Case study of a pregnant woman with decidualized ovarian endometriosis whose preoperative findings suggested malignant transformation

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Summary

Background: Because both decidualization and malignant transformation of endometriosis are characterized by mural nodules on the wall of the cyst, the preoperative differential diagnosis is reportedly difficult.

Case: A 31-year-old woman was referred to our hospital at ten weeks of gestation. Sonographic examination revealed an intrauterine gestational sac and ovarian endometrial cyst. At 21 weeks of gestation, characteristic findings associated with malignant transformation of ovarian endometriosis were seen on color-flow Doppler sonography and contrast magnetic resonance imaging. Under the diagnosis of malignant transformation of ovarian endometriosis, right salpingo-oophorectomy was performed at 22 weeks' gestation. However, histopathologic examination revealed ovarian endometriosis with marked decidual changes but no evidence of malignancy.

Conclusion: During pregnancy, intracystic vascularized excrescences of an endometrial cyst indicate not only malignant transformation but also decidualization. Thus, the preoperative differential diagnosis is reportedly difficult. However, the present findings of decidualization on magnetic resonance imaging seemed to be slightly different from those of malignant transformation, and therefore, might help distinguish decidualized endometriosis from malignant transformation preoperatively.

Key words: Decidualization; Malignant transformation; Endometriosis.

Introduction

Malignant transformation of ovarian endometriosis has been well documented, with special attention being given to the structural changes in ovarian endometrial cysts. Especially, intracystic irregular excrescences, which are vascularized on color-flow Doppler sonography and contrast magnetic resonance imaging, have been shown to be associated with malignant transformation of ovarian endometriosis [1, 2]. Furthermore, malignant transformation of ovarian endometriosis during pregnancy has been reported [3-5]. This report describes a pregnant woman with decidualized ovarian endometriosis in whom structural changes suggested malignant transformation.

Case Report

The patient, a 31-year-old primigravida woman, with a history of ovarian endometriosis was referred to our hospital at ten weeks of gestation. Transvaginal sonographic examination showed an intrauterine gestational sac with a single embryo showing normal cardiac activity, corresponding to ten weeks gestation, and a right ovarian tumor. The tumor was a unilocular cyst with fine internal echoes and a maximum diameter of 48 mm. Because the patient had a history of endometriosis, the tumor was believed to represent an endometrial cyst and was treated conservatively.

At 21 weeks of gestation, sonographic examination revealed a fetus appropriate for the gestational age but an increase in the size of the ovarian cyst, which reached a maximum diameter of 75 mm. The internal wall of the cyst was irregular with hyperechogenic papillary excrescences on transvaginal sonography (Figure 1A). Color-flow Doppler sonography demonstrated marked vascularization within the solid irregular excrescences (Figure 1B). The serum level of CA-125 at this time was 28.3 U/ml (normal, < 35.0 U/ml). For further evaluation of possible malignancy, magnetic resonance imaging was performed. High signal intensity on T1- and T2-weighted images was shown in the cystic portion of the tumor, suggesting blood products. The excrescences were dark on T1-weighted images (Figure 2A) and bright on T2-weighted images (Figure 2B). Immediately after intravenous injection of contrast agent (meglumine gadopentetate), fat-suppression images were obtained. In this contrast study, the mural nodules showed enhancement (Figures 2C, D).

Under the diagnosis of malignant transformation of ovarian endometriosis, laparotomy was performed at 22 weeks of gestation. A right ovarian tumor was found with no evidence of irregularity on the external surface of the mass. A right salpingo-oophorectomy was therefore performed. The tumor contained chocolate-like bloody fluid and edematous excrescences were found protruding into the lumen (Figure 3A). Histopathologic examination revealed ovarian endometriosis with marked decidual changes but no evidence of malignancy (Figure 3B). The patient recovered promptly without postsurgical complications and a 3,828 g healthy female infant was delivered at 39 weeks' gestation.

Discussion

Malignant transformation of ovarian endometriosis has been well documented, with clear cell carcinomas thought to be one of the most common histologic types of arising malignancy [6]. It has also been suggested that

