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Pregnancy-Related Ovarian Cancer: An Opinion

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INTRODUCTION

A small fraction of pregnant women (0.2-2%), especially in the first trimester, are identified with adnexal masses by normal obstetrical ultrasound. The vast majority of these masses are benign pregnancy-related masses that will dissolve spontaneously within the first 16 weeks of pregnancy. However, the malignancy rate of adnexal masses in pregnancy is 1-6%, making ovarian cancer the fifth most prevalent pregnant tumour. To avoid a delay in diagnosis, it is critical to be aware of the possibility of ovarian cancer during pregnancy and to carefully evaluate (persisting) adnexal tumours. This chapter will provide a review of the diagnostic and treatment options for pregnant women with adnexal masses and ovarian cancer.

DESCRIPTION

Adnexal masses in premenopausal women are frequently discovered accidentally and are usually of little clinical significance. Because of the widespread use of obstetrical ultrasound, the number of masses detected during pregnancy has increased in recent decades, making it critical to identify individuals who require additional investigation. In pregnancy, adnexal masses are classified as ovarian or non-ovarian, as well as pregnancy-related or non-pregnancy-related. Non-pregnancy related masses can alter morphology as a result of pregnancy, and accurate diagnostic evaluation by an expert specialist is critical to identify those women who require therapy. Hydrosalpinx, pedunculated fibroids, and para-ovarian cysts are examples of non-ovarian masses. The most frequent ovarian masses during pregnancy are functional cysts, which resemble follicular cysts of the corpus luteum and are caused by pregnancy-related morphological changes.

Because it is safe, broadly assessable, and has a high sensitivity and specificity, transvaginal and abdominal ultrasound is the ideal imaging tool for evaluating pelvic masses in pregnancy. Various methods have been developed in recent years to stratify the risk of malignancy based on factors such as tumour size, shape, and colour Doppler flow. However, its application in specific populations, such as pregnant women, has not been established.

When examining adnexal masses during pregnancy, it is important to remember that ovarian masses can experience pregnancy-related morphological alterations as well as pregnancy-related masses. When a symptomatic unilateral adnexal mass is discovered in early pregnancy and there is no evidence of intrauterine gravidity, an ectopic pregnancy must be ruled out.

The most frequent pregnancy-specific masses are the corpus luteum and theca lutein cysts, which usually dissolve after 16 weeks of pregnancy but might linger until birth. Endometriomas can have decidualization of the walls due to high amounts of progesterone, making it difficult to distinguish between a benign and malignant lesion. Further imaging is required when the diagnosis remains ambiguous, even after re-evaluation by an experienced sonographer [1].

Magnetic resonance imaging (MRI) can be utilised safely during pregnancy. The use of the MRI contrast agent gadolinium is discouraged because it crosses the placenta and is secreted into the amniotic fluid by the foetal kidney. Because gadolinium can become toxic in amniotic fluid by dissociating the ion from the chelating molecule, it is only used during pregnancy when the maternal advantage surpasses the potential foetal dangers. MRI is particularly useful in discriminating between bone and muscular tissue in adnexal masses such as leiomyomas, endometriomas, and complicated masses with solid components. When ultrasonography is inconclusive, when masses are too large to be thoroughly assessed with ultrasound, or when there is a significant risk of malignancy, MRI can help make the correct diagnosis. New imaging techniques, like as diffusion-weighted imaging (DWI), have

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the potential to eliminate the need for gadolinium contrast. Compared to contrast-enhanced MRI or computed tomography (CT) and FluorodeoxyglucosePositron Emission Tomography (FDG-PET)/CT, whole-body MRI with DWI has demonstrated superior diagnostic performance, particularly in detecting possible peritoneal disease spread and nodal metastases [2].

Ionizing radiation exposure should be avoided during pregnancy whenever possible, or at a minimum least the ALARA principle (as low as reasonably achievable) should be followed. A CT scan is not always contraindicated during pregnancy, although it should only be considered if the maternal advantages offset the danger of foetal radiation exposure. 18F-FDG PET has minimal use during pregnancy. Radioactive nuclides may have an effect on foetal health depending on tracer pharmacokinetics, foetal closeness to the maternal bladder, and gestational age. There have been several reports of radiopharmaceutical dose adjustments in pregnant patients.

