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Management of adnexal masses during the third trimester of pregnancy: a case report in twin-pregnancy and review of the literature

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ABSTRACT

The occurrence of ovarian masses during pregnancy is uncommon, nevertheless the correct diagnosis and management, either surgical or obstetric, may represent an issue. The clinical management has to take into consideration aspects both related to the mass (symptoms of torsion, rupture or occlusion and malignant potential) and to the foetal risks.

A 36-year-old woman with a twin pregnancy at 29 weeks of gestation was diagnosed with an ovarian cyst with suspicious ultrasonographic features (diameter of 15 cm and enhanced blood flow). An expectant management until a safer gestational age for the twins was established. At 32 weeks of gestation symptoms of bowel obstruction and abdominal pain required a caesarean section and the removal of the affected adnexum. The histological analysis revealed a mucinous borderline tumour with intraepithelial carcinoma.

When an adnexal mass is diagnosed during third trimester of pregnancy the ultrasonographic evaluation has to be done to assess the potential of malignancy. The clinical management needs a multidisciplinary approach has to be balanced between the risk of malignancy or other issues related to the mass and the foetal health.

Keywords: Adnexal mass; borderline tumour; mucinous tumour; twin-pregnancy; ovarian markers; CA 19.9

INTRODUCTION

According to literature the incidence of adnexal masses in pregnancy ranges from 1 in 25 to 1 in 8000⁽¹⁾. The widespread use of ultrasonography since the first trimester makes the detection of

SOMMARIO

Il riscontro di una neoformazione ovarica in gravidanza è un evento raro. La diagnosi e la gestione clinica possono presentare diverse criticità. È necessario considerare il potenziale di malignità e la presenza di complicanze (torsione ovarica, rottura della massa e dolore addominale), oltre che i rischi fetali.

Una paziente di 36 anni, con gravidanza gemellare, ha avuto diagnosi di massa ovarica sospetta a 29 settimane gestazionali. L'ecografia mostrava una neoformazione di circa 15 cm, multicistica, con porzioni solide e aumentata vascolarizzazione. Abbiamo scelto una condotta di attesa per le problematiche fetali di prematurità, ma a 32 settimane gestazionali l'insorgenza di una sintomatologia suggestiva per occlusione intestinale ha portato al taglio cesareo e contestualmente ad annessiectomia monolaterale con stadiazione della patologia ovarica. L'esame istologico definitivo era tumore mucinoso borderline con carcinoma intraepiteliale.

In caso di riscontro di una massa ovarica nel terzo trimestre la valutazione, attraverso l'ecografia, del potenziale di malignità guida la condotta clinica rispetto alla scelta di una terapia chirurgica e al timing del parto. La gestione del caso deve essere multidisciplinare e tenere in considerazione sia i rischi associati ad un ritardo di diagnosi istologica e terapia chirurgica, sia i rischi fetali.

asymptomatic lesions possible and more frequent every day^(2,3). During pregnancy most ovarian tumours reduce or disappear spontaneously and they don't need surgical management⁽⁴⁾.

Although malignant adnexal cysts are extremely rare (ranging from 1 in 10'000 to 1 in 50'000) the possibility of a borderline tumour has to be considered⁽⁵⁾. Malignancy is not the only

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risk of adnexal masses in pregnancy: the risk of rupture, torsion or bowel occlusion are increased during the whole gestation and so is the risk of dystocia during labour^(5,6,7).

Nevertheless the management of adnexal masses can be difficult as both the surgical removal of the mass and an expectant management present risks for the mother and the foetus^(5,6).

CASE PRESENTATION

A 36 year-old twin pregnant woman on the 29th week of gestation presented to the Emergency Room in January 2015 complaining diffuse abdominal pain. She had a previous caesarean section because of a foetal malpresentation. This pregnancy was a spontaneous bichorial-biamniotic twin pregnancy with regular evolution for both twins and no signs of obstetrics pathologies.

No uterine contractions or tenderness were noted and the cervix was regular at vaginal examination and at ultrasound screen. An obstetric ultrasonography showed that both foetuses heart rates were regular and checked the foetal position: cephalic for the first twin and breech for the second one.

While hospitalized the patient started to have irregular uterine contractions; then a tocolytic therapy and antenatal corticosteroids for foetal lung maturation were performed.

An ultrasonography detected the presence of left ovarian cyst, with multilocular lesions of 14 x 15 x 13 cm with liquid and solid portions, with regular boundaries and a vascular flow perfusing the solid areas (color score 3/4).

Ovarian markers were dosed finding CA 19,9 increased (462,5 IU/ml). Normal values were observed for CA125.

