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Renal colic imaging: Are we Choosing Wisely?

In this edition of *CUAJ*, Jenkins et al describe population-based trends in index imaging modality for renal colic patients in Ontario, Canada.¹ In the context of Choosing Wisely recommendations, which support index ultrasound (US) in uncomplicated renal colic, they conclude that although many patients proceed to computed tomography (CT), there is an encouraging trend towards increasing US use;¹ however this increase is coupled with an increase in CT use and a reduction in patients receiving no imaging.¹ This may indicate an additional challenge within a resource-limited healthcare system, namely an overall increase in total investigations for uncomplicated presentations. Jenkins et al found that index CT was associated with fewer emergency department (ED) and primary care physician (PCP) visits.¹ Additionally, despite increased use of point-of-care US, formal imaging usage was not mitigated.

To support appropriate index US selection, some centers have implemented formal clinical decision supports (CDS).² A randomized controlled trial found that implementing formal US-first CDS tools reduced radiation exposure without increasing ED visits, subsequent CT scans, or hospitalization within 30 days.² Canadian centers aiming to improve provider adherence to uncomplicated renal colic guidelines may benefit from CDS tools.

Although there is evidence supporting improved urinary tract calculi detection accuracy with CT over US, recent systematic reviews examining safety, accuracy, prognosis, and cost of renal colic care highlight a paucity of understanding regarding the effect of imaging modality on patient prognosis and healthcare costs, particularly in Canada.³ This contributes to a lack of international guideline consensus on initial imaging modality.

In addition to the impact of the Choosing Wisely recommendations, there have been improvements in US imaging modality accuracy, which further support index use for renal colic.^{3,4} Despite this, two of the primary challenges to widespread US uptake remain sizing accuracy and urinary tract calculi detection vs. CT. In support of index CT, many studies link automated stone characteristics that can easily be obtained on CT (e.g., total stone volume) to predictive models for future symptomatic stone events.⁵ There are other studies examining CT-extracted data associated with clinically

significant outcomes (e.g., predicting spontaneous stone passage success rates, safety of ureteral access sheath use, and the ability to access proximal urinary tract calculi with ureteroscopes).⁶

Despite relative equivalence of low-dose to standard-dose CT for renal colic, to my knowledge, there is no Canadian-based evaluation of standard, low-dose, or very-low-dose CT imaging protocol use and whether that has changed within the era of using “as low as reasonably achievable” radiation. In concert with ongoing efforts to advocate for index US in uncomplicated renal colic, additional efforts to support low-dose CT imaging should be investigated. Although individual exposure from a single renal colic protocol CT (~13 mSv) is equal to roughly two years of background radiation, the cumulative use of CT scans in recurrent stone formers can be significant.⁷

Overall, Jenkins et al highlight encouraging trends, along with many exciting areas for ongoing research in support of safe, effective, and cost-efficient index imaging for uncomplicated renal colic in Canada.

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