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Hematuria

Definition

The word **hematuria** - from **hemat**, blood, and **uria**, of urine, simply means blood in the urine.

Microscopic hematuria means that the blood is only seen when the urine is examined under a microscope. Gross hematuria means that there is enough blood in the urine so that it can be seen with the naked eye.

Gross hematuria has more blood in the urine than microscopic hematuria, but the causes are the same and the tests that are needed to diagnose the problem are identical.

Anatomy

To understand the evaluation needed for hematuria, it is helpful to know something about the anatomy of the urinary tract. The kidneys make urine by filtering blood then discarding into the urine the waste products that are no longer needed. Water and salts accompany these waste products. The urine is then transported through two **ureters**, or narrow tubes, to the bladder, which holds the urine until it is full enough to require emptying through urination.

In men, the urine exits the bladder through the urethra, a channel that first passes through the prostate and then through the penis to the outside. In women, the urethra exits the body near the front of the vagina.

Causes

Hematuria can have as many as 25 different groups of causes, some much more serious than others. These groups include cancers, stones, infections, and **obstructions**, or blockages, to urine flow.

Other less serious causes include viral infections or inflammations of the kidney, such as drug reactions (non-steroidal anti-inflammatory drugs, such as Ibuprofen, can cause this, usually without any harm). Many medications can cause blood in the urine, particularly medications that thin the blood's clotting ability, like Coumadin or aspirin.

Benign, or non-cancerous, enlargement of the prostate is a very common source of blood in the

urine in men. It does not require any treatment if no significant blockage is present.

Most often, a cause is never identified. This is actually a good finding because it suggests that the cause is not something that will ever be harmful.

Diagnosis

The doctor will ask several questions about the patient's medical history, including details about urination habits, stone disease, infections and injuries. In addition, the doctor will ask about recent illnesses, family history, drugs used in the recent past, prior operations, social habits, such as drinking and smoking, and work-related exposures.

The doctor also will perform a physical exam and examine a sample of urine under a microscope.

A computed tomography (CT) scan and intravenous pyelogram (IVP) are special x-rays of the urinary tract. The CT scan is the usual diagnostic test of choice for most patients.

With the CT scan, a series of computer driven x-rays are taken before and after **contrast media** (special colorless dye) is injected into the veins. The x-ray machine looks like a large donut. The patient lies on a special tray which slides the body through the donut as x-rays are being taken. The contrast media, which contains iodine, fills the urinary system and multiple films are taken over a 20-minute period looking for abnormalities.

Because contrast media is injected, the possibility of an allergic reaction is present. A physician is in attendance and will administer the proper therapy if needed. If you have had a previous reaction to intravenous contrast media or are sensitive to shellfish, tell your doctor before the test. You are also exposed to very small amounts of radiation, so tell your doctor if you think that you could be pregnant.

With the CT scan, less preparation is needed but you may need to swallow a thick liquid containing barium to allow better visualization of the bowel contents.

Cystoscopy is a procedure that is used to visually inspect the bladder and the urethra. This can be done in most instances without discomfort by the use of an anesthetic jelly. The patient lies on a special table. The urethra is cleaned and the anesthetic jelly placed into the urinary channel for a short time to numb it.

Afterwards, the patient might expect a little discomfort with urinating and perhaps a spot of blood for a day or so. A warm bath helps to relieve this irritation and will wash off the soap used to prep the area. Antibiotics may be prescribed for a few days to prevent infection.

Other tests that might be needed include an **ultrasound** of the urinary tract and/or a magnetic resonance imaging (MRI) scan. This will be done if some question is not answered or explained to the urologist's satisfaction. Special blood tests may be done if some aspect of the patient's medical history indicates they might help find a cause.

Many of the other diagnoses include **nephritis**, or inflammations of the kidneys, and would require a kidney biopsy to make a diagnosis. If the patient's urinary function is

normal and no protein is found in the urine, then the nephritis is usually harmless. This makes the kidney biopsy more dangerous than the disease, so no further evaluation is done.

Follow-up

There are too many conditions that can cause hematuria to discuss all the treatment options here. Once the evaluation is done, the urologist will decide what, if any, treatment is needed.

If the urologist does not find a cause for the hematuria, the patient is referred back to his primary doctor for follow-up. He will probably want to check the urine every year for a while to make certain that no changes are occurring. A blood test to check kidney function and a blood pressure check should be done as well, but all of these tests are usually done regularly.

Men over 50 should have a yearly Prostate Specific Antigen, or PSA, blood test to screen for prostate cancer.