<u>Case #1</u>   A uterine mass is found in a 45-year-old female complaining of severe abdominal cramps for which an abdominal hysterectomy was performed. Gross examination of the uterus showed a single 3 cm nodule in the myometrial wall. Representative histologic images are shown for this case. Immunohistochemistry for CK5/6 is positive in the nucleated cells shown at high power. Based on these findings, which of the following is the best diagnosis?

      A. Leiomyoma
      B. Leiomyosarcoma
      C. Endometrial stromal sarcoma
      D. Adenomatoid tumor
      E. Angiomyelolipoma

Answer: D. **Uterine adenomatoid tumor** is usually found subserosal near the cornua. Epithelial like cells (cuboidal or flat) are trapped between bands of smooth muscle. They can appear like a lymphangioma. These lesions are not that common, and if the epithelial like cells are particularly flattened may easily be dismissed as a leiomyoma. The epithelial like cells are mesothelial in origin and will stain with CK 5/6. (Sternberg, 4th Ed., p. 2524-25)

<u>Case #2</u>   After several months of abnormal bleeding, a 37-year-old female patient presents to her gynecologist for an endometrial biopsy. Representative histologic images of this biopsy are shown. Additional findings not shown include: fragments of unremarkable endometrium adjacent to lesional tissue shown, and areas of morular metaplasia within lesional tissue. Based on these findings, which of the following is the most likely diagnosis?

      A. Atypical polypoid adenomyoma
      B. Adenofibroma
      C. Endometrial adenocarcinoma
      D. Malignant mixed müllerian tumor
      E. Endometrial Polyp

Answer: A. **Atypical Polypoid Adenomyoma (APA)** usually occurs in the lower uterine segment and rarely is found after menopause. It is characterized by features of atypical endometrial hyperplasia (>90% have squamous morula formation) within bands of smooth muscle. Biopsies classically have fragments of normal endometrium combined with fragments of APA. (Sternberg, 4th Ed., p. 2490-2494)

Case #3   A 45-year-old patient presents to her gynecologist with severe of abdominal cramps. Abdominal ultrasound is suspicious for uterine fibroids. An abdominal hysterectomy is performed, and representative images of a uterine mass found to invade into the outer half of the myometrium is shown. Based on these findings, which of the following is the best diagnosis?

A. Cellular leiomyoma
B. Stromal nodule
C. Low-grade endometrial stromal sarcoma
D. Undifferentiated uterine sarcoma
E. Leiomyosarcoma

Answer: C. **Low Grade Endometrial Stromal Sarcoma** is essentially the same thing as an endometrial stromal nodule, but it shows invasion into the myometrium and/or vasculature. It can often have a "bag of worms" appearance grossly. In the past low grade ESS was differentiated from high grade ESS by a mitotic index <10. Currently, high grade ESS is no longer recognized, and poorly differentiated forms are categorized as undifferentiated uterine sarcomas. In differentiating low grade ESS from leiomyomas, CD10 often diffusely stains ESS and may focally be positive in leiomyomas. It should be noted that there is no perfect marker, and H&E impression is often the best. (Sternberg, 4th Ed., p. 2498-2500)

Case #4   An ovarian mass found in a 73-year-old patient. An oophorectomy is performed, and representative images of the mass are shown. Based on these findings, which of the following is the best diagnosis?

A. Granulosa cell tumor
B. Sertoli Leidig cell tumor
C. Malignant Brenner tumor
D. Clear cell carcinoma
E. Dysgerminoma

Answer: D. **Clear Cell Carcinoma (Ovary).** Clear cell carcinoma the ovary is often accompanied by endometriosis, and account for approximately 5% of ovarian cancers. Morphologically the two most common patterns are tubulocystic and diffuse. The clear cells have the same appearance as clear cell carcinoma of the endometrium with hobnailing, clear cytoplasm, and atypical nuclei. In some cases, there can be prominent eosinophilia, but typical clear cells can still usually be found. (Sternberg, 4th edition, pages 2565-2568)

Case #5   A 21-year-old patient is found to have an ovarian mass. A right-sided oophorectomy is performed, and representative histologic images are shown. Based on these findings, which of the following is the best diagnosis?

