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What is the purpose of the trophoblast in a normal pregnancy?

The trophoblast helps the embryo penetrate or invade the myometrium and establish the necessary vascular connection for a viable pregnancy. Trophoblastic tissue normally secretes beta HCG and human placental lactogen.

What are the main subtypes of gestational trophoblastic disease?

Common subtypes of gestational trophoblastic disease include complete mole, partial mole, co-existent molar pregnancy, invasive molar pregnancy, and choriocarcinoma. A few other subtypes of very rare tumors exist as part of the spectrum of gestational trophoblastic disease but these are probably not high yield for the ABR core exam, such as an epithelioid trophoblastic tumor.

Pregnancies in which age ranges are at higher risk for gestational trophoblastic disease?

Pregnancies in relatively young or older age ranges are at higher risk for gestational trophoblastic disease, such as under age 20 or over age 40.

How does gestational trophoblastic disease commonly present from a clinical perspective?

Clinical presentation of gestational trophoblastic disease often presents with gestational hypertension, hyperemesis, and a uterus larger than expected for age of gestation.

What are expected beta HCG values in gestational trophoblastic disease/molar pregnancy?

In molar pregnancy beta HCG values are expected to be much higher than expected for a normal pregnancy at a given age of gestation. Following treatment of molar pregnancy serial beta HCG testing is performed until levels are no longer detectable to confirm absence of any residual disease. Follow-up beta HCG may be performed for something like 6-12 months to confirm effective therapy.

What is the most common subtype of gestational trophoblastic disease?

A hydatidiform mole is the most common and accounts for something like 85% of all gestational trophoblastic disease.

What are characteristic features of a complete molar pregnancy?

Complete mole: Molar pregnancy with absent fetal components. Most have classic 46XX chromosomal pattern in which all chromosomes are derived from sperm fertilizing egg that had no chromosomes. This is the most common form of gestational trophoblastic disease. On imaging look for a multicystic vascular intrauterine mass distending the uterus with buzzword imaging features of “bunch of grapes” and “snowstorm” appearance. On MRI the mass may have T2 bright cystic spaces, T1 bright areas of hemorrhage, and avid enhancement. Co-existent bilateral theca lutein cysts may be seen. A complete mole has a risk of invasive or malignant gestational trophoblastic disease in approximately 10 to 20% of cases. Treatment often involves surgical curettage or hysterectomy followed by serial beta HCG monitoring.

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What are characteristic features of a partial molar pregnancy?

Partial mole: molar pregnancy with abnormal fetus or fetal parts. Classic triploid karyotype (69 XXY chromosomal pattern most common in which the chromosomes derive from an egg and two sperms). On imaging placenta typically appears much larger than expected relative to size of uterus and a multicystic appearance of the placenta is common. MRI may be particularly helpful to see the extent of myometrial invasion.

What are characteristic features of a co-existent molar pregnancy?

Co-existent molar pregnancy: molar gestation with separate normal fetus. However, complications are common with a co-existent molar pregnancy and pre-eclampsia, fetal demise, and premature delivery are common.

What are characteristic features of an invasive molar pregnancy?

An invasive mole is locally invasive with invasion of the myometrium and tissues around the myometrium with local destruction and obscuration of normal zonal uterine structures. Metastatic disease is not a classic feature of an invasive molar pregnancy. This may occur in up to approximately 20% of molar pregnancies.

What are typical features of gestational choriocarcinoma?

Unlike invasive molar pregnancy, gestational choriocarcinoma is at risk for metastatic disease with hematogenous spread with lung metastases being most common. The primary site of disease in the uterus may look very similar to a molar pregnancy but may have more solid components than an invasive mole. Beta-HCG levels tend to be extremely high and above that often seen with a molar pregnancy. Approximately half of gestational choriocarcinomas arise from a molar pregnancy, though choriocarcinoma may also arise from a normal pregnancy or following a miscarriage. Note that non-gestational choriocarcinomas also occur and in the non-gestational setting are more associated with an ovary in young girls or post-menopausal women or testis in teenage to young adult males. Fortunately, choriocarcinoma tends to be very responsive to chemotherapy and may have a relatively favorable cure rate.