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Application of International Deep Endometriosis Analysis (IDEA) group consensus in preoperative ultrasound and magnetic resonance imaging of deep pelvic endometriosis

The International Deep Endometriosis Analysis (IDEA) group statement[1] is the first international consensus on nomenclature and measurements in endometriosis imaging. We report on our preliminary experience using the IDEA imaging protocol, which offers guidance on the terms and definitions in pelvic endometriosis ultrasound examination. As it is important to standardize reporting among endometriosis centers and countries, and as magnetic resonance imaging (MRI) is used widely as an alternative to ultrasound examination, we have extended the use of the protocol to both imaging modalities, as well as intraoperative reporting.

The design of this prospective study followed the IDEA imaging protocol and planned to evaluate the performance of the IDEA protocol for mapping pelvic endometriosis using both ultrasound and MRI. Before joining the multicenter IDEA study, we approached 111 consecutive patients in a specialist referral center for endometriosis who had suspected deep endometriosis (DE) requiring surgery, from August 2016 to February 2018; however, 60 women declined participation due to discomfort or travel issues. Fifty-one patients with suspected DE agreed to undergo both transvaginal ultrasound (TVS) and MRI before surgery; however, two were excluded from the final analysis due to delayed surgery beyond 4 months. For the MRI protocol, we removed soft markers (sliding sign and site-specific tenderness) and replaced them with signs of extensive adhesions; otherwise, the IDEA protocol was used in its published form (Table S1). Laparoscopy and histology were used as the reference standard.

We found that both TVS and MRI had a high detection rate of DE in the bladder (sensitivity of 89% for TVS *vs* 100% for MRI; specificity of 100% for TVS *vs* 95% for MRI), upper rectum (sensitivity and specificity of 100% for both) and rectosigmoid (sensitivity of 94% for both; specificity of 84% for both). TVS had a higher specificity than did MRI for DE in the vagina (V), uterosacral ligaments (USL) and rectovaginal septum (RVS) (V: 100% *vs* 95%; USL: 67% *vs* 60%; RVS: 100% *vs* 93%) but a lower sensitivity (V: 55% *vs* 73%; USL: 74% *vs* 94%; RVS: 67% *vs* 83%). Ultrasound and MRI showed similar overall sensitivity (78% and 91%, respectively) and specificity (97% and 91%, respectively) in pelvic DE assessment, resulting in an overall accuracy of 92% for TVS and 91% for MRI (Table 1). There was an overall good agreement between TVS and the reference standard (kappa value (κ) = 0.727; $P \leq 0.001$), and between MRI and the reference standard ($\kappa = 0.755$; $P \leq 0.001$).

Although our sample size was small, the results are consistent with those of previous research. This would suggest that the new definitions, such as description of bowel DE in relation to the parts of the uterus (e.g. fundus) and insertion of uterosacral ligaments on the cervix, may be used in clinical practice without compromising established accuracy. Furthermore, use of the IDEA protocol in MRI is possible, allowing standardized reporting across all main modalities. Modifications of the IDEA consensus for MRI use seem to be of importance as many centers use MRI as their imaging modality of choice. MRI assessment of pelvic endometriosis follows guidelines of the European Society of Urogenital Radiology (ESUR)[2], which detail a technical protocol for optimal acquisition of images. Such a technical protocol should be included in any future IDEA protocol updates to offer full guidance in radiology. The ongoing multicenter IDEA study aims to evaluate the diagnostic accuracy and predictive value of

Table 1 Sensitivity, specificity and accuracy of International Deep Endometriosis Analysis (IDEA) group imaging protocol for deep endometriosis (DE) using transvaginal ultrasound (TVS) and modified protocol for magnetic resonance imaging (MRI)

		*TVS**			*MRI**		
DE location	*Patients with positive findings* (n = *49*) (n *or* n *(%)*)	*Sensitivity (%)*	*Specificity (%)*	*Accuracy (%)*	*Sensitivity (%)*	*Specificity (%)*	*Accuracy (%)*
Anterior compartment							
Bladder	9 (18.4)	89	100	98	100	95	96
Ureter	5 (10.2)	100	100	100	100	100	100
Total individual lesions	14	93	100	99	100	98	98
Posterior compartment							
Uterosacral ligaments†	34 (69.4)	74	67	71	94	60	84
Right uterosacral ligament	18 (36.7)	56	84	73	94	65	76
Left uterosacral ligament	26 (53.1)	81	100	90	88	91	90
Upper rectum	10 (20.4)	100	100	100	100	100	100
Rectosigmoid	17 (34.7)	94	84	88	94	84	88
Sigmoid colon	0 (0)	—	—	—	—	—	—
Rectovaginal septum	6 (12.2)	67	100	96	83	93	92
Vagina	12 (24.5)	55	100	90	73	95	90
Total individual lesions	88	76	95	91	90	89	89
Overall individual lesions	102	78	97	92	91	91	91

*Compared against reference standard (laparoscopy and histology). †Lesion on left, right or both sides.

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ultrasound, using IDEA terminology, in the detection of DE in women scheduled for surgery. We hope that it will also evaluate MRI for this purpose and we expect that the reported accuracies will be confirmed in the ongoing multicenter study, which was initiated in 2018, and future updates will reflect experience from multiple departments.

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Table S1 Study methodology

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