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Diagnostic Imaging for Kidney Stones

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Discussion | This study found that 99% of COVID-19–related web pages included a third-party data request, and 89% included a third-party cookie. By comparison, a prior study of 1 million popular web pages found that 91% included a third-party data request and 70% included a third-party cookie.[2]

Third-party tracking was pervasive even among government and academic COVID-19–related web pages, on which visitors might reasonably expect greater privacy protections. Decision-makers at these institutions may be unaware of third-party tracking on their websites because they do not realize that tools used to monitor website traffic transmit data to third parties.

This study had limitations. First, only 2 mechanisms of third-party tracking were investigated. Because other means of third-party tracking exist, including some designed to evade automated capture, these findings likely underestimate the extent of third-party tracking. Second, because this study was limited to web pages that appeared in the top 20 results for a given Google query, findings may not generalize to web pages with lower search rankings or searches performed using other search engines.

Amid debate and legislative activity focused on the privacy implications of COVID-19 contact-tracing apps, these findings suggest that attention should also be paid to privacy risks of online information seeking.[3]

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Acquisition, analysis, or interpretation of data: All authors.
Drafting of the manuscript: McCoy.
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Statistical analysis: Libert, Buckler, Friedman.
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COMMENT & RESPONSE

Diagnostic Imaging for Kidney Stones

To the Editor Dr Rule and colleagues[1] concluded that computed tomography (CT) should be used as the first diagnostic test in patients with suspected kidney stones because it is the most accurate diagnostic test and because small stones can be missed on ultrasonography. We disagree and believe that the evidence supports an ultrasonography first strategy, with CT as needed. This will result in improved patient outcomes[2] for several reasons.

First, although CT may have slightly greater accuracy, this is primarily for the detection of small stones that are less clinically important. These stones will likely pass on their own with conservative management. Small Randall plaques are frequently diagnosed as stones on CT imaging, yet have no clinical ramifications.

Second, the radiation doses used routinely for CT are in the range associated with an increased lifetime risk of cancer.[3] Although CT scans performed for kidney stones could use low doses (2-4 mSv), in actual practice the doses are routinely 5-fold to 20-fold higher. Many patients undergo repeat CT scans, further increasing risks.

Third, CT is associated with an increased detection of incidental findings, which can lead to a cascade of additional testing and overtreatment. For example, higher rates of CT are associated with increased nephrectomies, likely reflecting the incidental detection of kidney masses.[4]

A multicenter pragmatic randomized trial compared CT, ultrasonography, and point-of-care ultrasonography for patients with suspected kidney stones.[2] Patients were randomized to the first diagnostic imaging test, after which treating physicians could obtain additional testing as needed. Using ultrasonography first resulted in similar rates of missed diagnoses, adverse events, hospital admission, patient-reported pain, and urological interventions. Allowing CT as a secondary diagnostic test as needed resulted in identical accuracy for the ultrasonography and CT groups. Patients in the ultrasonography groups received significantly less radiation, and patients who underwent only point-of-care ultrasonography spent 1 hour less in the emergency department.

The results of this trial were recently incorporated into a multispecialty consensus statement for the imaging of renal

colic, which supported ultrasonography in younger patients and middle-aged patients with a history of kidney stones.[5] We suggest that the risks and benefits of each imaging test be tailored to individual patients, and using ultrasonography first when appropriate may prevent exposing patients to the unnecessary risks of routine CT.

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In Reply We stand by our recommendation of CT first for a diagnostic evaluation of renal colic.[1] Dr Wang and colleagues raise 3 objections to this recommendation and advocate for ultrasonography first instead.

First, they argue that small stones missed by ultrasonography are less clinically important even if they would have been detected by CT. We agree that pain from a small stone will often self-resolve with the stone passing on its own. However, the patient will lack a diagnosis for the cause of their pain. Advising dietary and medical interventions to prevent the next painful kidney stone episode is contingent on having a correct diagnosis. Much of the increase during recent decades in the incidence of confirmed symptomatic kidney stone disease has been due to detection of small stones by CT that were not detected in the earlier era of plain radiographic film.[2] Conversely, an incorrect diagnosis of kidney stones may lead to patient anxiety, unnecessary referrals, and unhelpful and burdensome dietary changes. Thus, an ultrasonography first approach has a detrimental effect on diagnosis and subsequent management of kidney stones. Using ultrasonography first is a reasonable alternative in persons with frequent stone episodes because of their prior diagnosis and high risk for recurrence.

Second, they argue that CT radiation is associated with increased cancer risk. However, despite nearly a century of study, no conclusive evidence exists demonstrating an increased risk of cancer from radiation doses typical for CT imaging of renal colic.[3] Nonetheless, it is essential that CT protocols be optimized to minimize radiation exposure. If properly implemented, radiation doses comparable with annual background radiation levels are sufficient to diagnose kidney stones in patients without obesity.[3] The report cited by Wang and colleagues from the National Research Council states, "At relatively low doses, there is still uncertainty as to whether there is an association between radiation and disease, and if there is an association, there is uncertainty about whether it is causal or not."[4] Observational data on cancer risk with CT imaging is of limited value due to confounding by the indication for CT imaging. We hope that with clinical trials, such as the one cited by Wang and colleagues,[5] rates of cancer in persons randomized to CT first vs ultrasonography first will be reported to determine if there is cancer risk with CT radiation.

Third, they argue that CT will lead to overtreatment from increased detection of incidental findings, including kidney masses. We agree that there is potential for harm with overtreatment of incidental findings on CT, but this risk should not preclude the use of CT imaging for renal colic. Rather, better evidence-based approaches are needed to appropriately manage incidental findings.

In conclusion, accurate diagnosis of a symptomatic kidney stone in a patient presenting with renal colic is important for long-term treatment to prevent recurrence. The benefits of CT first in most patients with unexplained renal colic outweigh the unsubstantiated risks with low-dose radiation or the inconvenience of incidental findings.

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Replicability of Treatment Effect in Study of Blood Pressure Lowering With Dementia

To the Editor Dr Hughes and colleagues[1] found that blood pressure lowering with antihypertensive agents was associated with a reduced risk of dementia or cognitive impairment