

AB061. Can diffusion-weighted magnetic resonance imaging be efficient in the differential diagnosis of uronephrosis and pyonephrosis?

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Background: To study the method of diffusion-weighted (DW) magnetic resonance imaging (MRI) in the differential diagnosis of uronephrosis and pyonephrosis.

Methods: The patients who were going to receive flexible ureteroscopy lithotripsy (f-URL) or percutaneous nephrolithotomy (PCNL) were enrolled in this study, and those who were diagnosed with uronephrosis by ultrasound and computed tomography (CT) furtherly underwent the exam of DW MRI. Apparent diffusion coefficient (ADC) map was produced and the value of ADC focused on region of interest (ROI) was calculated based on different parameter b values: 0, 50, 100, 150, 200, 500, 800 and 1,000 s/mm². Patients were divided into the uronephrosis group and pyonephrosis group according to the appearance characteristics of renal pelvic urine during puncture and operation.

Results: A total of 52 patients were included in this study, among which 22 patients were in uronephrosis group with

mean age of (51.86±11.23) years, and 30 patients were in pyonephrosis group with mean age of (47.53±9.38) years. The sex ratio of female in the pyonephrosis group was higher than uronephrosis group (80.00% *vs.* 50.00%, *P*<0.05), with a higher frequency of antibiotic and antifungal drugs usage (100.00% *vs.* 31.80%, *P*<0.05). When b=0 s/mm², in the MRI image uronephrosis appeared as hyperintensity, whereas pyonephrosis signal was similar to adjacent tissues. In the ADC map, uronephrosis appeared as hyperintensity, whereas pyonephrosis appeared as hypointensity. The mean ADC value of pyonephrosis group was lower than uronephrosis group [(1.35±0.27)×10⁻³ *vs.* (3.04±0.03)×10⁻³ mm²/s, *P*<0.05]. Receiver operating characteristic (ROC) curve was drawn according to the ADC value of uronephrosis and pyonephrosis based on different b values, which revealed that when the cutoff value of b was 500 s/mm², AUC was 0.88, indicating a relatively high diagnostic efficiency of pyonephrosis.

Conclusions: Uronephrosis and pyonephrosis could be efficiently diagnosed by DW MRI, when parameter b value was set as 500 s/mm², which was important for an urgent diagnosis to better prevent urosepsis following URL and PCNL.

Keywords: Uronephrosis; pyonephrosis

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