IN TOTAL, 147 healthy, non-hysterectomised early postmenopausal women aged 47–60 years were screened. Inclusion criteria were amenorrhoea of 6–24 months, no use of hormone replacement therapy up to 6 months before gynaecological examination and serum FSH levels > 30 mU/l. Clinical history of gynaecological events was noted.

Each participant had transvaginal ultrasound (TVU) for evaluation of uterine anatomy, dimensions and endometrial thickness. After that, a thin catheter was inserted through the cervix allowing sterile saline infusion into the uterine cavity (SIS). Evaluation of the uterine cavity for detection of focal or diffuse thickening of the endometrium is then possible. Endometrial thickening of more than 5 mm on TVU was defined as abnormal. Abnormalities on SIS were classified in submucous myomas, polyps, focal thickening or single layer endometrial thickening of more than 3 mm.

RESULTS

A total of 147 TVU were followed by 135 SIS. In 10 women SIS was not possible due to cervical stenosis, 2 women withdrew from further participation. TVU showed no endometrial abnormalities in 127 women, but 8 women had endometrial thickening of > 5 mm. SIS was normal in 105 women, and abnormal in 30 women. We found 25 endometrial abnormalities, 4 submucous myomas and 1 woman with an uterus bicornis (Table 1). A normal TVU with abnormal endometrium on SIS was found in 24 women. In 13 women a polyp was seen, but only 10 hysteroscopic biopsies were obtained. Pathology showed an atrophic polyp in 7 women, leiomyoma in 2 women and cystic hyperplasia in 1 woman. The other 11 women had diffuse endometrial thickening, 5; submucous myoma, 4; focal thickening, 1; or a uterus bicornis, 1. From the 8 women with endometrial thickening of more than 5 mm on TVU, SIS showed 2 women with normal endometrium and 3 women with single layer endometrial thickening of more than 3 mm. Biopsies in 2 women showed proliferative endometrium. One woman had focal endometrial thickening, biopsy only showed atrophic endometrium and 2 women had both a polyp and a submucous myoma which were confirmed by hysteroscopy and biopsies. The results are summarised in Table 2.

Table 1. Results of screening for endometrial abnormalities

	TVU		Total (%)
	Normal (%)	Endometrium > 5 mm (%)	
	127 (94.0)	8 (6.0)	135 (100)
SIS			
SIS normal	103 (76.3)	2 (1.7)	105 (78.0)
SIS endometrial abnormalities	24* (17.7)	6 (4.3)	30 (22.0)

*One uterus bicornis included.

Table 2. SIS-detected endometrial abnormalities

	SIS abnormalities			
	Polyp	Endometrium > 3 mm	Focal thickening	Submucous myoma
TVU normal endometrium (13.3%)	10	4	1	2
TVU normal, uterus myomatosus (4.4%)	3	1		2
TVU endometrium > 5 mm	2	3	1	
Total	15	8	2	4

We conclude that a normal appearance of the endometrium on TVU did not exclude endometrial abnormalities in 17.7% of these asymptomatic women. In the presence of myomas on TVU, accurate assessment of the endometrium may be difficult (4.4%). SIS-detected abnormalities that were confirmed by biopsy or hysteroscopy, show that SIS can be an accurate method for additional assessment of the endometrium. The indications for SIS in general practice, however, need to be further established.

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III.6 Tamoxifen-induced Changes of the Uterus: MRI Features

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The aims of this study were to evaluate the magnetic resonance imaging (MRI) features of tamoxifen-induced changes in the uterus and to assess whether they can be distinguished from endometrial cancer. The patient population included 31 postmenopausal women treated with tamoxifen (group I) and 13 patients with endometrial cancer (group II). MR images were analysed in random order and morphologic features were described. 32 out of 39 benign polyps (82%) and 2 malignant tumours were detected by MRI in patients of group I. In group II, MRI visualised 8 carcinomas. Benign and malignant lesions showed remarkably different morphologic features and enhancement patterns. Lesions sufficiently large to be detected with MRI can be characterised with confidence.

EVALUATION OF uterine changes in patients treated with tamoxifen constitutes a potential application for MRI that has received relatively little attention [1,2]. The purpose of our study was to evaluate the MRI features of tamoxifen-induced changes in the uterus and to assess whether they can be distinguished from endometrial cancer.

Group I: 31 postmenopausal women treated with tamoxifen were included. In all patients, histopathological correlation (biopsy) was available. Hysteroscopy and biopsy revealed a total number of 39 polyps in 21 patients. Also found were one endometrioid carcinoma and one endometrial metastasis of breast carcinoma.

Group 2: 13 women referred for pre-operative evaluation of (suspected) endometrial cancer. In all patients, histological correlation was available.

MR images were obtained with a 1.5 T Vision Magnetom system (Siemens, Erlangen, Germany) with a gradient switching capability of 25 mT/m in a rise time of 600 microseconds. All patients were imaged using a phased array coil. Both high-resolution T2-weighted images [3] and T1-weighted images were obtained. Contrast-enhanced images were obtained after injection of 0.2 mmol/l gadolinium-DTPA.

All MR images were evaluated in random order and analysed in consensus by two blinded radiologists. A four- and five-point qualitative score was used to describe the appearance of the contents of the uterine cavity as visualised on T1- and T2-weighted images, respectively.

In group I, MRI visualised 32 polyps (82%) in 18 patients (86%). Polyps not detected were smaller than 1 cm in size. 11 patients had one or more fibromyomas. In group II, MRI visualised a soft tissue mass in the cavity in 8 patients. The other 5 patients had histologically proven FIGO-stage 1a disease. The presence of a cavitary mass with intermediate intensity on T2-weighted images was highly suggestive of malignancy (positive predictive value 100%). The same was true for a non-enhancing cavitary mass (T1-weighted images). In group I, 'typical' tamoxifen-related polyps were seen in a minority of cases if only T2-weighted images were analysed (8 patients—26%). Analysis of both T1- and T2-weighted images showed 'typical' features in 18 patients (58%). In another 5 cases, lattice-like enhancement was found on T1-weighted images. This pattern was never found in patients with carcinoma. 2 patients showed both cysts and an atypical soft tissue mass (T1); both patients had a malignant tumour in the cavity.

(1) Both T2-weighted images and contrast-enhanced T1-weighted images with fat saturation should be obtained.
(2) Small polyps (grossly < 1 cm in size) are difficult to visualise. It is likely that the same holds true for small carcinomas.
(3) Tamoxifen-related uterine changes show specific MR features that differ significantly from those seen in patients with endometrial carcinoma. This implies that all lesions that can be *identified* as a mass can also be *characterised* with confidence.
(4) The important question whether *co-existent malignancy* can be ruled out in patients with typical tamoxifen-related changes cannot be answered by our data alone. Our results indicate that MRI should be most valuable for non-invasive characterisation of sonographically indeterminate masses $\geq \pm 1$ cm in size. However, the detection of tumours < 1 cm will probably remain difficult or even beyond the scope of this technique.

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