Revised manuscript accepted for publication January 5, 2006

Fig.1A

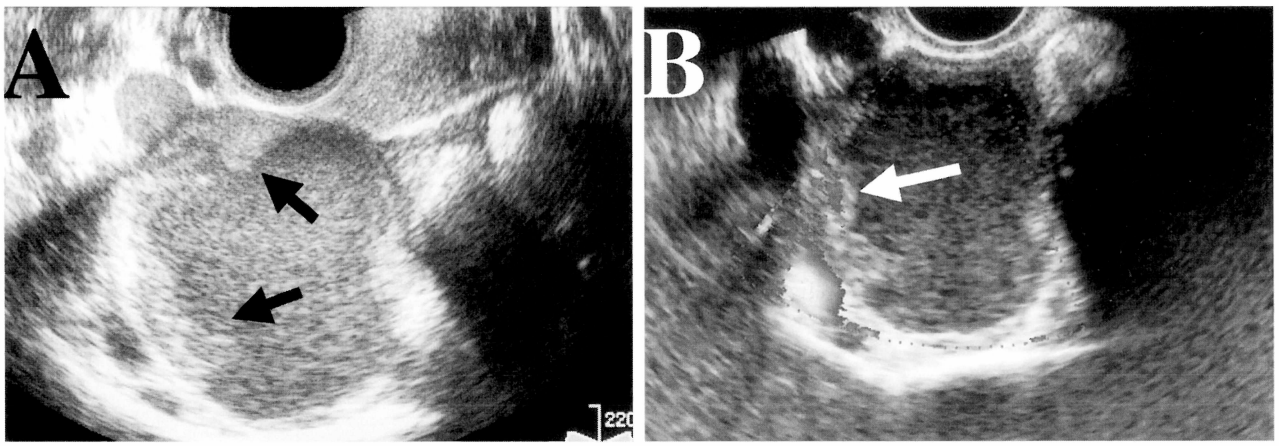


Figure 1. — Sonographic findings at 21 weeks of gestation. **A)** Excrescences can be seen on the internal wall of the endometrial cyst. **B)** Color-flow Doppler image showing rich vascularity within the excrescences.

Fig. 2A

Fig. 2C

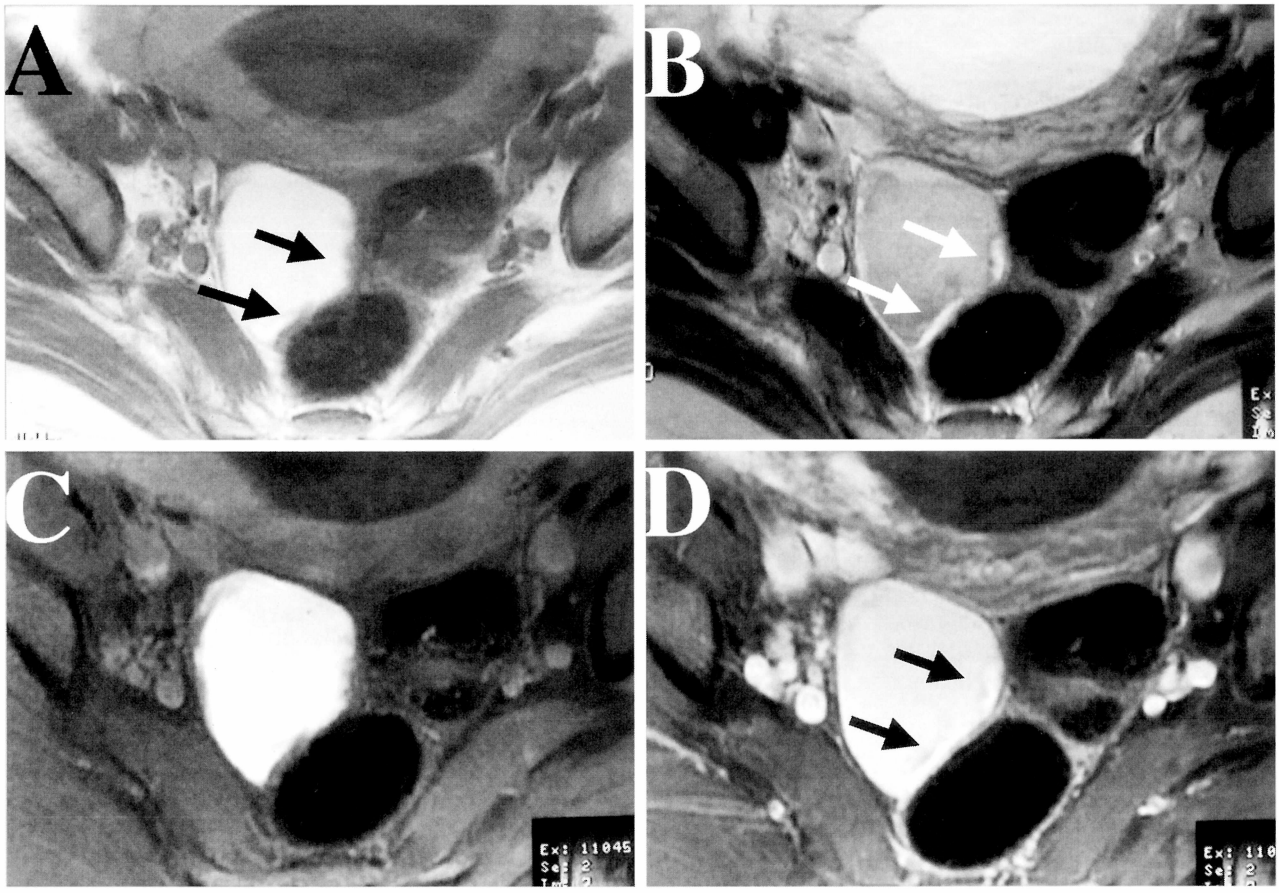
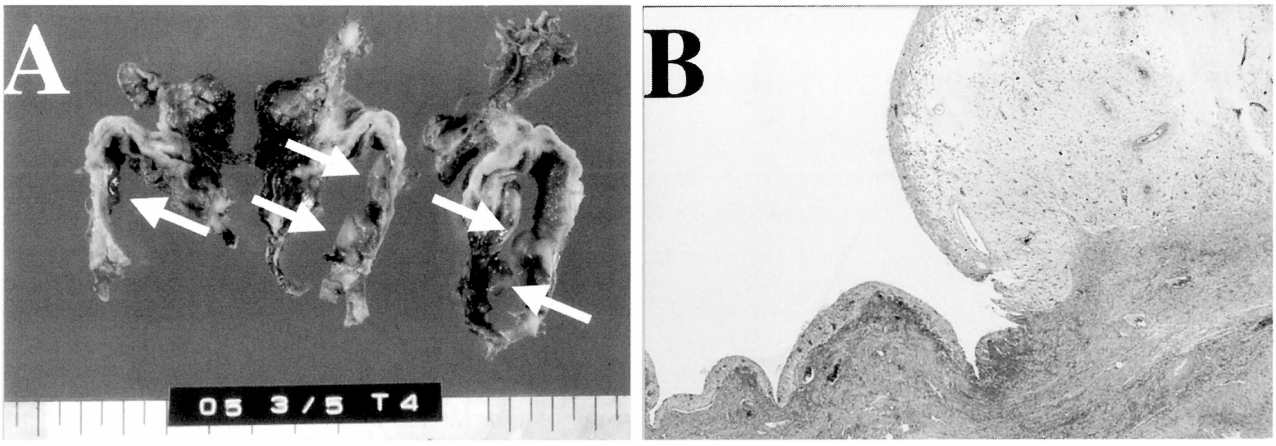


