Case Report

Granulosa cell tumor of the ovary: An incidental finding during caesarean section

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Abstract

Approximately one-fourth of the ovarian neoplasms and cysts are diagnosed incidentally during caesarean section. The possibility of malignancy should be considered although existence of ovarian malignancy in pregnancy is rare. A 24-year-old pregnant woman was admitted to our hospital at 38 weeks of gestation for cesarean section in view of Breech presentation, fortuitously during intraoperative pelvic examination; a large ovarian unhealthy mass was detected. Thus, the team proceeded with oophorectomy and removal of the tumor. Histopathological findings, including immuno-histochemical study, led to the diagnosis of juvenile granulosa cell tumor (JGCT). In this report, the histological features of the JGCT and the optimal management of such adnexal masses during pregnancy are discussed. A JGCT that is confined to the ovary appears to have an excellent prognosis and can be treated by unilateral oophorectomy.

Key Words:
Granulosa cell tumor, oophorectomy, pregnancy, ovarian cancer

Introduction

Approximately 24% of the ovarian tumors are incidentally discovered at caesarean section, inspite of the routine prenatal ultrasonography [1]. This underlines the importance of instilling ovarian examination habit at operation. Granulosa cell tumors of the ovary are a rare ovarian malignancy presenting 3-5% of ovarian tumors. Histologically, there are two distinct types of granulosa cell tumor: the most common type is the adult granulosa cell tumors of perimenopausal and post-menopausal women with a peak incidence at 50-55 yrs. The second type is the juvenile granulosa cell tumors, which is less frequent and rare; presenting 5% of granulosa cell tumors and common in young women [2]. Those tumors are the most frequent hormone - secreting ovarian tumors and are generally characterized by insidious growth, low malignancy potential and late recurrence [3]. Occurring in patients with an active sexual life and in reproductive age, granulosa cell tumors can be associated with pregnancy. In the literature, 10% of granulosa cell tumors were discovered during pregnancy [3]. The management of this association is a real challenge because it must consider the pregnancy and the fertility outcome. We report a case of malignant juvenile-type granulosa cell tumor (GCT) found incidentally during caesarean section performed in our hospital. So far, very few such cases have been reported worldwide that not only its rarity adds to a diagnostic dilemma but also to the difficulty in the formulation of a definite plan of management and follow-up protocol remains a tricky territory along with individualization of treatment for each patient.
Case Presentation

A 24-year old primigravid women without any known medical illnesses with an uneventful antenatal period, presented at 38 weeks’ gestation to our obstetrics & gynecology emergency department with painful abdominal contractions. The Abdomen was soft and non-tender on examination. Blood pressure was 116/66 mmHg, pulse 106/min and normal temperature. CTG was reactive. Ultrasound confirmed a single viable fetus within the uterus with breech presentation. The team decided for caesarean section in view of breach presentation in labor and a baby girl (3.0 kg) was delivered, Apgar scores were 9-10-10. Intraoperatively, proceeding further, a large unhealthy nodular ovarian mass was found measuring 20x11x4 cm (approximately 300gm) and there was yellowish ascetic fluid Figures (1) (2). The left ovary was normal in size and shape. Right oophorectomy was performed and the specimen sent for histopathology with peritoneal wash for cytology. The rest of the operation and post-operative period went uneventfully and the patient was discharged on the forth post-operative day. Histological examination showed juvenile granulosa cell tumor of the right ovary that composed of variably sized lobules with focal cyst formation. Neoplastic cells were monomorphic with round to oval vesicular nuclei and prominent nucleoli. Some foci showed frequent mitoses. Figures (3) In term of immunostaining; the tumor cells were positive for calretinin Figures (4), WT1 and Vimentin (strong and diffuse) Figures (5) and negative for CK7, AFP, AE1, AE3, Synaptophysin, Chromogranin and inhibin. CK20 was inconclusive and regarding Reticulin, the stain showed rich staining around theca cell clusters but tumor showed poor reticulin. The tumor was FIGO IA staged (i.e. Exact Stage of the disease cannot be declared because of the absence of the full staging surgery. In this situation the patient was accept ed as stage IA disease). Peritoneal wash was examined microscopically with cytopsin preparation and appeared negative for malignant cell. The tumor marker CA 125 level was normal 9.3 U/mL (normal less than 35 U/mL), CA 15-3 was slightly elevated 39.3 U/mL (normal less 31.3) and all other tumor markers profiles were within normal reference ranges. In view of the potential risk for recurrence; the follow-up plan for this patient will include regular Clinic follow up appointments with detailed history and abdomino-pelvic examination in each visit, Ultrasound after three months along with tumor markers mainly Ca 125, B-hCG, Alpha-fetoprotein (AFP) profile and Inhibin level. She was also scheduled in 6 Months for abdomino-pelvic computed tomography (CT). The couple agreed also for long-term follow-up and showed a good understanding.
Sex cord–stromal tumors account for approximately 7% of all malignant ovarian neoplasms, and their extreme rarity represents a limitation in our understanding of their natural history, management, and prognosis. This group of tumors includes granulosa cell tumors, thecomas, Sertoli-Leydig cell tumors, and gynandroblastoma. Most malignant sex cord–stromal neoplasms are GCTs. Routine pelvic examination and ultrasonic scan aids diagnosis of 62.7% of ovarian tumors in early pregnancy, and the rest goes undetected as it happened in our case. In most patients, the presenting manifestation is usually abdominal pain or swelling. Some present with menstrual irregularities or amenorrhea. Postmenopausal women usually present with uterine bleeding. Some others present during pregnancy as persistent breech presentation like our patient with failure to turn head-down or as obstructed labor, which attributed to the large ovarian mass causing the obstruction.