Considering the gestational age, the common issues related to a twin pregnancy and the mass size (which made it not possible to be removed preserving the pregnancy), an observation period, until the 34th week of gestation was established by a multidisciplinary team foreseeing a magnetic resonance imaging (MRI) and an elective caesarean section and surgical management of the mass.

After few weeks an exacerbation of abdominal pain together with other gastro-enteric symptoms such as nausea, anorexia and difficult digestion led to the decision to anticipate the caesarean section which was performed at 32 weeks of gestation, before MRI execution.

The caesarean section was carried out through a midline incision. A sample of peritoneal fluid was collected for cytology before the twins

extraction. First twin was in cephalic presentation, the second twin was in breech presentation. The newborns were both males weighting 1850 grams and 1990 grams and with an Apgar score of 9 and 10 respectively. After closing the uterine incision and the visceral peritoneum the ovarian mass was then considered.

The mass showed solid and cystic portions. It was located between the diaphragm on the top, the small bowel medially and the uterus and pelvic cavity inferiorly. After the removal of few adhesions between the small bowel and the mass, the vascular ovarian pedicle was then isolated, clamped and ligated with double safety vessel ligation because of its size. The mass was then removed without compromising its integrity and sent to the pathology for a frozen section analysis which came back to be a mucinous borderline tumour, weighing 2095 grams. Omentectomy, appendectomy and several peritoneal biopsies were then performed. The right ovary appeared regular.

The operation course and puerperium were regular.

The definitive histological exam reported mucinous borderline tumour intestinal type with intraepithelial carcinoma (1A1 F.I.G.O. 2013). Free peritoneal fluid, appendix, peritoneum and omentum were free from neoplastic cells.

A 4 months follow-up was established considering patient's young age and the clinical benign course of this kind of lesion. Twins were discharged in few weeks healthly.

DISCUSSION

In this case the adnexal mass was diagnosed in the third trimester of a twin pregnancy, with suspicious features and symptoms (abdominal pain and increasing preterm uterine contractions). Even if a surgical management to confirm the tumour histology was the best patient's option, the a conservative surgical treatment without stopping the pregnancy was not possible, because of the patient's history of previous caesarian section and the size of the mass itself. Even though the adnexal mass had several features of malignancy such as an increased size, solid component and abnormal blood flow, the high risks of neonatal complications deemed an expectant management until a safer gestational age to be the best option for the patient.

CA 125 was negative while CA 19.9 was found highly increased (>400 IU/ml). Even though

there are limited reports regarding the use of CA 19.9 as a diagnostic marker in ovarian mucinous tumours (and even less about its value in screening borderline and malignant tumours from the benign ones)⁽⁶⁾ its positivity, together with the ultrasonographic features, were suggestive of a mucinous mass.

Regarding the definitive histological type the discovery of malignant cells in the tumour's parenchyma is based on cytological evidences and immunohistochemical techniques. This accounts for the underdiagnosis of this type of tumours as they require a more extensive sampling then possible during a frozen section analysis. Mucinous borderline tumours with intraepithelial carcinoma have a benign clinical behaviour and are bilateral only 5% of the times.

We applied a fertility preserving strategy choosing not to remove the other ovary or perform biopsies which could cause adhesions and reduce fertility⁽⁹⁾. Even if the rate or recurrence is higher in this kind of management (10% to 20% versus 5% of radical surgery) the mortality rate is no increased^(10,11).

Considering the low risk of lymph nodes metastasis in this kind of histotype the retroperitoneal staging was omitted⁽¹²⁾.

REVIEW OF THE LITERATURE

Adnexal masses in pregnancy are rare, from 0,15%-0,57% (incidence rate ranging from 1 in 25 to 1 in 8000)⁽¹⁾. The risk of malignancy is even less common, (1 in 10000 to 1 in 50000) especially considering the patients' age⁽³⁾. The risk of borderline ovarian tumour (BOT) is though worth of being considered. BOT represent between 10% and 20% of all ovarian malignancies⁽¹³⁾. The mean age of incidence is 20 years earlier than ovarian invasive carcinomas, with up to 30% of diagnosis in childbearing age (< 40 years)⁽¹⁴⁾. The exact incidence of BOT during pregnancy is unknown; literature reports an incidence up to 8% of adnexal masses⁽¹⁴⁾.

Even if their early diagnosis is increasingly frequent because of the widespread use of ultrasonography from the first trimester, the 19,4% of all ovarian masses are detected in the third trimester or at term of pregnancy and this percentage reaches 36,9% considering the ovarian masses requiring surgery⁽⁵⁾.

