

Computed Tomography Imaging for the Diagnosis of Renal Colic: A Review

Context

The term “renal colic” is used to describe the severe pain caused when kidney stones have moved from the kidneys into the ureter (a tube that goes from the kidney to the bladder). This pain is often felt in the side and back. But when a patient visits the emergency department with severe side and back pain, renal colic is only one possible diagnosis. Two examples of other diagnoses are ectopic pregnancy and kidney infection. Computed tomography (CT) is frequently used to help determine whether the pain is due to renal colic.

Technology

CT uses X-rays to create images of bones and soft tissues inside the body. CT exposes the patient to radiation, which can be a concern in some patients, such as children and pregnant women. There are alternatives to CT that can minimize or avoid radiation. Low-dose CT minimizes the radiation exposure and portable ultrasound uses high-frequency sound waves to produce images of structures inside the body. These technologies may not be as accurate as standard CT when the kidney stones are small.

Issue

A review of the clinical and cost-effectiveness of CT compared with portable ultrasounds for diagnosing patients with renal colic in the emergency department will help inform decisions on how best to diagnose these patients.

Methods

A limited literature search was conducted of key resources, and titles and abstracts of the retrieved publications were reviewed. Full-text publications were evaluated for final article selection according to predetermined selection criteria (population, intervention, comparator, outcomes, and study designs).

Key Messages

- Patients undergoing CT and portable ultrasound experience similar complication rates from delayed or missed diagnoses of renal colic (based on one recent study).
- No evidence was found on the cost-effectiveness of using CT compared with portable ultrasound to diagnose renal colic in an emergency setting.

Results

The literature search identified 553 citations, with 1 additional article identified from other sources. After screening the abstracts, 2 articles met the criteria for inclusion in this review. Both articles reported on the same randomized controlled trial.

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