



Pediatric Clips

Urinary tract infections – Tamara Tufts, RN, PNP

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Pediatric Clips from The Children's Medical Center are quick reviews of common pediatric conditions.

The Children's Medical Center is the region's pediatric referral center for a 20-county area. As the only facility in the region with a full-time commitment to pediatrics, Children's offers a wide range of services in general pediatrics as well as in 35 subspecialty areas for infants, children and teens. We welcome your inquiries about services available – call 937-641-3666 or e-mail marketing@childrensdayton.org.



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CASE: 6-YEAR-OLD PRESENTED WITH HISTORY OF URINARY TRACT INFECTIONS (UTIs)

Geneva is a 6-year-old girl with a history of urinary tract infection (UTI) since the age of 1 year. She has approximately two UTIs per year. Each infection takes two to three months to clear. The last UTI was six months ago. Symptoms included dysuria and daytime incontinence but not fever. She had a positive urine culture and was treated with 10 days of oral antibiotic without

improvement. The urine remained dark and foul smelling. Dysuria and positive urine culture persisted. Additional antibiotics were given. She had two additional courses of Macrochantin, each lasting 10 days, and one 10-day course of Suprax.

Geneva was referred to the nephrology department for evaluation. At the time of evaluation she had been off antibiotic treatment for five days. She denied

dysuria, fever or stomachache. Urine was dark and foul smelling. Geneva's height and weight are in the 50th percentile. Her blood pressure was 96/50. Her abdomen was soft, not tender and without mass. Her genitalia were normal. There was no leaking of urine with Valsalva maneuver. Her underwear was noted to be damp but free of stool.

CASE DISCUSSION

UTI is one of the most common reasons for a nephrology referral. Managing the acute UTI and identifying the cause of infection are the goals. The challenge is to prevent recurring infections and kidney damage by identifying risk factors. For this reason, obtaining a clear history of voiding and elimination patterns and diet and fluid intake is important. A careful stool history is also indicated since children with voiding disturbances often exhibit problems with constipation.

Geneva's prenatal history and ultrasounds were normal. Her growth and development have been on target. She has been potty trained since age 3 years, but has never been dry at night. Family history is unremarkable for UTI, kidney disease or enuresis.

She holds urine and voids small volumes infrequently during the day. Her mother often observes her doing the "pee-pee" dance. She leaks urine into her underwear and

sometimes needs to change clothes three times a day. She wets the bed nightly. Bowel movements are daily to every other day. She maintains a good appetite, drinks a lot of water, pop and milk and takes a water bottle to school.

Generally, radiologic investigation is indicated after the first documented febrile UTI in a female younger than 5 years of age or in any male. This is obtained with a renal ultrasound and voiding cystourethrogram (VCUG). While a nuclear cystogram minimizes radiation exposure, it does not provide anatomic detail of the bladder or urethra or allow precise grading of VUR. For this reason, a standard contrast cystourethrogram is recommended as the first study in both boys and girls.

A renal ultrasound was obtained at the time of the nephrology appointment. Both kidneys appeared normal and plotted less than one standard deviation above mean for height. VCUG was

obtained and negative for vesicoureteral reflux. A spinning top urethra was noted. CBC and renal panel were normal with BUN 19 and creatinine 0.7. Urinalysis results included specific gravity 1.026 indicating concentrated urine, pH 6 and negative for blood and protein. Urine culture was negative at 48 hours.

The diagnosis is dysfunctional voiding (abnormal voiding pattern) and urinary tract infection and cystitis. Infrequent voiding, holding urine and dark, concentrated urine demonstrate Geneva's pattern of voiding dysfunction.

It is important to correct the dysfunctional voiding. These patients have uncontrolled bladder spasms with urine leaking. In order to retain urine and prevent wetting, they place mechanical pressure on the urethra by squatting.

A schedule was prescribed to void at least every two to three

Continued on the reverse side.

Continued from the front.

hours throughout the day. Geneva was directed to void with legs open wide to allow the urine to flow freely into the toilet and prevent vaginal reflux. She was instructed to wipe front to back and this was demonstrated. She was instructed to practice double voiding several times throughout the day to assure complete emptying of the bladder. It was prescribed to take showers or clear water baths. She was directed to drink 40 to 45 ounces of clear fluids daily, caffeine-free. A "pull up" was recommended for the night. Geneva's parents were instructed to monitor voiding and bowel movements. They were asked to observe the

urine. If the urine was dark or if voiding every two hours was not possible; fluid intake needed to increase. Geneva should have a daily bowel movement and the characteristics of her stools should be noticed.

Prophylactic antibiotic treatment was initiated with Macrochantin 50 mg every evening. This was to continue until Geneva went one year without UTI. The treatment plan also included repeating the renal ultrasound in one year. A second cystogram would be indicated in the event of another UTI especially a breakthrough infection while she is on prophylaxis.

Infection of the upper urinary tract

places the patient at risk for kidney damage. Acute pyelonephritis is characterized by systemic symptoms such as fever, abdominal or back pain and vomiting. The potential sequelae of renal scarring including proteinuria, increased blood pressure and inadequate renal growth should be monitored. A dimercaptosuccinic acid (DMSA) renal scan is indicated if scarring is suspected.

Geneva had a good response with increased fluid intake and timed voiding. She experienced clearing of the urine and an improvement of enuresis. She rarely squats and has been UTI free for 12 months. Repeat imaging studies are pending.

FEATURED SPECIALIST



Tamara Tufts, RN, PNP,

is a certified pediatric nurse practitioner in the nephrology department at The Children's Medical Center of Dayton. She received her

bachelor's degree from Bowling Green State University. She completed her master's degree and nurse practitioner training at University of

Cincinnati. She has been a pediatric nurse practitioner for nine years and has worked in the nephrology department for four years.

NEPHROLOGY

The department of nephrology at The Children's Medical Center of Dayton provides comprehensive diagnostic and treatment services for disorders of the kidney, urinary tract and hypertension. Inpatient and outpatient consultations are available for patients with electrolyte acid base and blood pressure disorders. Consultation for calcium and phosphorus disorders and blood pressure disorders are also provided.

The department offers specialized procedures for renal replacement therapy including hemodialysis, peritoneal dialysis and hemofiltration/hemodia-filtration (CAVH/CVVH) for acute inpatients. The department works closely with urologic and pediatric surgeons to provide comprehensive management of patients through a combined renal-urologic clinic.

CONTACT INFORMATION

To speak to Tamara Tufts or to make a referral, call nephrology at 937-641-3304 or e-mail Tamara at tuftst@childrensdayton.org.



For further information about The Children's Medical Center or its specialists contact us at 937-641-3666 or marketing@childrensdayton.org.



One Children's Plaza
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