Figure 2. — Magnetic resonance imaging at 21 weeks of gestation. **A)** T1-weighted image: solid excrescences showed low intensity. **B)** T2-weighted image: solid excrescences showed high intensity. **C)** Unenhanced fat-suppression image. **D)** Enhanced fat-suppression image: the mural nodules showed enhancement.

ovarian endometriosis could be considered a precursor of ovarian carcinomas, especially, clear cell carcinomas [7]. Furthermore, malignant transformation of ovarian endometriosis during pregnancy has been reported [3-5], and thus, special attention must be given to any structural changes. The most important feature associated with malignant transformation of ovarian endometriosis is reportedly intracystic irregular excrescences, which are vascularized on color-flow Doppler sonography [1] and contrast magnetic resonance imaging [2].

In the present case, characteristic findings associated with malignant transformation of ovarian endometriosis were seen; however, the result of histopathologic examination revealed decidualized ovarian endometriosis but



3A Fig. 3B

Figure 3. — Gross and microscopic appearance of the cyst. A) Gross picture of the tumor; edematous excrescences are visible. B) Microscopically the excrescences show decidualized ectopic endometrium with no evidence of malignancy.

no evidence of malignancy. Preoperatively, it is reportedly difficult to distinguish decidualized endometriosis from malignant transformation because both are characterized by mural nodules on the endometrial cyst wall [8-10]. However, in our case, the findings of magnetic resonance imaging appeared characteristic. It was previously reported that in ovarian clear cell carcinomas, solid areas show intermediate to slightly high intensity on T1-weighted magnetic resonance images and slightly high intensity on T2 images [11]. However in the present case, the solid portion showed very low intensity on T1-weighted images and very high intensity on T2 images (so-called "water intensity"). This characteristic finding seems to be caused by the edematous excrescences of decidualized endometriosis. Miyakoshi *et al.* noted identical findings [8]. Furthermore, Tanaka *et al.* revealed that mural nodules on the decidualized endometrial cyst wall showed the same intensity as the placenta (hypointensity on T1-weighted images and isointensity with the surrounding hyperintense fluid on T2 images) [12]. In the study by Fruscella *et al.*, on the other hand, MRI failed to provide more precise information in comparison to ultrasound [9], although we do believe this to be the case. We believe that the characteristic magnetic resonance imaging findings revealed here might help preoperatively distinguish decidualized endometriosis from malignant transformation.

Conclusion

Intracystic irregular excrescences, which are vascularized on color-flow Doppler sonography and contrast magnetic resonance imaging, are not always indicative of malignant transformation of ovarian endometriosis during pregnancy. That is, they are also characteristic of decidualization. However, the low and high intensity of the excrescences of decidualized endometriosis on T1 and T2 magnetic resonance imaging seem to be slightly different from those of malignant transformation. To avoid unnecessary operations during pregnancy further analysis of additional cases is required.

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