Article Summary

Use of and regional variation in initial CT imaging for kidney stones.

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Abstract:

Objective:

To determine the prevalence of initial computed tomography (CT) utilization and to identify regions in the United States where CT is highly used as the first imaging study for children with nephrolithiasis.

Methods:

Performed a cross-sectional study in 9228 commercially insured children aged 1 to 17 years with nephrolithiasis who underwent diagnostic imaging in the United States between 2003 and 2011. Data were obtained from MarketScan, a commercial insurance claims database of 17,827,229 children in all 50 states. Determined the prevalence of initial CT use, defined as CT alone or CT performed before ultrasound in the emergency department, inpatient unit, or outpatient clinic, and identified regions of high CT utilization by using logistic regression.

Results:

Sixty-three percent of children underwent initial CT study and 24% had ultrasound performed first. By state, the proportion of children who underwent initial CT ranged from 41% to 79%. Regional variations persisted after adjusting for age, gender, year of presentation, and insurance type. Relative to children living in West South Central states, the highest odds of initial CT utilization were observed for children living in the East South Central US Census division (odds ratio: 1.27; 95% confidence interval: 1.06-1.54). The lowest odds of initial CT were observed for children in the New England states (odds ratio: 0.48; 95% confidence interval: 0.38-0.62).

Conclusions:

Use of CT as the initial imaging study for children with nephrolithiasis is highly prevalent and shows extensive regional variability in the United States. Current imaging practices deviate substantially from recently published guidelines that recommend ultrasound as the initial imaging study.

Key points:

\* Use of CT as the initial imaging study for children with nephrolithiasis is highly prevalent and shows extensive regional variability in the United States.

\* Sixty-three percent of children underwent initial CT study and 24% had ultrasound performed first.

\* The highest odds of initial CT utilization were observed for children living in the East South Central US Census division.

\* The lowest odds of initial CT were observed for children in the New England states.