    A. Yolk sac tumor
    B. Granulosa Cell Tumor
    C. Seminoma
    D. Dysgerminoma
    E. Teratoma

Answer: D. **Dysgerminoma (Ovary).** The dysgerminoma of the ovary is the female counterpart of the seminoma in the male. Sometimes it can be associated with hypercalcemia, which is classically associated with small cell carcinoma of the ovary. It usually occurs during the first two decades of life. Histologically, fibrous septa are usually present throughout the tumor, which also have a prominent lymphocyte infiltrate. Sometimes the infiltrate may be so dominant that it overshadows the underlying tumor cells. The individual cells will have well-defined membranes, clear cytoplasm, and nuclei with prominent nucleoli. The cells generally have a uniform appearance from cell to cell. Seminomas and dysgerminomas are positive for PAS (highlights glycogen within the cells) and PLAP. CD 117 is also positive in most cases. EMA and CD30 are typically negative. Sometimes a dysgerminoma may be difficult to distinguish from a yolk sac tumor (Sternberg, 4th edition, pages 2169-2176 and 2595-2597)

Case #6   A 42 y/o female with dysfunctional uterine bleeding is found to have a mass present within the uterine cavity. There is no gross evidence of invasion and does not appear to extend to the lower uterine segment. What is the most likely diagnosis?

    A. Endometrial Adenocarcinoma
    B. Simple hyperplasia
    C. Clear cell carcinoma
    D. Cervical adenocarcinoma
    E. Serous carcinoma

Answer: A. This case represents endometrial carcinoma. Adenocarcinoma of the cervix can look virtually identical, but there is no evidence of a mass being associated with the cervix. Serous and Clear cell carcinoma have high grade histology, which is not present in this case.

Question #1   Which of the following stains is most often positive in low-grade endometrial stromal sarcomas, and helps differentiate from a cellular leiomyoma?

    A. Desmin
    B. CD10
    C. Calretinin
    D. CK5/6
    E. Ki67

Answer: B. CD10 is often strongly positive in low-grade endometrial stromal sarcomas. Leiomyomas may be weakly/focally positivity for CD10. Desmin is positive in leiomyomas and usually negative or weakly positive in low grade endometrial stromal sarcoma. It should be noted that there is no perfect marker, and H&E impression is often the best. (Sternberg, 4th Ed., p. 2498-2500)

Question #2   A primary uterine serious carcinoma is found to extend from the uterus into the cervix (no cervical stromal invasion) and invades the outer one half of the myometrium. What is the pathologic stage (pT)?

          A. pT1a
          B. pT1b
          C. pT1c
          D. pT2a
          E. pT2b

Answer: D. pT2 is characterized by tumor that invades the cervix but does not extend outside the uterus. It is subdivided into pT2a and pT2b, which is characterized by lack of invasion into cervical stromal connective tissue and invasion of cervical stromal connective tissue, respectively. (AJCC, page 301)

Question #3   A primary ovarian serious carcinoma is present on the surface of the right and left ovaries. Malignant cells are identified in peritoneal washings, but there is no other pelvic extension and/or pelvic implants. What is the pathologic stage (pT)?

          A. pT1b
          B. pT1c
          C. pT2a
          D. pT2b
          E. pT3a

Answer: B. pT1 in the ovary staging categorization scheme is when tumor is limited to one or both ovaries (with or without malignant cells in peritoneal washings). pT2 is characterized by tumor involving one or both ovaries with the presence of pelvic extension of disease (including implants). (AJCC, page 309)

Question #4   A cervical carcinoma is diagnosed at hysterectomy. It is found to extend laterally into the pelvic wall, but does not invade into the uterus or lower third of the vagina. Based on these findings what is the pathologic stage?

          A. pT1
          B. pT2a
          C. pT2b
          D. pT3
          E. pT4

Answer: D. Pathologic stage pT3 is classified by cervical carcinoma that extends to the pelvic wall, causes hydronephrosis or a nonfunctioning kidney, or extends below the lower third of the vagina. If any one of these findings is present, then it is pathological stage pT3. The pathologic stage pT2 is when the tumor extends into the uterus but does not meet criteria for pT3 or pT4. (AJCC, page 295)

References:

Sternberg's Diagnostic Surgical Pathology. Mills, SE, *et al*. 4th Edition. 2004.

AJCC Cancer Staging Handbook. Greene, FE, et al. Sixth Edition. 2002.

Notes for question set:[1]

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[1] PathMD strives for the highest quality and accuracy. However, the *PathMD: Board Review Letter* is for review purposes and not meant for clinical decision making. It should not be used in place of review of primary reference texts and the current medical literature. If inaccuracies are identified, please notify us so that a correction may be published. (info@PathMD.com)