LETTER TO THE EDITOR

The evaluation of renal cortical density in urinary stone disease by unenhanced helical computed tomography

To the Editor,

I read the article by Dr Chou and associates [1] with interest. They evaluated the secondary signs associated with ureteral obstruction from calcium and uric acid stones. They used unenhanced helical computed tomography (UCT) in order to assess the kidneys in those patients, and observed that UCT reliably showed secondary changes (such as rim sign, hydro-ureter, perirenal stranding, renal density) on kidneys caused by ureteral stones. Specifically, we were interested in Hounsfield unit (HU) values of the renal cortex and papilla in patients with nephrolithiasis and investigated renal changes associated with nephrolithiasis [2]. In contrast to the study of Chou et al. [1], we preferred to investigate cases with unilateral nephrolithiasis and excluded patients with ureteral stones. In addition, we formed an age-matched control group. Eventually, we observed that kidneys with calculi had significantly higher renal cortex and papilla densities when compared to the control group. Dr Chou and colleagues [1] similarly measured renal parenchymal densities from the upper, middle, and lower portions of each kidney. However, they focused on the differences in renal densities between the right and left kidneys. They revealed that nearly more than half of the patients with ureteral stones (50–73.7%) had kidneys with increased densities on the affected side.

We think that both studies actually highlight similar data. Calculi in the urinary system (either in the kidney or the ureter), cause a change in renal parenchymal density. This increase starts during the acute phase in urinary stone disease and persists during the chronic phase of the disease process. As the authors already suggested in the paper, this HU increase could be a very valuable secondary sign to the clinician to predict the obstruction that had been created by the calculi during the early phase of the disease. In our study, no differences between the affected and non-affected sides within the stone-bearing group were observed. This reveals that urinary stone disease can be considered a systemic disease that will probably affect the contralateral kidney in the future. Therefore, secondary changes (such as an increase in renal cortical density of more than 5 HU) that begin in the affected kidney during the early period can probably be observed on the contralateral kidney later in life.

From this perspective, UCT evaluation in urinary stone-formers allows a noninvasive, simple, accurate, and quick assessment of the upper urinary system. Measurement of HU in order to determine renal parenchymal (cortical) densities may give valuable prognostic data during initial diagnosis and follow-up.

I thank Dr Chou and associates for this interesting and insightful article.

References


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