

## Diffusion-Weighted Imaging for the Differential Diagnosis of Benign and Malignant Ovarian Tumors

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### Abstract

The 92 patients in the aged group of 25 to 84 (mean 56 years) diagnosed with an ovarian tumor (OT) have been prospectively examined. All patients were undergone a routine MRI and have been obtained DWI (b value = 50, 800 and 1000 mm<sup>2</sup>/s) with the construction of the map of the apparent diffusion coefficient (ADC). A statistically reliable significant difference of the intensity signal of solid tissue of OT on DWI at value b = 1000 and T2-WI between patients with benign ovarian tumors (BOT) and malignant ovarian tumor (MOT) (p < 0,001) as well as by ADC (p = 0,009) was revealed. Statistically significant difference of intensity signal on T2WI and on DWI with ADC of solid and cystic components of OT between the primary MOT and metastatic ovarian were not detected. The average value of ADC of the solid tissue of MOT was  $0,6 \times 10^{-3}$  mm<sup>2</sup>/s, whereas of BOT consisted of  $0,3 \times 10^{-3}$  mm<sup>2</sup>/s. According to the ROC analysis the average value of ADC  $0,35 \times 10^{-3}$  mm<sup>2</sup>/s can serve as a threshold for the differential diagnosis of BOT and MOT with the sensitivity 95 %, specificity 60 %, with the positive predictive value 90 % and negative predictive value 75 %: with ADC below this value is more likely BOT, at exceeding of the trigger value is MOT. Thus, the analysis of the solid component of OT with using conventional MRI with DWI/ADC maps is most informative in the differential diagnosis of the BOT and MOT. MOT was characterized the higher signal intensity on DWI, T2WI and also higher ADC values than for BOT. Additionally, MOT had bilateral lesion, irregular shape, larger size, cystic-solid structure, irregular septa and ascites.

**Key words:** Malignant Ovarian Tumors, Ultrasound, Diffusion-weighted, Morphological Feature Ovarian Tumors.

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