

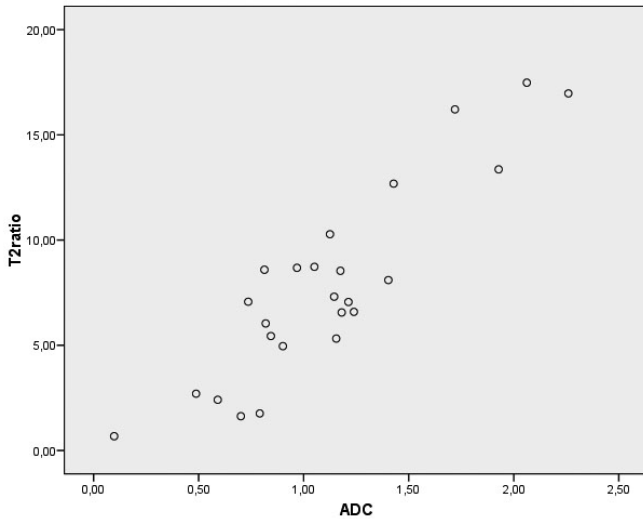
MR IMAGING IN THE EVALUATION OF (DEEP) INFILTRATING ENDOMETRIOSIS: THE VALUE OF DIFFUSION-WEIGHTED IMAGING

M. P. Busard¹, V. Mijatovic², C. van Kuijk³, I. Pieters-van den Bos³, P. Hompes⁴, and J. van Waesberghe³

¹Radiology, VUMC, Amsterdam, Noord Holland, Netherlands, ²Gynecology, VUMC, Amsterdam, Noord Holland, Netherlands, ³Radiology, VUMC, Amsterdam, ⁴Gynecology, VUMC, Amsterdam

Purpose: To assess the value of magnetic resonance (MR) diffusion-weighted imaging (DWI) in the evaluation of deep infiltrating endometriosis (DIE).

Materials and Methods: In a prospective single center study, DWI was added to the standard MR imaging protocol in 56 consecutive patients with known or suspected endometriosis. Endometriotic lesions as well as (functional) ovarian cysts were analysed for location, size, and signal intensity on T1-, T2-, and DWI. Signal intensity ratios were calculated, using the obturatorius muscle. Apparent diffusion coefficient (ADC) values were calculated using b-values of 50, 400, 800 and 1200 s/mm². Statistical analysis included the Spearman correlation coefficient, Mann Whitney U and Kruskal-Wallis tests.



Results: A total of 112 lesions (62 endometrial cysts and 48 DIE) were detected, 60 of which were large enough to analyse. Mean ADC values of endometrial cysts ($2.14 \times 10^{-3} \text{ mm}^2/\text{s}$) were significantly lower than ADC values of functional ovarian cysts ($1.11 \times 10^{-3} \text{ mm}^2/\text{s}$; $p < 0.001$). Mean ADC values of DIE retrocervical, infiltrating the colon and bladder were $0.70 \times 10^{-3} \text{ mm}^2/\text{s}$, $0.79 \times 10^{-3} \text{ mm}^2/\text{s}$ and $0.76 \times 10^{-3} \text{ mm}^2/\text{s}$ respectively. ADC values of DIE did not show a significant difference between varying pelvic locations ($p = 0.63$). Moreover we found a highly significant correlation between ADC values and T2SI ratios in endometrial cysts ($r = 0.77$; $p < 0.001$).

Figure 1. Correlation between T2-ratio (SI/m.obturatorius) and ADC values (mm²/s) in endometrial cysts.

Conclusion: Results of our study suggest that ADC values of DIE are consistently low, without significant difference between pelvic locations. In addition, in the differentiation between endometrial cysts from other pelvic cysts, ADC values show a comparable diagnostic performance as evaluation of the T2- and T1-weighted images.

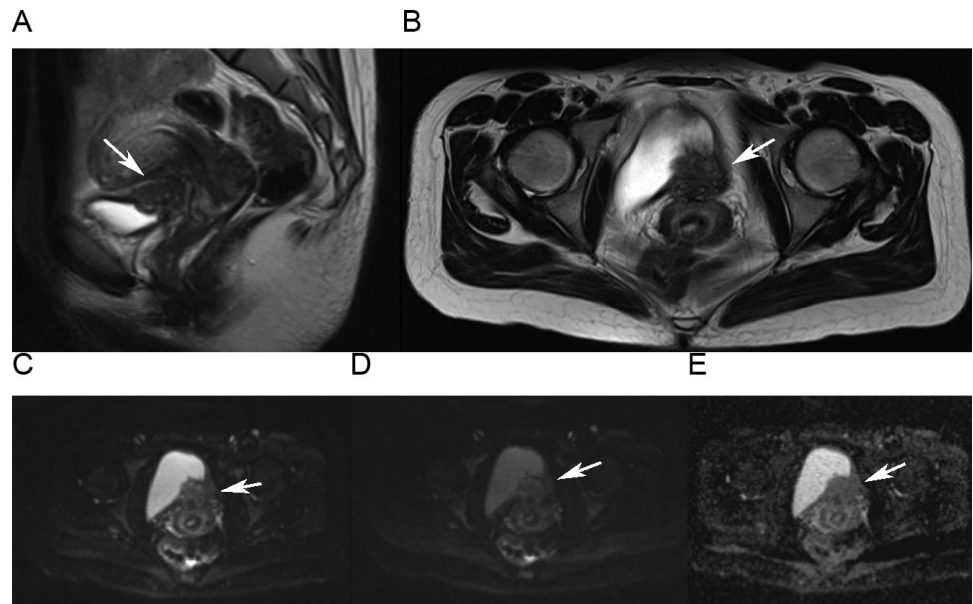


Figure 2. A and B: T2-weighted images, showing deep infiltrating endometriosis of the bladder wall (arrow). C and D: Diffusion-weighted images (b-50 and b-400 s/mm²). E: Corresponding ADC map.