

Management of Ovarian Tumors in Pregnancy: Description of a Case and Review of the Literature

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Abstract

The routine use of abdominal sonography resulted in an increase of adnexal masses diagnosed concurrently with pregnancy. Although the management of adnexal masses associated with pregnancy differs, the two most common options might be laparotomic exploration of the mass or expectant management. Surgical exploration may be performed by laparoscopic or laparotomic approach depending upon the clinical findings. The presence of ovarian malignancy should always be kept in mind while diagnosis is made. We report a 30-year-old pregnant women with right adnexal mass diagnosed at the 15th gestational week. Abdominal sonography revealed a solid 95 x 70 x 91 mm ovarian mass which was later diagnosed as teratoma by histopathological examination.

Keywords: pregnancy, adnexal mass, sonography, laparoscopy

Gebelikte Over Tümörlerinin Yönetimi: Olgu Sunumu ve Literatür Derlemesi

Özet

Abdominal sonografinin rutin kullanımı ile gebelikte eşzamanlı adneksiyal kitle tanısında artış ortaya çıkmıştır. Gebelik ile birlikte görülen adneksiyal kitlelere yaklaşım değişiklik gösterse de en sık kullanılan iki yöntem laparotomik eksplorasyon ya da tedavisiz izlemdir. Klinik bulgulara göre cerrahi yaklaşım laparoskopik ya da laparotomik yolla yapılabilmektedir. Karar verme sürecinde overe ait malignite olabileceği her zaman akılda tutulmalıdır. Bu çalışmada 15. gestasyonel haftada sağ adneksiyal kitle saptanan bir olgu sunulmuştur. Abdominal sonografik incelemede 95 x 70 x 91 mm solid overyen kitle, laparotomik eksplorasyonda teratom tanısı almıştır.

Anahtar sözcükler: gebelik, adneksiyal kitle, laparoskopi

Introduction

By the routine use of abdominal sonography in screening of pregnant women, the identification of asymptomatic adnexal masses became a more common problem. When an ovarian mass was discovered in a pregnant woman, the decision whether to perform surgical exploration or expectant management is the important decision. Abdominal sonography discriminates between types of adnexal masses. The interpretation of sonographic findings may well avoid unnecessary surgery during pregnancy. Gestational age should also be considered. Although exploratory laparotomy has been the standard procedure, for operative laparoscopy may be a feasible surgical alternative for pregnant patients in terms of safety.

The prevalence of pelvic masses during pregnancy was reported as 1% depending upon the definition of a pelvic

mass (1). Thorton et al (2) reported 50% of all adnexal masses detected in pregnancy are less than 5 cm in diameter, 25% measure between 5-10 cm and 25% are more than 10 cm. Fifty per cent of simple cysts larger than 5 cm resolve without any therapy (2). The adnexal masses larger than 5 cm in diameter are surgically extirpated during the second trimester in order to rule out malignancy and prevent any complications (3,4).

The pelvic masses that should be considered in differential diagnosis in pregnancy are summarized in Table 1. The majority of pelvic masses identified during pregnancy have gynecologic origin. Leiomyoma is the most common uterine mass identified during pregnancy and clearly diagnosed by abdominal sonography. Corpus luteum cyst is the most common pregnancy-related adnexal mass and usually does not persist beyond 16th gestational week (5). The most frequent ovarian neoplasms that are identified during pregnancy are benign cystic teratomas and cystadenomas. It is important to point out that functional cysts were not detected by surgical procedures after 18 weeks' gestation (6). Table 2 summarizes the histopathologic diagnoses of a large series (7).

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Table 1. The pathology findings of adnexal masses in pregnancy (4)

Gynecologic origin	
Ovary:	Corpus luteum cysts Benign neoplasms Malignant neoplasms
Fallopian tube:	Ectopic pregnancy Hydrosalpinx Tubo-ovarian abscess
Uterus:	Uterine anomalies Leiomyoma
Non-gynecologic origin	
Neoplasm:	Lymphoma Mesothelial tumors Metastatic disease Retroperitoneal tumor
Cyst:	Urachal Mesenteric or peritoneal cyst
Normal structure:	Bladder Bowel Pelvic kidney
Other:	Hematoma Abdominal pregnancy

Case

A 30-year-old pregnant woman was admitted to our clinic at the 15th gestational week with identification of asymptomatic right adnexial mass during abdominal sonography. The past