CA 125 is produced by decidua and granulosa cells during normal pregnancy, particularly in the first and last trimesters, lowering its diagnostic usefulness for ovarian cancer. This is also true for other ovarian cancer tumour bmakers, such as alpha-fetoprotein (AFP) and beta human chorionic gonadotropin (bhCG) for germ cell tumours. However, the use of these indicators may be beneficial in the evaluation of therapy. Inhibin B, anti-mullerian hormone (AMH), and human epididymis protein 4 (HE4) are not raised in normal pregnancy and can be used in both diagnostic and therapy evaluation.

Surgical treatment

Because surgery is frequently used for non-oncological causes with no recorded harmful effects, it is the least controversial type of oncologic treatment in pregnancy. Nonobstetrical surgery is performed on one to four pregnant individuals out of every 200. Surgery can be performed during pregnancy if certain precautions are taken. If the planned delivery date is approaching, the patient's general condition is satisfactory, and the disease is not progressing rapidly, surgery may be postponed until postpartum. In pregnancy, the major goals to address are maternal and foetal safety, in addition to an optimal surgical outcome. Because of the abdominal approach, ovarian cancer requires specific treatment. Fortunately, not all ovarian tumours require immediate removal [3-5].

For best exposure, a midline laparotomy conducted through a midline vertical incision with minimal uterine manipulations is suggested. When specified standards are followed, laparoscopy is both safe and feasible. A laparoscopic method is preferred between 16 and 20 weeks to improve visibility of the mass in comparison to the enlarged uterus and to reduce the ratio of preterm labour. The initial trocar should be placed at least 34 cm above the uterine fundus. In addition to these precautions, experts at a consensus meeting on gynaecologic malignancies in pregnancy recommended four prerequisites: a maximum laparoscopic procedure time of 90 minutes, a pneumoperitoneum with a maximum intra-abdominal pressure of 10-13 mmHg, open introduction (Hasson technique, to avoid Verees needle injury), and an experienced physician [4,6].

In addition to these precautions for laparoscopic surgeries, general recommendations for surgery during pregnancy must be followed. To avoid hypovolemia, hypotension, and hypoxemia, the patient's position should be gradually adjusted to Trendelenburg with only mild inclination, and the left lateral position should be employed after 20 weeks. Because of the increased oxygen requirements of the uterus, placenta, and foetus, oxygen consumption increases until term. At term, however, the functional residual capacity drops by up to 20%. This cause's considerable desaturation more quickly following apnoea, hence comprehensive pre-oxygenation is critical. Furthermore, proper maternal oxygenation is critical since foetal well-being is closely tied to maternal health.

Chemotherapy for ovarian cancers

In all cases of epithelial ovarian cancer, chemotherapy should be administered following initial surgery. Only stage IA, grade 1 and 2 patients, as in non-pregnant patients, can skip treatment and be closely watched. When advanced epithelial ovarian cancer is diagnosed preoperatively, neoadjuvant chemotherapy may be recommended instead of total cytoreduction with hysterectomy, which cannot be achieved if pregnancy is to be protected. The last cycle of chemotherapy should be scheduled at least 3 weeks before birth to minimise maternal hematopoietic nadir and newborn myelosuppression [6].

Platinum derivatives and paclitaxel are the conventional first-line treatment for epithelial ovarian cancer [7]. Cisplatin appears to be very embryolethal and teratogenic in mice and rats at the period of fast DNA replication in early organogenesis, according to preclinical research. Carboplatin has been linked to similar side effects. There have been five reports of cisplatin administration during the first trimester in humans, with one major malformation (blepharophimosis, microcephaly, and hydrocephalus) and one minor malformation (microphtalmos); no case of carboplatin administration during the first trimester has been reported to date. As a result, administration of platinum derivatives during the first trimester is not advised.

CONCLUSION

A diagnosis of malignant ovarian cancer during pregnancy is unusual, but it necessitates prompt treatment in order to achieve a favourable obstetrical and oncological result. Ultrasound is commonly used to make the diagnosis, and distinguishing suspicious ovarian masses from pregnancy-related functional cysts can be difficult, especially because tumour markers, such as CA 125, are not accurate in pregnancy. When ultrasonography is inconclusive, MRI can help characterise ovarian masses. In the case of other types of cancer, the therapy should be followed as closely as possible to that of non-pregnant patients. If a result, surgery should be scheduled after the 16th week of pregnancy, and adjuvant chemotherapy should be delivered in the second and third trimesters as needed.

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CONFLICT OF INTEREST

The author has no conflicts of interest to declare.

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