When dealing with an adnexal mass in third trimester of pregnancy the malignant potential, the likelihood of spontaneous resolution (depending on the size and the ultrasonographic and radiologic

appearance), the presence of symptoms and the risk of obstructed labour should be considered⁽¹²⁾.

The ultrasonographic diagnosis of malignant ovarian masses during pregnancy has a sensitivity ranging between 68 and 93%⁽⁶⁾, with a certain rate of false positives. It's not known if the specific pregnancy's hormonal environment could contribute to this particular issue. The Doppler examination has a false positive rate of 49% in predicting malignancies, due to the increased pelvic blood flow⁽³⁾.

MRI with gadolinium injection can be performed during from the third trimester of pregnancy. Gadolinium is a pregnancy category C drug. Animal studies have shown an increased risk of skeletal malformations; for this reason it should be avoided during organogenesis. MRI is a second line examination and it should be considered in case of indeterminate adnexal lesion, up to 20% of times. It is useful in evaluating adnexal masses that are too large to be evaluated by ultrasonography^(7,15).

Ca 125 is not useful in the diagnosis of ovarian masses during pregnancy, because the effect of embryonic growth during pregnancy and the peculiar hormonal assessment can cause significant variations in the first and third trimester. CA 19.9 is even less specific during pregnancy, but it is associated with several types of mucinous tumours in the gastrointestinal tract and with primitive ovarian tumours as well (dermoid cyst and mucinous ovarian tumour), playing a potential role in different diagnosis^(16,17).

The 70% of the masses resolve spontaneously⁽⁴⁾. This percentage does not decrease in patients with complex or large cysts (more than 5 cm) and is higher in presence of simple cysts with major diameter less than 5 cm⁽¹⁸⁾.

Adnexal masses are asymptomatic in 65% of cases. Symptoms detected are abdominal pain, occurrence of rupture or bleeding and ovarian torsion^(4,7). The rate of torsion is between 1 and 22% of cases, it is higher in adnexal masses with size between 6 and 8 cm, compared to other size (22% vs 14%), but only 5,9% of ovarian torsions appears in third trimester⁽¹⁹⁾. The cyst rupture or bleeding seems to be less frequent, ranging from 1 to 9%, without difference during the whole pregnancy⁽²⁰⁾.

There is not a definitive management strategy dealing with the adnexal masses in pregnancy⁽¹⁾. The optimal management foresees a multidisciplinary approach, involving specialist in oncology, in obstetrics and sometime in pediatrics⁽⁵⁾.

In case of an asymptomatic masses with no

features of malignancy in third trimester an expectant management should be offered and surgery should be considered at least 6 weeks after delivery.

Ultrasonographic features of malignancy guide to a surgical management. In case of a complex mass or a large one with major diameter > 8 cm⁽²⁰⁾ or > 10 cm^(19,21) according to different authors, there is an increased risk of malignancy.

If a low malignant potential can be confirmed the tumour can be treated with conservatively adnexectomy, peritoneal cytology and biopsies, without leading to the end of pregnancy when possible. In case of single ovary or bilateral tumour a conservative treatment with cystectomy should be considered^(4,5) to preserve fertility in young patients⁽⁹⁾.

Frozen section analysis should be always performed to achieve the diagnosis. In case of invasive tumour unilateral or bilateral adnexectomy with abdominopelvic exploration should be done in stage IA and IB. If the tumour stage is advanced (stage II-IV) the best options in third trimester is to consider a premature birth to avoid delay in mother's treatment. In earlier

gestational age the neoadjuvant chemotherapy during pregnancy should be taken in consideration by a multidisciplinary group and according to the patient's will⁽⁸⁾.

The surgical approach (laparoscopic or laparotomic) should be established considering the gestational age, the patient's history of previous surgery, the likelihood of pelvic adhesions and the mass^(22,23). Laparoscopy is as safe as laparotomy up to 32 weeks of gestation⁽²⁴⁾ and should be preferred when possible because it seems to cause less preterm uterin contractions, even if there is not an evidence of difference in preterm delivery rate and intrauterine foetal demise⁽²⁵⁾. The increased risk of emergency surgery versus elective surgery is not confirmed^(6,25).

List of abbreviations

BOT: borderline ovarian tumour.

MRI magnetic risonance imaging

COMPETING INTERESTS

All authors declare no conflict of interests.

