

PP-042

CT thick-slice reconstruction, can it predict stone visibility on KUB radiograph?

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Introduction: Non-contrast CT (NCCT) scanning has long been the most sensitive modality for diagnosing Urolithiasis¹. However for conservative stone follow up a plain KUB radiograph is often quicker, easier to obtain and a lower dose of radiation. EUA suggest obtaining a plain KUB radiograph following NCCT in patients with acute renal colic who are likely to receive conservative outpatient follow up². This adds to radiation doses in the acute setting, but maybe a lower dose than repeating NCCT.

Methods: Consecutive patients presenting with acute urolithiasis were reviewed over a 3 month period. Patients were included if they had obstructing ureteric stones and if they had both NCCT and plain radiograph taken within the presenting 24 hour period. Coronal thick-slice (~200mm) CT reconstructions were analysed and compared with plain radiograph for each patient for presence of stones. They were analysed by one radiologist and were unblinded.

Results: In that period 20 patients fit the inclusion criteria. Stone position was distal ureter in 11, mid in 2 and proximal in 7 patients. Sensitivity of thick-slice CT reconstruction was 55% (11/20), whereas plain radiograph was 80% (16/20).

Both modalities had consistent results - either positive or negative - in 15/20 (75%), p=0.03 Fisher's Exact Test.

Discussion: We believe that thick-slice CT reconstruction can predict stone visibility on plain radiograph and this justifies its use in the acute setting in renal colic in place of an additional plain radiograph. If the stone is visible on the reconstruction, stone follow up could likely be undertaken with plain radiograph. If a stone is not visible an additional plain radiograph should be taken to ascertain if the stone can be followed up with plain radiograph. Use of thick slice reconstruction may reduce use of plain radiograph in accompaniment to NCCT in acute urolithiasis by 50%.

References:

- 1 Worster A, Preyra I, Weaver B, et al. The accuracy of noncontrast helical computed tomography versus intravenous pyelography in the diagnosis of suspected acute urolithiasis: a meta-analysis. *Ann Emerg Med* 2002 Sep;40(3):280-6. <http://www.ncbi.nlm.nih.gov/pubmed/12192351>
- 2 C. Türk, T. Knoll, A. Petrik, K. Sarica, M. Straub, C. Seitz. EUA Guideline for Urolithiasis 2012.

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