MR manifestations of decidualized endometrial cysts during pregnancy

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[Introduction] Malignant transformation is a rare, but often fatal complication of endometriosis, and the most important finding for a diagnosis of malignant change is the presence of one or more contrast–enhanced mural nodules within a cystic mass at MR imaging. Endometriosis-associated ovarian cancer generally affects women who are younger than those affected by ovarian cancer without endometriosis, and malignant transformation of ovarian endometriosis may occur during pregnancy. Decidual changes of endometrial tissue in endometrial cysts during pregnancy may manifest as mural nodules and mimic malignant transformation. The purpose of this study is to describe MR manifestations of decidualized ovarian endometrial cysts for the differentiation from malignant transformation.

[Materials and Methods] MR imaging findings of five decidualized ovarian endometrial cysts during pregnancy were retrospectively evaluated. MR images of two patients were obtained on a system with a 1.5-T superconducting unit (Signa Horizon, General Electric, Milwaukee, WI) with 4ch body-array torso coils. MR images of the other three patients were obtained on a system with a 1.5-T superconducting unit (Signa Excite, General Electric, Milwaukee, WI) with 8ch body-array torso coils. Fast spin-echo T2-weighted images, spin-echo T1-weighted images, and fat saturated spin-echo T1-weighted images were obtained in all five patients. Diffusion-weighted images (DWI) with high b-value (b=800 sec/mm^2) were obtained in three patients.

[Results] All five decidualized endometrial cysts were demonstrated as unilocular cysts with multiple mural nodules. The cystic components showed high intensity on T1-weighted images, and showed no signal decrease on fat saturated T1-weighted images reflecting hemorrhagic contents. On T2-weighted images two cysts showed characteristic low intensity as "the shading sign", and the other three cysts showed high intensity. In all lesions the mural nodules showed prominent high intensity similar to normal endometrium or placenta on fast spin-echo T2-weighted images and low intensity similar to normal myometrium on spin-echo T1-weighted images (Fig. 1-4). In three lesions, mural nodules showed slight to very high intensity on DWI (Fig. 1). The morphologic appearance of the mural nodules were various such as linear (Fig. 1), small nodular (Fig. 4), broad-based nodular (Fig. 3), or polypoid (Fig. 2). Most nodules were small less than one centimeter, but one polypoid nodule (Fig. 2) was over two centimeter in size (ADC=1.95 x 10^{-3} mm^2/sec).

[Conclusion] The signal intensity of mural nodules in decidualized endometrial cysts were similar to that of the endometrium or placenta: prominent high intensity on T2-weighted images, which is atypical for mural nodules in endometrial cysts with malignant transformation: slightly high to intermediate intensity on T2-weighted images. High intensity on DWI is for both decidualized endometrial tissues and malignant mural nodules, and is considered to be not a diagnostic finding. We conclude that, in the presence of endometrial cyst with prominent hyperintense mural nodules on T2-weighted images in a pregnant woman, decidualized endometrial cysts is highly suspected but close follow-up is necessary to exclude the possibility of malignanct transformation.

Fig.1

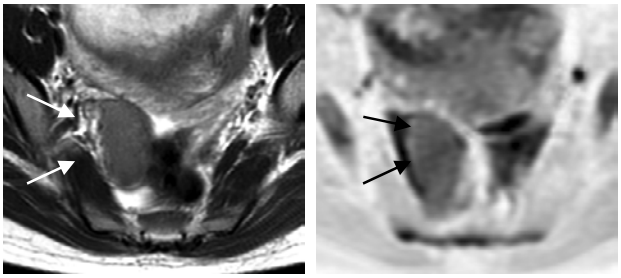

Fig.2

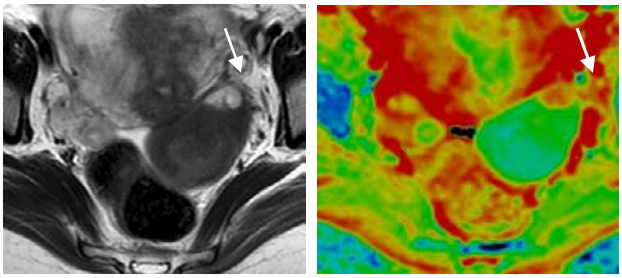

Fig. 1. Prominent hyperintense linear mural structures in the endometrial cyst with the shading sign on T2WI (left). The linear structures show strong intensity on DWI (right).

Fig. 2. Prominent hyperintense polypoid mural nodule in the endometrial cyst with the shading sign on T2WI (left). The nodule shows relatively high ADC value on the ADC map.

Fig.3

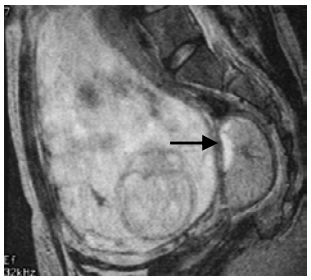

Fig.4

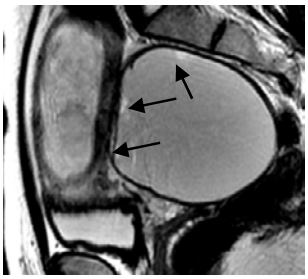

Fig. 3. Prominent hyperintense broad-based mural nodules in the endometrial cyst on T2WI.

Fig. 4. Prominent hyperintense small mural nodules in the endometrial cyst on T2WI.