REFERENCES

- 1) Mukhopaddhyay A, Shunde A, Naik R. **Ovarian cyst and cancer in pregnancy.** Best Pract Res Clin Obstet Gynaecol 2016. pp 58-72
- 2) Hoover K, Jenkins TR. **Evaluation and management of adnexal mass in pregnancy.** Am J Obstet Gynecol. 2011. pp 97-102
- 3) Xie M, Zhang X, Wang W, Hua K. **Benign pelvic masses masquerading as adnexal cancer during pregnancy on ultrasound: A retrospective study of 5 years.** Mol Clin Oncol 2015. pp 1395-1397
- 4) Aggarwal P, Kehoe S. **Ovarian tumours in pregnancy: a literature review.** Eur J Obstet Gynecol Reprod Biol. 2011. pp 119-24
- 5) Marret H, Lhomme C, Lecuru F, Canis M, Leveque J, Golfier F et al. **Guidelines for the management of ovarian cancer during pregnancy.** Eur J Obstet Gynecol Reprod Biol. 2010 pp 18-21
- 6) Whitecar MP, Turner S, Higby MK. **Adnexal masses in pregnancy: A review of 130 cases undergoing surgical management.** Am J Obstet Gynecol. 1999. pp 19-24
- 7) Navqui M, Kaima A. **Adnexal masses in pregnancy.** Clin Obstet Gynaecol 2015. pp 93-101
- 8) Kyung MS, Choi JS, Hong SH et al. **Elevated CA 19-9 levels in mature cystic teratoma of the ovary.** Int J Biol Markers. 2009. pp 52-6
- 9) Tomao F, Peccatori F, del Pup L, Franchi D, Zanagnolo V, Panici PG, Colombo N. **Special issues in fertility preservation for gynaecologic malignancies.** Crit Rev Oncol Hematol. 2016. pp 206-219
- 10) du Bois A, Trillish F, Mahner S, Heitz F, Harter P. **Management of borderline ovarian tumors.** Ann Oncol. 2016
- 11) du Bois A, Ewald-Riegler N, de Gregorio N. et al. **Borderline tumours of the ovary: a cohort study of the Arbeitsgemeinschaft Gynäkologische Onkologie (AGO) Study Group.** Eur J Cancer 2013. pp 1905-1914
- 12) Powless CA, Aletti GD, Bakkum-Gamez JN, Cliby WA. **Risk factors for lymph node metastasis in apparent early-stage epithelial ovarian cancer: implications for surgical staging.** Gynaecol Oncol. 2011. pp 536-540
- 13) Tropé CG, Kaern J, Davidson B. **Borderline ovarian tumours.** Best Pract Res Clin Obstet Gynaecol. 2012. pp 325-36
- 14) Fauvet R, Brzakowski M, Morice P, Resch B, Marret H, Graesslin O et al. **Borderline ovarian tumors diagnosed during pregnancy exhibit a high incidence of aggressive features: results of a French multicenter study.** Ann Oncol. 2012. Pp 1481-7
- 15) Yacobozzi M, Nguyen D, Rakita D. **Adnexal masses in pregnancy.** Semin Ultrasound CT MR. 2012. pp 55-64
- 16) Cho H, Kyung M.S. **Serum CA19-9 as a Predictor of Malignancy in Primary Ovarian Mucinous Tumors: A Matched Case-Control Study.** Med Sci Monit. 2014. pp 1334-9
- 17) Ercan S, Kaymaz O, Yucel N. **Serum concentrations of CA 125, CA 15-3, CA 19-9 and CEA in normal pregnancy: a longitudinal study.** Arch Gynecol Obstet. 2012. pp 579-84
- 18) Bernhard LM, Klebba PK, Gray DL. **Predictors of persistence of adnexal masses in pregnancy.** Obstet Gynecol. 1999. pp 585-9
- 19) Yen CF, Lin SL, Murk W. . **Risk analysis of torsion and malignancy for the adnexal masses during pregnancy.** Fertil Steril. 2009. pp 1895-902
- 20) Bignardi T, Condous G. **The management of ovarian pathology in pregnancy.** Best Pract Res Clin Obstet Gynaecol. 2009. pp 539-48
- 21) Horowitz NS. **Management of adnexal masses in pregnancy.** Clin Obstet and Gynaecol. 2011. pp 519-527
- 22) Mathevet P, Nessah K, Mellier G. **Laparoscopic management of adnexal masses in pregnancy: a case series.** Eur J Obstet Gynecol Reprod Biol. 2003. pp 217-22
- 23) ACOG Committee on Obstetric Practice. **ACOG committee opinion No 474: non obstetrics surgery during pregnancy.** Obstet Gynaecol 2011. 420-421
- 24) Weiner E, Mizrachi Y, Keidan R.. **Laparoscopic surgery performed in advanced pregnancy compared to early pregnancy.** Arch Gynaecol Obstet. 2015. pp 1063-68
- 25) Webb KE, Sakhel K, Chauhan SP, Abuhamad AZ. 2015. **Adnexal mass during pregnancy: a review.** Am J Perinatol. pp 1010-16