

Adnexal masses in pregnancy: a review of eight cases undergoing surgical management

Ž. Duić, V. Kukura, S. Ciglar, M. Podobnik, M. Podgajski

Department of Obstetrics and Gynaecology, University Hospital "Mercur", Zagreb (Croatia)

Summary

Objective: Our purpose was to determine maternal and foetal outcome in patients undergoing surgery for a pelvic mass in pregnancy.

Study design: Maternal and foetal records (outcomes) of eight cases of adnexal masses associated with intrauterine pregnancy that required laparotomy or aspiration or that were diagnosed incidentally at the time of caesarean section were reviewed. The review was performed on patients who were seen with an adnexal mass in pregnancy from January 1994 to February 2001. We included patients with simple or complex masses ≥ 6 cm that were persistent on ultrasonographic evaluation and patients with adnexal masses with complications (torsion, haemorrhage). We excluded cysts that spontaneously resolved by 16 weeks' gestation.

Results: Eight patients of 16,472 deliveries were identified with adnexal masses that satisfied the above criteria. Six patients underwent laparotomy in the first and/or the second trimester of pregnancy. In two of them emergency laparotomy were done due to torsion or haemorrhage 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 (negative results on cytological study). All of these eight patients had term deliveries. Two patients, due to obstetrical reasons, underwent caesarean section.

Conclusion: The incidence of an adnexal mass during pregnancy in our population is consistent with what has been reported in the literature. We emphasize that transvaginal aspiration and drainage of symptomatic simplex cysts in the first trimester and percutaneous cysts in the second trimester can avert laparotomy. Our data support a randomised clinical study to determine optimal management of an adnexal mass in pregnancy.

Key words: Adnexal mass; Human; Pregnancy complication; Female; Surgical procedure; Retrospective studies.

Introduction

Ovarian tumors are relatively uncommon complications of pregnancy. The reported incidence of adnexal masses during pregnancy ranges from 1 in 81 to 1 in 1,000 pregnancies [1, 2]. The incidence of ovarian cancer in pregnancy is from 1 in 8,000 to 1 in 20,000 deliveries [3].

Materials and Methods

This retrospective study was conducted at the Clinical Hospital "Mercur", Clinic of Obstetrics and Gynaecology. All medical records-inpatients records, operative reports, pathology records and delivery room records were reviewed for seven consecutive years from January 1994 to February 2001. Data collected included age, gravidity, parity, gestational age (at diagnosis, disposition, delivery), pregnancy outcome, operative procedure, and maternal, foetal, or neonatal complications occurring at the time of laparotomy during pregnancy, labor and delivery, or the puerperium. Pregnant patients with an adnexal mass that resolved spontaneously during the course of pregnancy and did not require surgical removal were excluded from the review. Adnexal masses found simultaneously with ectopic pregnancy were also excluded. During the time period of our study, 16,472 live births occurred. Eight patients satisfied the above (criteria) requirements. The incidence of adnexal masses was 1 in 2,059 live births in pregnant women who required surgical management. The mean age of all patients was 27 years (range, 21-30). The mean gravidity was 1.875 (range, 1-3); the

mean parity was 0.62 (range, 0-2). Two patients were lost to follow-up, one after laparotomy and one after transvaginal aspiration and drainage of symptomatic cysts. All neonatal weights were appropriate for gestational age and there were no congenital anomalies in the series. Six patients were delivered at term. Laparotomy was performed in six patients. Four patients underwent elective laparotomy while emergency laparotomy was performed in two patients in the first trimester due to adnexal torsion or haemorrhage. Laparotomy was performed during the first trimester (0-11 weeks' gestation) in two patients, during the early second trimester (12 to 20 weeks' gestation) in two, during the late second trimester (21 to 30 weeks' gestation) in one, and during the third trimester (>31 weeks' gestation) in one.

Aspiration and drainage of unilocular anechogenic cysts with signs of subtorsion in the first and in the early second trimester of gestation were performed in two patients. The diameter of the cysts was 6 cm. In the first one we aspirated 100 ml and in second 70 ml of fluid. Cytological examination of aspirated fluid was negative for evidence of malignancy. Pains and other signs of subtorsion were resolved. In the first one, due to obstetrical reasons at term, caesarean section was performed and a paraovarian cyst was found on the left side with intact and normal ovaries. At the same time cystectomy of the paraovarian cyst was done; histology of the cyst was cystadenofibroma of the ovary. Three of the women had bilateral adnexal masses. One had a mucinous cystadenoma on both ovaries; two had bilateral benign teratomas. The other three women had unilateral adnexal masses and the histological diagnoses were: simplex cysts, serous cystadenoma and teratoma in the same ovary, and mucinous cystadenoma. All eight adnexal masses were detected by ultrasound examination in the first trimester of gestation. The average diameter of the adnexal masses was 9.5 cm (range 5 to 19 cm). Surgical procedures performed in our eight patients

Revised manuscript accepted for publication September 10, 2001

were: unilateral salpingo-oophorectomy + ovarian cystectomy; oophorectomy; unilateral salpingo-oophorectomy + ovarian cystectomy; unilateral salpingo-oophorectomy; ovarian cystectomy; unilateral salpingo-oophorectomy; unilateral salpingo-oophorectomy + cystectomy; cyst aspiration. We did not note intraoperative or postoperative complications in either mother or foetus/neonate. Two patients, due to obstetrical reasons, underwent caesarean section at term.

