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INTRODUCTION

Placental site trophoblastic tumours (PSTT) are a rare subset of gestational trophoblastic disease (GTD). Patients present with a hypervascular uterine mass, amenorrhea and post-partum low-level beta-human chorionic gonadotropin (beta hCG) elevation. Prognosis depends on multiple patient and tumour factors. Here we present a case, review literature behind risk factors, and propose a grossing protocol adherent to the College of American Pathologists (CAP) and International Federation of Gynecologic Oncologists (FIGO) guidelines and staging requirements.

BACKGROUND

GTD is an umbrella term for tumours that form during pregnancy. GTD occurs in 1:1000 pregnancies and includes all lesions depicted below. A rare subset of GTD is the PSTT.

PSTT, unlike other tumours, responds poorly to chemotherapy, and thus surgical excision is the most effective treatment option. Patient prognosis depends on an array of factors, however, once the tumour has extended to the serosa or has metastasized, treatment becomes more difficult and mortality rate approaches 50%.

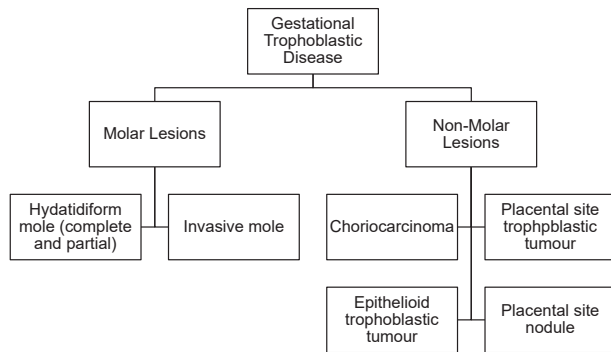


Figure 1: (WHO, 2014)

CASE PRESENTATION

Patient History	Test Results	High Risk Criteria
- G2P2 >20 months antecedent pregnancy interval - Amenorrhea - Abdominal distention	- bHCG: 1276mIU/mL - Ultrasound: 7.9 cm heterogeneous and hypervascular mass within uterine cavity - D&C dx: PSTT - No metastasis	- Antecedent pregnancy interval >12 months - Tumour size >5 cm

GROSS DESCRIPTION

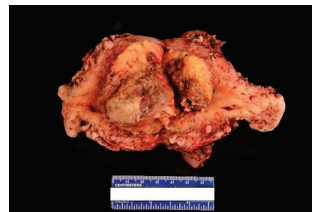


Figure 2: Bivalved uterus, anterior on left

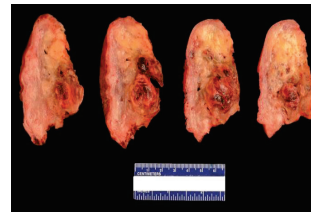


Figure 3: Anterior cross sections

Simple hysterectomy specimen (9.6 x 7.2 x 6.8 cm; 149.0 g) demonstrates an irregular, soft, fleshy, tan-white exophytic mass (7.9 x 6.4 x 5.9 cm) with hemorrhagic areas predominantly involving the anterior myometrium and occupying the endometrial cavity.

The mass invades into the outer third of the anterior myometrium and is 0.2 cm from the serosa. It is 2.0 cm from the vaginal cuff and 2.4 cm from parametrial margins. The mass is covered by a thin lining (0.2 cm) of unremarkable endometrium. Areas of necrosis are not identified. The overlying serosa is smooth, shiny, and unremarkable.

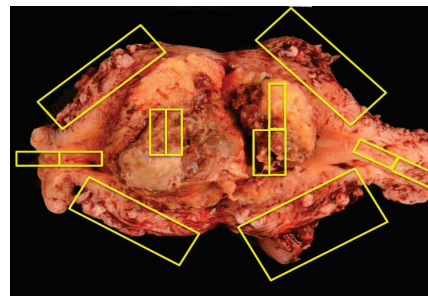


Figure 4: Section map

PROGNOSTIC FACTORS

Non-histological

- Necrosis
- Depth of invasion
- FIGO stage
- Tumour size

Histological

- Necrosis
- Depth of invasion
- Clear cell change
- High mitotic rate (>5 / 10 HPF)

- Depth of invasion** – assesses the likelihood of tumour recurrence and fatality
- Necrosis** – higher stage tumours
- Tumour size** – not an independent marker of prognosis
- Clear cell change and a high mitotic rate** (>6 per 10 HPF) – higher stage and more aggressive tumour behaviour
- The most important prognostic factor is the FIGO stage**

MICROSCOPIC EVALUATION

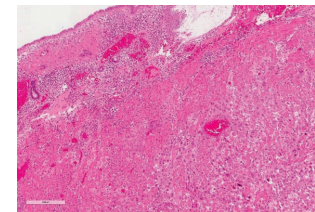


Figure 5: tumour with overlying endometrium.

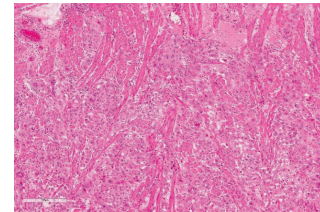


Figure 6: tumour with invasion into myometrium

The PSTT was comprised of a mixture of abnormal polygonal and spindled intermediate trophoblasts arranged in sheets and cords. The neoplastic cells had abundant eosinophilic cytoplasm with marked nuclear atypia, hyperchromatic nuclei, and an elevated mitotic rate (11 MF per 10 HPF). In areas, these cells were invading blood vessels and replacing the vessel walls with fibrinoid material. These cells dissected between fascicles of smooth muscle fibres into the outer third of the myometrium, to within 1 mm of the serosal surface. No necrosis or clear cell change was identified.

An IHC panel on the previous biopsy and was immunopositive for human placental lactogen (HPL), cytokeratins CAM 5.2 and AE1/AE3, CD10, inhibin, and human chorionic gonadotropin (hCG) in sporadic cells, and immunonegative for p63. The Ki-67 proliferation index was 5-10%.

Since the PSTT was confined to within the uterine corpus, tumour was staged as pT1 and FIGO stage I. The prognostic score was 9 (high-risk), with 4 points for the interval from index pregnancy, 2 points for a term antecedent pregnancy, 2 points for the largest tumour size, and 1 point for pre-treatment serum HCG level.

PROTOCOL RECOMMENDATION

The mass should be measured in three dimensions and should include precise measurements to the paracervical, parametrial, periadnexal and cervical/vaginal cuff resection margins. A Detailed description of the mass including depth of myometrial invasion into thirds, as well as areas of necrosis should be noted.

Sections submitted should include: anterior and posterior cervix, anterior and posterior lower uterine segment, a minimum of 4 full thickness sections to show mass with the deepest invasion including overlying serosa, any areas of necrosis, all attached soft tissue (including paracervical, parametrial and periadnexal), and entire submission of fallopian tubes and ovaries if included with the specimen.

This protocol ensures that all staging criteria are met according to CAP and FIGO guidelines while allowing for the assessment of literature-based prognostic factors.