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Malignancies in pregnancy – Multiple Choice Answers for Vol. 33

Q12

1. a) T b) T c) F d) T e) T

The incidence of adnexal masses in pregnancy vary from 0.15% to 5.7%; clinically significant masses range from 1 in 25 to 1 in 8000 pregnancies. Most of these masses are innocuous and spontaneously resolve during pregnancy. A higher trend in reporting is possibly explained by the increasing use of ultrasound as a routine antenatal evaluation and delay of childbearing to an older age. The variation in incidence accounts for differences in detection and management protocols and includes borderline neoplasms. A functional ovarian cyst is the most common benign cyst seen in pregnancy occurring in approximately 75% of patients. Mature teratomas are the most common persistent ovarian cyst (40%) in pregnancy. Approximately 50% of OCs in pregnancy are epithelial in origin. Germ cell and stromal tumours account for 30% and the remaining 20% consist of rare tumour entities e.g. sarcomas and secondary metastases to the ovary. Thus, epithelial ovarian cancer (EOC) is more commonly reported in pregnant patients than germ cell tumours, contrary to the distribution seen in non-pregnant patients of the same age group. The resolution rate of adnexal masses in the second trimester of pregnancy is 60–70%. Persisting masses have the potential to cause complications in 10–30% pregnancies. Size and morphology criterion on ultrasound decide between which masses are for intervention and which can be kept under surveillance.

2. a) F b) F c) F d) T e) T

Most adnexal masses are incidentally detected on routine first trimester ultrasound. Pain, obstruction of labour and hemodynamic instability are uncommon acute presentations necessitating urgent intervention. The sensitivity of detecting ovarian cysts on clinical examination in pregnancy is between 15–50%. Clinical assessment is subject to inter-observer variation and is often masked by pregnancy induced pelvic changes. Moreover, routine internal pelvic examination during the first trimester of pregnancy has fallen into disfavor in view of the risk of introducing infection. A persistent 5cm ovarian cyst on USS should prompt investigation during pregnancy. Other features on ultrasound indicating a malignant potential are solid areas, papillary projections and ascites on ultrasound in addition to the size criterion. Colour Doppler in pregnancy may be less informative. For those masses which the IOTA rules yielded an inconclusive result, subjective assessment of ultrasonic findings by an experienced ultrasound examiner was the most accurate predictor of malignancy. MRI is a useful adjunct when sonography is inconclusive or insufficient to guide management of an adnexal mass.

3. a) F b) T c) F d) F e) T

Scheduling surgery between 16–20 weeks allows for spontaneous resolution of masses, exclusion of a fetal congenital anomaly, reduced risk of preterm labour and better uterine visualization

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with advanced gestational age. However surgery should not be delayed beyond 23 weeks in view of poorer outcomes due to delay in treatment in case of a malignancy or risk of complications in cases of benign masses. A laparoscopic approach is associated with a rapid return to post-operative bowel function, decreased post-operative incisional pain and narcotic use, lower morbidity from atelectesis and thromboembolic events, lower need for uterine traction leading to less irritability and faster post-operative ambulation and return to regular activity. There is level 2 evidence available supporting the use of laparoscopy in pregnancy over laparotomy. Poorer fetal outcomes are associated beyond 23 weeks of gestation. The overall outcome depends upon size of the tumor, risk of malignancy and the period of gestation. Surgical intervention has shown not to have an adverse impact on overall obstetric outcome. Some authors report an increase in hysterectomy, rates of caesarian delivery, blood transfusion, prolonged hospitalization for these women, but no effect in neonatal outcome. Hypotension is associated with a laparoscopic approach in pregnancy due to increased intra-abdominal pressure and inferior vena cava compression. Alteration in fetal vital parameters, hypercarbia, CO2 embolism, increase in carbon monoxide in fetal blood and inadvertent uterine injury due to trocar placement are other complications which may occur. Micro-papillary and serous histopathological subtypes have a worse prognosis, indicating contralateral foci of invasive carcinoma, lymphatic spread and extra-pelvic disease. A full surgical re-staging is warranted in these patients. In a French multi-centre study, 21% of mucinous BOTs exhibited intra-epithelial carcinoma or micro-invasion and 47% of serous BOTs exhibited micro-papillary features, noninvasive implants or micro-invasion. Re-staging surgery performed in 52% patients resulted in upstaging in 24% of cases. Recurrence rate with serous BOT with micro-papillary features or peritoneal implants was 7.5%.

4. a) F b) T c) F d) F e) F

Ideally the delivery should be planned 3–4 weeks after the last chemotherapy cycle to avoid fetal neutropenia due to transient aplasia. Most cytotoxic agents cross the placental barrier. Isolated case reports, with no adverse perinatal outcome encourage its use, however keeping in mind the theoretical risk of teratogenicity most authors recommend use after 20 weeks of gestation. CNS and neural tube defects are seen primarily between the 2^{nd} to 8^{th} weeks of gestation. Ophthalmic, genito-urinary and haematologic complications occur during week 8 to week 12 of pregnancy. 10–20 % of patients receiving chemotherapy in pregnancy develop major congenital malformations. These occur in 17% of patients with single agent regimens and 25 % with multi-agent regimens in the first trimester. Doll et al. described a teratogenic risk of only 1.3% for the combination of carboplatin in the second and third trimester in contrast to an elevated risk up to 25% in the first trimester Fetal echo is recommended at 20-22 weeks of gestation to rule out cardiac malformations. Ventriculomegaly, micro-ophthalmia and cerebral atrophy are reported fetal risks associated with platin-based chemotherapy.

5. a) T b) T c) T d) T e) F

White blood cell count and alkaline phosphatase are both elevated in pregnancy. Many specific tumor markers are also impacted by pregnancy, and therefore are either not useful or are not as predictive as in the non-pregnant population. Ovarian cancer antigen 125 (CA-125) concentrations have been shown to be elevated in the first trimester with wide variation between weeks 5 and 8, normalize during the second and third trimesters, rise again immediately after delivery, also with wide fluctuations, with generally do not return to baseline until 10 weeks postpartum. More recently, the concentration of the biomarker human epididymis protein 4 (HE4), was found to be lower in pregnant women when compared with non-pregnant or pre-menopausal women. Other markers whose levels and thus clinical utility may be altered by pregnancy include human chorionic gonadotropin (HCG), alpha-fetoprotein (AFP), and lactate dehydrogenase (LDH), whereas carcinoembryonic antigen (CEA) and CA 19-9 are not affected by pregnancy.