

ACR Appropriateness Criteria for Acute Onset of Flank Pain with Suspicion of Stone Disease

Key Points for Practice

- Helical (spiral) noncontrast CT has high clinical accuracy, allowing for the precise measurement of a mass, as well as providing a clear depiction of where in the ureter a stone has become lodged.
- A low-dose CT radiation regimen should be used in place of conventional dosing when evaluating for renal or ureteral stones.
- Ultrasonography is the imaging tool of choice in pregnant patients.

From the AFP Editors

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A collection of Practice Guidelines published in AFP is available at <http://www.aafp.org/afp/practguide>.

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Imaging modalities used in the initial evaluation of acute flank pain provide physicians with the information necessary to diagnose and predict the outcome of abdominal conditions such as urinary tract stones. Because of the variety of radiologic options available for detecting suspected urolithiasis, and the different contexts that might influence their use, the American College of Radiology (ACR) has established appropriateness criteria to assist in the selection process. Procedures with a rating of 9 are considered most appropriate, and those with a rating of 1 least appropriate. These guidelines rate the suitability of computed tomography (CT), ultrasonography, radiography, and magnetic resonance imaging for patients who present with suspected stone disease, recurrent stone disease symptoms, or abdominal pain in pregnancy.

Recommendations

SUSPECTED STONE DISEASE

For more than two decades, helical (spiral) noncontrast CT of the abdomen and pelvis has been heavily relied on in the detection of suspected stone disease. It has 95% or higher sensitivity and specificity, allowing for the precise measurement of a mass, as well as providing a clear depiction of where in the ureter a stone has become lodged. The ACR assigned it an appropriateness rating of 8 (usually appropriate). Size and location

of the stone are essential for determining the level of intervention required; smaller, more proximal stones are likely to pass spontaneously.

Patients who undergo noncontrast CT are exposed to a greater radiation dose than with other imaging tests, and it could cause adverse health effects. Therefore, a low-dose regimen should be used in place of conventional dosing when evaluating for renal or ureteral stones. If low-dose CT does hinder sensitivity, intravenous contrast media, secondary signs (i.e., ureteral dilatation and perinephric stranding) and dual-energy CT may be useful for clarifying findings. CT of the abdomen and pelvis without and with contrast media is assigned an appropriateness rating of 6 (may be appropriate).

Abdominal radiography delivers a smaller amount of radiation than CT, but it has an appropriateness rating of 3 (usually not appropriate). Its narrow capabilities in visualizing different etiologies of renal colic could lead to repeat use, cancelling out the benefit of the smaller exposure imprint. In comparison, combining radiography with ultrasonography has a sensitivity of about 79% in identifying clinically significant stones, providing an acceptable alternative to low-dose noncontrast CT for some patients. If conservative management is ineffective or surgery is expected, noncontrast CT is recommended.

Magnetic resonance imaging is less accurate for identifying suspected stones, but it is highly dependable in depicting hydronephrosis and perinephric edema. In contrast, although intravenous urography has long been a standard test for ureterolithiasis, it cannot guide physicians toward alternative diagnoses if stones are ruled out. Both of these modalities are assigned a rating of 4 (may be appropriate).

Practice Guidelines

RECURRENCE OF STONE DISEASE SYMPTOMS

Stones are a likely cause of flank pain, especially in patients who have already had them. Reviewing previous images that indicate where or how many stones the patient had during earlier episodes, or limiting noncontrast CT to the bladder, can help avoid problems generated by repetitive use of CT imaging. Noncontrast CT, preferably at reduced doses, is usually appropriate in the evaluation of recurrent symptoms, with a rating of 7 for these situations. Additionally, large stones may appear on radiography (rating of 5, or may be appropriate)—with potential for tracking their course—depending on stone composition and weight of the patient. Ultrasonography (rating of 7, or usually appropriate) is an option for evaluating hydronephrosis.

ABDOMINAL PAIN IN PREGNANT PATIENTS

Ultrasonography is the imaging tool of choice in pregnant patients with flank pain because it has reasonably good sensitivity for stone

detection but does not harm the patient or fetus with ionizing radiation (rating of 8, or usually appropriate). Physiology may be the culprit in cases of hydronephrosis in this population. The hazards and effectiveness of low-dose noncontrast CT (rating of 6, or may be appropriate) are the same during pregnancy, but radiologists are more likely to use it than magnetic resonance urography (rating of 5, or may be appropriate) in the second and third trimesters if renal calculus is suspected.

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Available at: <https://acsearch.acr.org/docs/69362/Narrative/>

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