Surgery remains the mainstay of initial management for patients with suspected sex cord–stromal tumors. Surgery is necessary to establish a definitive tissue diagnosis, perform staging, and debulk as much gross disease as possible in case of advanced disease. The surgical principles are generally identical to those used in the management of epithelial ovarian cancer, including the need for a vertical midline incision for advanced disease, which allows adequate visualization of the upper abdomen, along with careful inspection of the omentum, underside of the diaphragm, paracolic gutters, and bowel serosa. Many literatures indicate that more than 90% of these neoplasms are unilateral and confined to the ovary. Thus, a fertility-sparing surgery with unilateral salpingo-oophorectomy and staging seems to be reasonable in patients wishing to preserve their fertility in the absence of extra-ovarian spread as was performed in our patient. Removals of the

The immunoprofile of our patient was unusual and unique as it was inhibin negative and calretinin positive on Immunohistochemistry (IHC). Although inhibin has been shown to be a sensitive marker for ovarian sex cord-stromal and fibrous neoplasms, it may be negative in some cases. A negative inhibin on IHC does not exclude a diagnosis of GCT. Calretinin, a mesothelial marker is particularly useful in the diagnosis of sex cord-stromal and fibrous neoplasms that are inhibin negative.

Discussion

Photomicrograph (HPF) showing monomorphic neoplastic cells with round to oval nuclei in diffuse sheets and prominent nucleoli with lack coffee bean nuclei that seen in adult type.

Positive Immunohistochemical staining for calretinin
other ovary and total abdominal hysterectomy are reasonable considerations at the conclusion of childbearing and post-menopause, though this point is still controversial. Some authors reported a worse survival for patients undergoing fertility-sparing surgery, but this was related mostly to a higher stage of disease in the group analyzed [5,6]. No postoperative treatment is required for patients with early stage disease (stage I and II) as they have a very good prognosis with five-year disease-free-interval and overall survival of 89% and 99% respectively [3]. However, patients with advanced stages of disease associated with poor prognostic factors like large tumor size or high mitotic index, have a higher chance of relapse, and may benefit with postoperative treatment but role of chemotherapy is still debatable [3, 5].

In case there is any evidence of recurrence during follow-up, keeping in mind that most recurrences are confined to the abdomen and pelvis, an abdominopelvic CT scan should be performed to look for recurrent tumors. Other imaging studies may be ordered as indicated by physical examination findings. Long-term follow-up is required in all patients with GCTs because at least 50% of recurrences are found more than 5 years after initial treatment. Recurring granulosa cell tumors of the ovary are usually treated by surgical resection, chemotherapy or radiation, or a combination of the treatment modalities. However, the results of such treatment are disappointing. Recurrent ovarian granulosa cell tumors may also be treated with an aromatase inhibitor, with promising results [7]. Approximately one-fourth of the ovarian neoplasms and cysts are diagnosed incidentally during caesarean section. We report a case of a rare solid malignant tumor of the ovary incidentally found during caesarean section. Oophorectomy was done and histopathology revealed it to be a granulosa cell tumor. Equipped with these knowledge physicians can be made aware of the existence of this little-known ovarian neoplasm along with its rare association with pregnancy. Also one can better manage, counsel and follow-up the patients after delivery, given the knowledge of the tumors’ inevitable malignant potential and its high incidence of recurrence.

Acknowledgement
None

Declaration of Interest
None

References

Figure 5.

Diffuse, strongly positive Immunohistochemical staining for vimentin