Discussion

Most cysts in pregnant patients are follicular or corpus luteum cysts and are usually no more than 3-5 cm in diameter. More than 90% of these functional cysts will disappear as pregnancy progresses and are undetectable by the 14th week of gestation. Patients operated on about the 18th week of gestation had negligible foetal wastage associated with exploration. Therefore 18 weeks' gestation appears to be a judicious period for laparotomy [3]. Patients undergoing laparotomy before 23 weeks had significantly fewer adverse pregnancy outcomes than those undergoing laparotomy after 23 weeks [4]. Ultrasonography is a primary screening modality for obstetric imaging. When additional information is needed to care for pregnant patients, computed tomography (CT) and magnetic resonance imaging (MRI) can be used. Traditionally, pelvic MRI has been used during pregnancy to evaluate maternal anatomy and abnormalities such as adnexal masses which required further characterisation beyond that available with ultrasound [5]. A combined approach (morphologic assessment, Doppler parameters, tumour color score, vessel location and diastolic notch) in the evaluation and assessment of malignancy of ovarian masses by transvaginal sonography is the best [6]. In our series we did not have malignant tumors, thus color Doppler imaging was performed in all cases. Pulsatility index was >1 in all cases. Whitecar *et al.* gave a summary of published series of adnexal masses in pregnancy, and the total incidence of malignant tumors was 2.8% [4]. The management of ovarian tumors in pregnancy is crucial because of the various complications that may develop, such as pelvic impaction, obstructed labor, torsion of the ovarian pedicle, haemorrhage into the tumor, rupture of the cyst, infection and malignancy [3]. Hess *et al.* recommended elective removal of any mass ≥ 6 cm in diameter that persists until 16 weeks' gestation regardless of its sonographic appearance unless the mass is suspected of being a uterine leiomyoma; then also sonographic evaluation of maternal kidneys is recommended if a pelvic kidney or renal cyst is suspected [7]. Preoperative ultrasonography was not helpful in differentiating tumors of low malignant potential from benign neoplasms [4]. On the contrary, Thorton and Wells suggested that ultrasonographic evaluation of adnexal masses in gravid women might allow distinction between malignant and benign lesions. However, they had three of 14 patients with unilocular cysts (with benign sonographic pattern, two of which were <10 cm in diameter) had ovarian tumors of borderline malignancy [8]. Platek *et al.* reported the use of ultrasonographically guided percutaneous or transvaginal drainage in five patients to reduce the incidence of

potential complications of the adnexal mass or pregnancy. However ultrasonographically guided cyst drainage does carry some risk of infection, haemorrhage, and other complications such as preterm labor or pelvic abscess, and the patient needs to be alerted to these possibilities. Nonetheless, judicious use of ultrasonographically guided cyst drainage in selected patients with early symptoms or suspected pelvic obstruction may reduce the need for surgical intervention during the pregnancy and postpartum period [9]. In two of our patients transvaginal ultrasonographically guided drainage was performed due to subtorsion unilocular cysts. After the procedure patients were relieved of symptoms and pregnancy reached term with the birth of healthy babies. However, not all patients may benefit from this procedure, thus it should be used on an individual case basis rather than for routine management [9]. Torsion is usually preceded by symptoms; however, there may be patients who have torsion without this prodrome and may then require emergency surgery [9].

Conclusion

The incidence of an adnexal mass during pregnancy in our population is consistent with what has been reported in the literature. We emphasize that transvaginal aspiration and drainage of simplex cysts in the first trimester and percutaneous cysts in the second trimester can circumvent laparotomy.

References

- [1] Grimes W. H., Bartholomew R. A., Colvin E. D., Fish J. S., Lester W. M.: "Ovarian cyst complicating pregnancy". *Am. J. Obstet. Gynecol.*, 1954, 68, 594.
- [2] Hilgers R. D.: "Adnexal mass and ovarian cancer in pregnancy". In: Gleicher N., Buttino L. Jr, Elkayam U., Evans M. I., Galbraith R. M., Gall S. A., Sibai B. M. (eds.): "Principles and Practice of Medical Therapy in Pregnancy". Stanford, Connecticut, Appleton and Lange, 1998, 1322.
- [3] DiSaia P. J., Creasman W. T.: "Cancer in pregnancy". In: DiSaia P. J., Creasman W. T. (eds.): "Clinical Gynaecologic Oncology". St. Louis, Missouri, Mosby, 1997, 444.
- [4] Whitecar P., Turner S., Higby K.: "Adnexal masses in pregnancy: A review of 130 cases undergoing surgical management". *Am. J. Obstet. Gynecol.*, 1999, 81, 19.
- [5] Levine D.: "The role of computed tomography and magnetic resonance imaging in obstetrics". In: Callen P. W., (ed.): "Ultrasonography in Obstetrics and Gynecology". Philadelphia, Pennsylvania, W.B. Saunders, 2000, 725.
- [6] Dill-Mackay M. J., Atri M.: "Ovarian sonography. Ultrasonography in Obstetrics and Gynecology". Philadelphia, Pennsylvania, W. B. Saunders, 2000, 857.
- [7] Hess L. W., Peaceman A., O'Brien W. F., Winkel C. A., Cruikshank D. P., Morrison J. P.: "Adnexal mass occurring with intrauterine pregnancy: report of fifty-four patients requiring laparotomy for definitive management". *Am. J. Obstet. Gynecol.*, 1988, 158, 1029.
- [8] Thorton J. G., Wells M.: "Ovarian cysts in pregnancy: does ultrasound make traditional management inappropriate?". *Obstet. Gynecol.*, 1987, 69, 717.
- [9] Platek D. N., Henderson C. E., Goldberg G. L.: "The management of persistent adnexal mass in pregnancy". *Am. J. Obstet. Gynecol.*, 1995, 173, 1236.

Address reprint requests to:
 Ž. DUIĆ, M.D.
 University Hospital "Mercur"
 Dep. of Obstetrics and Gynaecology
 Ivana Zajca 19
 Zagreb 10000 (Croatia)