Computed tomography value of differentiating small renal masses

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Aims and objective
To determine CT value diagnosing small (less than 4 cm) solid renal masses.
1. To determine the most valuable signs of computed tomography (CT) differentiating small renal masses;
2. To investigate the diagnostic accuracy of contrast-enhanced CT of small renal masses;
3. To evaluate and compare accuracy of renal masses diagnoses by two independent radiologists.

Results
The mean patients age was 66 years (range, 58 to 74 years). Fifty-seven patients were female (58.2 %) and forty-one were male (41.8 %). All of 98 patients had solid renal masses: 63 malignant, 35 benign renal masses. Other parameters are submitted in Table 1. Malignant renal masses more often had central fibrous scar and were enhancing heterogeneously than benign renal masses, but these CT signs were not statistically significant (Table 2). The predictive value of each CT finding was determined by using univariate and multivariate logistic regression analysis.

Tumor size and central fibrous scar were valuable predictors for differentiating malignant masses from benign at multivariate analysis (P < .003 and P < .001). Mass growth (eogphsic or endophytic) was valuable predictor for differentiating benign masses (P < .022).

The mass enhancement sensitivity for detection of malignancy, specificity were high, positive predictive value 69.9 %, negative predictive value 43.4 %.

Comparison of correct renal masses diagnoses provided by two independent radiologists presented in Table 3.

Methods
Ninety-eight patients who had undergone CT (CT with unenhanced, arterial, corticomedullary and excretory phase scanning) in Lithuanian University of Health Sciences, Kaunas Clinics, Department of Radiology were evaluated. Two independent reviewers who were unaware of the diagnosis retrospectively recorded tumor attenuation on CT scans, enhancement characteristics (homogenous, heterogenous or hypovascular), location of tumor center (upper, middle or inferior poles, central or peripheral part), intratumoral calcification/fat, central scar, and patient age and sex. The predictive value of each CT finding was determined by using univariate and multivariate logistic regression analysis.

Conclusions
1. Evaluating all small solid renal masses, the most valuable sign – size; malignant masses – size, enhancement characteristics and central scar; benign – eogphsic/endophytic growth.
2. Contrast enhanced CT showed high sensitivity and specificity for evaluating malignant renal masses enhancement and specific evaluating mass size.
3. Both reviewers ~ 70 % of cases submitted the same diagnosis.

Key words
Small renal masses, renal cell carcinoma, angiomyolipoma, oncocytoma.