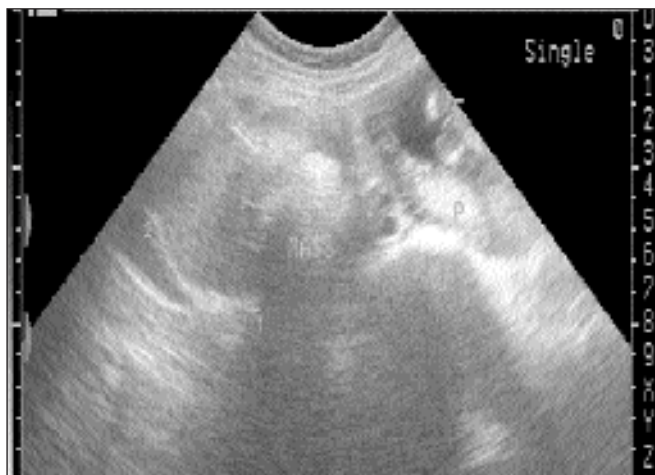


Figure 1. Abdominal sonographic appearance of teratoma (P: placenta, F: fetus).

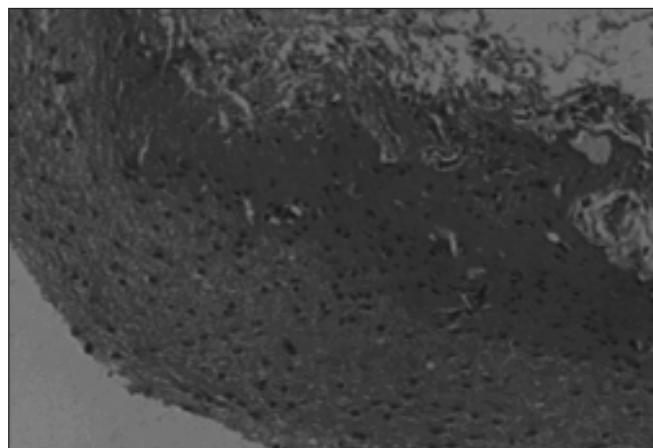


Figure 2. The appearance of neuroectodermal tissue in teratoma (x 10, H&E).

medical history was unremarkable except a surgical abortion and a thyroid operation. The tumor markers were as follows: CA-125 30.2 (normal 3.6-54.6), CA-19.9 534.6 (normal 0-114), CEA 0.56 (normal 0-10) and Alpha-fetoprotein 8.4 (normal 1-7). Abdominal sonographic examination showed a solid 95 x 70 x 91 mm ovarian mass (Figure 1). Obstetric sonography revealed alive, single fetus of 15-16 weeks. Exploratory laparotomy was performed at the 15th gestational week and a right adnexal solid mass was extirpated. Histopathological examination of the mass revealed cystic teratoma (Figure 1 and 2). No postoperative complication was observed.

Discussion

The risk ovarian malignancy is between 1:5000 and 1:10 000 and an adnexal mass identified in pregnancy that persists beyond the first trimester will be malignant in 2% to 5% of cases (5). Dgani et al (8) reported 23 patients with malignant primary ovarian tumors diagnosed during pregnancy. They found that most of the epithelial tumors diagnosed in pregnancy are of low-grade and 74% of patients have stage I disease at the time of diagnosis. The management of patients with malignant tumors discovered during her pregnancy depends on the type of the tumor, the tumor stage and the term of the pregnancy. In most of the cases, conservative management of the pregnancy could be offered without affecting neither the optimal approach for the treatment of the tumor nor the survival of the patient. This management should be planned in a multidisciplinary staff with oncologists, neonatologists, obstetricians and also the point of view of the patient should be considered.

Pregnant women with adnexal mass present in many different ways. Patients may present with acute abdomen symptoms due to torsion, rupture or hemorrhage of the pelvic mass, especially between the 6th and 14th weeks of gestation or the adnexal mass may be discovered at the time of cesarean section (9-11). Zanetta et al (10) performed a prospective study on pregnancies complicated by adnexal masses. All ovarian cysts with a diameter exceeding 3 cm (n=82) were prospectively recorded and followed. Forty-two cysts

Table 2. Adnexal mass pathology in pregnancy (n=60) (7)

