

# THE UROLOGY GROUP

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## **PEDIATRIC HEMATURIA**

### **What is hematuria?**

The discovery of hematuria, which is the presence of blood in urine, can be very alarming for a child and his or her parents. However, the condition is quite common in children and it is often easily treated. There are generally two types of hematuria.

Microscopic hematuria is when an abnormal amount of red blood cells appear in the urine, but the amount is not large enough to detect visually.

Macroscopic or gross hematuria is when the amount of blood cells is sufficient enough to change the color of the urine from yellow to pink, red or brown. Only 1 milliliter of blood is necessary in order to make urine appear red.

Some amount of red blood cells in the urine is considered normal, given the fact that approximately 2.5 million red blood cells are excreted in the urine each day as part of a normal process of ridding the body of old and inefficient red blood cells.

### **What causes hematuria?**

There are at least 50 different causes of hematuria in children. Many of these causes do not involve the urinary tract, such as filtering problems with the kidney.

The following are causes for hematuria that involve the urinary tract.

- Urinary tract infection
- Vesicoureteral reflux
- Urolithiasis (abnormal concentration on mineral salts in the urinary tract)
- Hypercalciuria (large amounts of calcium in the urine)
- Trauma to the urinary tract
- Ureteropelvic junction obstruction
- Ureterovesical junction obstruction
- Vascular anomalies
- Genitourinary tumors

### **What are the symptoms of hematuria?**

Hematuria doesn't have any other symptoms other than the identification of red urine, in the case of gross hematuria. Microscopic hematuria is generally without symptoms. However, the associated conditions may produce symptoms. For example, in the case of a urinary tract infection, a child will often complain of urinary frequency or burning with urination. Hematuria caused by urinary stones is often associated with renal colic (pain) due to the passage of the stone. However, conditions such as vesicoureteral reflux, hypercalciuria, renal vascular abnormalities, UPJ and UVJ obstructions and tumors may have no symptoms at all.

### **How is hematuria diagnosed?**

These studies can include blood tests, radiographic imaging, cystoscopy (an exam in which a scope, a flexible tube and viewing device is inserted through the urethra to examine the bladder and urinary tract) and potentially a renal biopsy. (Most children with hematuria do not require a renal biopsy.)

In nearly all cases of confirmed hematuria, whether gross or microscopic, a renal and bladder ultrasound will be necessary. In some instances, an intravenous pyelogram (a special x-ray of the kidneys, ureters and bladder that shows how well the kidneys drain urine) will be used. Bladder images will detect any obvious bladder masses. Not all children with hematuria will require a cystoscopy. In fact, it is commonly accepted that children with microscopic hematuria and normal radiographic studies almost always have a normal cystoscopy. It should be noted that small bladder tumors cannot be discovered with ultrasound imaging. These are also extremely unusual in childhood. In addition, bladder ultrasonography does not image adequately by cystoscopy. In some instances, a voiding cystourethrogram aka VCUG (a bladder and urethra x-ray that takes moving pictures) will be necessary.

### **How is hematuria treated?**

Your child's pediatric urologist will determine which treatment is appropriate for your child based on what's causing the hematuria. For example, hematuria caused by urinary stones is generally treated by removal of the stones. Hematuria caused by urinary tract infection is treated with antibiotic therapy to eradicate the infection. The doctor will also consider the extent of the condition, the child's tolerance for specific medicines and procedures, and the surgeon and parents preference. In many cases, the hematuria is self-limited, does not return and the child requires no specific therapy other than observation.