USDRN PUSH | Research Article Summary

Validation of an Automated CT Image Analysis in the Prevention of Urinary Stones with Hydration Trial

What was this study about?

This study looked at whether a computer program could correctly find, measure, and track kidney stones on CT scans. (A CT scan uses many X-rays to create detailed pictures of the inside of the body.) The researchers wanted to see if a computer could tell when kidney stones grew or disappeared, or when new stones showed up over time.

Why did we do this study?

Doctors usually have to look at CT scans by hand to check for kidney stones. Doing this takes a long time and can be hard, especially when many pictures must be reviewed. A computer program might make this job easier, faster, and more accurate.

What did we learn?

The computer program was correct 98.4% of the time. There was only one mistake when the program confused a kidney stone with a buildup of calcium in a blood vessel, which looked similar to a stone.

The computer program was 100% correct when there were new stones, no changes, and when a stone disappeared on the second CT scan.

How did we do this study?

The team used CT scans from 62 adults in a larger kidney stone study called the Prevention of Urinary Stones with Hydration (PUSH) clinical trial. Each person had two CT scans: one at the beginning of the study, and one 2 years later. A computer program studied both scans to see whether stones grew, disappeared, stayed the same, or were newly formed. Doctors also reviewed the scans, and the researchers checked whether the computer's answers matched the doctors' answers.

What does this mean for patients and care teams

- Computer tools can be trusted to help doctors understand CT scans faster and more accurately. This technology could make kidney stone care more efficient and consistent in the future.
- Doctors should still review CT scans for more difficult cases by hand. Using this technology, doctors can make better decisions about treatment by having clearer information.

Learn more about this study from the full research article:
https://pubmed.ncbi.nlm.nih.gov/40854610/

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