Histologic diagnosis	%	Calculated mean cyst size (cm)
Mature cystic teratoma (n=30)	50	6.2 ± 2.1 (3-11)
Cystadenoma (n=12)	20	11 ± 3.9 (4-13)
Functional (n=8)	13	7.4 ± 3 (4-13)
Cancer (n=8)	13	11.5 ± 3.9 (6-17)
Fibroma (n=1)	2	3
Paratubal (n=1)	2	7

resolved in pregnancy without treatment. As sonography defines the characteristics of ovarian cysts in pregnancy, expectant management is successful in the majority of cases. Duic et al (11) determined maternal and fetal outcome in eight patients undergoing surgery for a pelvic mass in pregnancy. Six patients underwent laparotomy in the first and/or the second trimester of pregnancy. In two of them emergency laparotomies were done due to torsion or hemorrhage as a complication of the adnexal masses. In all patients benign ovarian tumors were found. Two patients underwent transvaginal aspiration of simplex cysts due to subtorsion in the first trimester of gestation.

Abdominal sonography is the best procedure for evaluating a pelvic mass in pregnancy. Sonography both provides valuable diagnostic information and it is safe for the fetus. Sonographic appearance of the pelvic mass gives clues regarding the specific diagnosis (Table 3). Pelvic masses with typical appearance are simple cysts, endometriomas and dermoid cysts (12-13). The use of Doppler flow studies may improve the diagnostic accuracy of sonography. Low impedance was associated with malignant ovarian masses detected during pregnancy. However, there is considerable overlap in blood flow patterns that may cause incorrect assignment of malignant potential to some benign lesions (14). Magnetic resonance imaging does not involve ionizing radiation, provides good tissue contrast and permits visualization of lateral and posterior areas of pelvis. Magnetic resonance imaging aids in the differential diagnosis of adnexal masses in pregnancy and permits expectant management (15,16).

The measurement of CA-125 level provides limited information and CA-125 was identified in high concentrations in the amniotic fluid and amnion cells. Serum levels of CA-125 increase by the 10th week of gestation, then decrease and remain low until delivery (17).

The management of adnexal mass in a pregnant patient is controversial and should be individualized. If there is

evidence of an acute abdomen, surgery should be performed regardless of gestational age. An asymptomatic pelvic mass should be followed by sonography into the second trimester. Pelvic mass larger than 5 cm that persists into the second trimester should be explored at 16 to 20 weeks of gestation (17). The major complications of surgery in pregnancy are fetal loss, preterm labor, and infection. Although estimates of fetal loss rates vary, the risk is not significantly higher than the overall risk of spontaneous loss. If a pelvic mass is identified after 20 weeks, the treatment should be individualized.

Even though cystic teratomas have a characteristic sonographic appearance as in our case, definitive diagnosis requires surgical exploration. The risk of missing a malignant adnexal mass exists in all patients. The definitive diagnosis could only be made after histopathological examination.

Midline vertical incision is recommended for the exploratory laparotomy at the second trimester (4). The role of perioperative tocolytics is unclear in the second trimester. A preoperative dose of a broad-spectrum antibiotic is recommended because postoperative fever and wound infection occur in more than 50% of pregnant women (18). Fetal viability should be documented before and after the laparotomy. The patient should be in the left lateral decubitus position and hemodynamic stability should be maintained during the operation.

Operative laparoscopy may endanger the fetus and the enlarged uterus may endanger visualization. Currently, laparoscopy is used during the first trimester of pregnancy. Laparoscopy performed during the first trimester of pregnancy does not increase the risk of fetal loss, the risk of fetal anomalies (with the use of non-teratogenic anesthetic drugs) and the maternal mortality and morbidity. Although the second and third trimesters of pregnancy have been considered a contraindication for laparoscopic surgery, case series have been reported for second and third trimesters (19, 20). Moore et al (19) reported 14 cases of adnexal masses in the second

Table 3. Sonographic characteristic of pelvic mass and risk of malignancy (12)

Low risk of malignancy	Cystic, unilocular, size < 5 cm
Intermediate risk of malignancy	Cystic, multilocular, complex, thin septations
High risk of malignancy	Solid, nodules present, thick septations, size > 5 cm



trimester of pregnancy that were managed with laparoscopic surgery. Fourteen patients had laparoscopic removal of adnexal masses in their second trimester of pregnancy. Mathevet et al (20) performed laparoscopic surgery during the first trimester of pregnancy in 17 cases, the second trimester in 27 cases and the third trimester in four cases.

In conclusion, adnexal masses during pregnancy should be evaluated and managed according to the presence of clinical findings and the nature of the pelvic mass.

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