Urinary bladder mass: histopathological and cell type prediction by apparent diffusion coefficient

H.M. Imam, D.A. Hameed, G.S. Seifeldein, E.M. Moussa, R.S. Al Johi;

Abstract:

Purpose: assess the ability of the apparent diffusion coefficient (ADC) value to discriminate cell type of urinary bladder (UB) masses and predict the histological grade. Methods and Materials: Hundred and tow patients underwent magnetic resonance imaging using 1.5T machine include T2 weighted imaging and DWI using b value of 0, 150, 500 and 1000s/mm2. The ADC values of UB masses was measured. Final diagnosis was confirmed by histological examination of surgical specimens from all patients. To compare ADCs between three histologic grades and different cell type ANOVA with post Hoc LSD was used. The diagnostic performance was evaluated by receiver operating characteristic (ROC) curve. Results: The mean ADC of transitional cell carcinoma (TCC) was (0.76 ± 0.21X 10-3 mm2/S), squamous cell carcinoma (SCC) was (0.83±0.14 X 10-3 mm2/S and adenocarcinoma was (0.9±0.12 X 10-3 mm2/S).
The mean ADC of benign tumors was (1.2 ±0.15 X 10-3 mm2/S). A statistically insignificant relation was found between different cell types according to ADC value (P=0.156) but it was statistically significant between malignant tumours in general and benign tumors (P=0.000). A significant difference in ADC values were found between G1 and G3 (P=0.000),G2 and G3 (P= 0.045) but it was statistically insignificant between G1 and G2 (P=0.066). The cut-off value for differentiating malignant and benign bladder wall pathologies according to ADC values was found to be ≤ 1X10-3mm2/s; 94.5% sensitivity and 87.5% specificity.

Published In: