and the urethra, prostate and the bladder in the male. Anesthetic jelly is placed in the urethra to minimize any discomfort. This is performed on a monitor with optical magnification, so that the patient can view the procedure.

Causes Of Hematuria

Serious causes: Bladder cancer; kidney cancer; prostate cancer; urothelial cancer of the ureter or kidney; urethral cancer; metastatic cancer to urinary tract; penile cancer; renal lymphoma; abdominal aortic aneurysm

Significant causes: kidney stones; vesico-ureteral reflux; bacterial cystitis; bladder stone; uretero-pelvic junction obstruction; renal disease; benign prostate hypertrophy; urethral stricture; meatal stenosis; bladder papilloma; pyelonephritis; hydronephrosis; ureteral stone; renal artery stenosis; renal vein thrombosis; radiation cystitis; bladder diverticulum; atrophic kidney; bladder neck contracture; interstitial cystitis; papillary necrosis; renal arterio-venous fistula; renal contusion; polycystic kidney; prostatitis; cystocele; neurogenic bladder; cystitis cystica/glandularis; phimosis

Insignificant causes: renal cysts; duplicated collecting system; prostate calculi; bladder neck polyps; urethral polyps; bladder varicosities; kidney scarring; urethral caruncle; urethritis; ectopic kidney; caliceal diverticulum; exercise hematuria