Value of diffusion-weighted magnetic resonance imaging in the characterization of complex adnexal masses

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ABSTRACT

Aims and background. The aim of the study was to define the role of diffusion-weighted imaging in the characterization of adnexal complex masses, with particular regard to the distinction between benign and malignant lesions. Conflicting results on this topic have emerged from studies in the last decade, with a consequent substantial limitation to the use of this relatively novel technique in clinical practice.

Methods and study design. Magnetic resonance imaging examinations performed on 91 patients with ovarian masses (56 benign, 35 malignant) were retrospectively evaluated by two observers unaware of the final histopathological diagnosis. Diffusion-weighted sequences with b values of 0, 500 and 1000 were performed in all cases, and apparent diffusion coefficient maps were automatically generated. The signals of both the cystic and solid components of the ovarian masses were evaluated on T2-weighted and diffusion-weighted images acquired with a b value of 1000. Apparent diffusion coefficient values were measured in all cases.

Results. With regard to the solid components, hypointensity on both the T2-weighted and diffusion-weighted images has proved to be a reliable indicator of benignancy. In contrast, hyperintensity on both sequences was suggestive of malignancy. Signal intensity of the cystic components and apparent diffusion coefficient values of both components have not proven useful in characterization of the masses.

Conclusions. Only the definition of the signal intensities on diffusion-weighted images obtained with the use of high b values on the solid component of a complex adnexal mass is useful to characterize an ovarian mass as benign or malignant.