Kidney Stones in Children and Adolescents

Kidney stones are a condition where the minerals and other elements that are found in the urine harden into a stone. The stone typically forms in the kidney and causes pain as it passes down the tubes (ureters) connecting the kidney to the bladder.

Kidney stones are more common in adults than children but can happen in children of any age. Among children, kidney stones are most likely to happen in the adolescent years and are more common in girls compared with boys. Some chronic medical conditions are associated with higher risk of kidney stones, such as inflammatory bowel disease, cystic fibrosis, seizure disorder, and urinary tract abnormalities. This month’s JAMA Pediatrics includes a review article about kidney stones in children and adolescents.

Most stones are primarily made of calcium, including calcium oxalate and calcium phosphate. Stones may also be made of other materials. Most stones are around ¼ to ½ inch in size.

Symptoms of kidney stones include severe abdominal pain that comes and goes in waves, often called “colicky” pain. Urinating blood that is visible in the toilet, called “gross hematuria,” is a common sign of kidney stones. Some children may urinate blood that is not visible in the toilet but can be found using a urine test; this is often called “microscopic hematuria” because the blood is visible in a microscope examination.

Other nonspecific symptoms of kidney stones may include generalized abdominal pain, nausea, or vomiting. Young children may have a more difficult time in describing where the abdominal pain is located and may just complain of abdominal pain. Some children have kidney stones and do not have symptoms and the stone is discovered during an evaluation for a urinary tract infection or on an x-ray for an unrelated reason.

Evaluation for kidney stones often includes taking a detailed history about what the child drinks during the day and how much he or she drinks, what medications or supplements the child takes, and asking about a family history of kidney stones. The physical examination will typically include assessing blood pressure and your child’s growth. Typically, a urinalysis is done to examine whether blood or signs of infection are present in the urine. Sometimes an imaging study is done, such as radiography or ultrasonography, to locate the stone. In some cases, additional tests are done to see if there are other conditions present such as a urinary tract abnormality or a metabolic condition that contributed to the kidney stone.

Treatment includes helping the body to pass the stone out of the urinary tract. This typically includes pain control and helping the child to take in additional amounts of water or fluid. In cases of large stones more than ½ inch in size, surgery or other procedures may be needed to remove the stone.

Children who have had one kidney stone have a high risk of having another kidney stone in the future, often called a “recurrence.” It is estimated that the risk of recurrence is between 16% and 44% in children who have had one kidney stone episode. Prevention of future stones is important and may include changing patterns of what the child drinks. For example, reducing soda and increasing water intake can help prevent future calcium-based stones.

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