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Gonadal Path Lab
Ovarian and Testicular Pathology

Winter 2009
Ovary

18-year-old with an adnexal mass noted on her first pelvic examination. She relates no symptoms.
Benign Cystic Teratoma
Dermoid Tumor
Benign Cystic Teratoma
Histologic Keys

One or more mature “-dermal” elements

- ectoderm (i.e., skin, hair, brain, etc.)
- mesoderm (i.e., bone, cartilage, etc.)
- endoderm (i.e., GI tract, respiratory, etc.)

a.k.a. mature teratoma, dermoid cyst
Ovary

30-year-old with a protuberant abdomen and 50 pound weight gain over two years. A large, smooth-walled, multiloculated ovarian cyst is removed, filled with mucoid material.
Mucinous Cystadenoma

surface epithelial tumor
Mucinous Cystadenoma
Histologic Keys

Multiloculated cysts lined by mucin producing epithelium

gastrointestinal-type lining
  (gastric antral in this case)
basal, inconspicuous nuclei
no “atypia”
Ovary

A 52-year-old presents with an elevated CA-125. On physical exam she has ascites and a pelvic-abdominal mass.
Papillary Serous Cystadenocarcinoma

surface epithelial tumor
Ovarian Serous Carcinoma

Histologic Keys

- papillary architecture
  - lined by cytologically malignant “serous” epithelium
  - papilla = finger-like projection, often on a fibrovascular core
- papillary exfoliation
  - small 3-D clusters pinched off the tips of the papillae
  - may or may not see psammoma bodies
- “destructive stromal invasion” = carcinoma
  - desmoplasia in ovarian stroma
Ovary

50-year-old with an endometrial biopsy demonstrating hyperplasia. A hysterectomy was performed and an incidental enlargement of the left ovary was noted. Cut section revealed a solid-yellow tumor with areas of hemorrhage. (See Slide 137 from Uterine Lab.)
Granulosa Cell Tumor

Sex cord-stromal tumor
Granulosa Cell Tumor
Histologic Keys

“Solid” tumor of granulosa cells
- “blue cells” with areas of hemorrhage & necrosis
- microfollicular pattern = Call-Exner bodies
- nuclear grooves - “coffee bean nuclei”

Estradiol & Inhibin are tumor serum markers
Ovary

18-year-old with abdominal pain. A solid pelvic mass is noted on sonography. Serum AFP is elevated. Serum β-hCG is negative. CA-125 is slightly elevated. A unilateral ovarian mass is noted at surgery with no evidence of extra-ovarian pathology. The tumor is 15cm, solid with hemorrhage.
Endodermal Sinus Tumor
Yolk Sac Tumor
germ cell tumor
Endodermal Sinus Tumor
Histologic Keys

**Schiller-Duval Bodies**
- capillary lined by cuboidal or low columnar embryonal epithelial-like cells

**Cytology**
- large, vesicular nuclei with prominent nucleoli
- hyaline “ globs” (PAS +, diastase resistant)

**Patterns**
- endodermal sinus
- reticular
- polyvesicular-vitelline

**Tumor Marker**
- alpha-fetoprotein
Ovarian Dysgerminoma

germ cell tumor
Normal Testis
Testis

Normal Testis: From the tunica propria of seminiferous tubules to the lumen, one sees spermatogenic cells in the following order:

1. Spermatogonia (small dark nucleus)
2. Primary spermatocyte (largest cell in series)
3. Secondary spermatocyte (relatively transient cell)
4. Spermatids
5. Spermatozoa

Sertoli cells are difficult to identify in tubules with normal spermatogenesis, which tends to obscure them.

Interstitial cells (Leydig cells) possess eosinophilic cytoplasm and are located between tubules.
Testis

25-year old an with pain in right testicle of five weeks duration. Serum human chorionic gonadotropin and alpha-fetoprotein negative.
Testicular Infarction
Testis

40-year-old man noted swelling and tenderness of his right testicle for several months prior to orchiectomy.
Testicular Seminoma
Dysgerminoma-Seminoma
Histologic Keys

Undifferentiated malignant germ cells
look like primitive oogonia-spermatogonia

Solid architecture
ribbons and cords of tumor cells separated by fibrous septae
fibrous septae sprinkled with lymphocytes
Comparing Male & Female Germ Cell Tumors

**Male Tumors**
- 90% of testicular cancer
  - majority are malignant
- teratomas uncommon (3%)
  - majority are “immature”
- one-third (33%) are mixed tumors
- spermatocytic seminoma has no female counterpart

**Female Tumors**
- 20% of ovarian tumors
  - majority are benign
- teratomas common (60%)
  - majority are mature
- mixed germ-cell tumors uncommon (8%)
### Markers in Germ Cell Tumors

<table>
<thead>
<tr>
<th>Tumor</th>
<th>AFP</th>
<th>hCG</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dysgerminoma</td>
<td>−</td>
<td>−/+</td>
</tr>
<tr>
<td>Endodermal sinus tumor</td>
<td>+</td>
<td>−</td>
</tr>
<tr>
<td>Immature teratoma</td>
<td>−</td>
<td>−</td>
</tr>
<tr>
<td>Choriocarcinoma</td>
<td>−</td>
<td>+</td>
</tr>
<tr>
<td>Embryonal carcinoma</td>
<td>+</td>
<td>+</td>
</tr>
</tbody>
</table>

Multiple Series
Testis

This patient had received radiation and cytotoxic drug therapy for a systemic neoplasm. The analysis of his semen revealed azospermia.

Also called the “Sertoli cell only” syndrome because all or most of the spermatogonia are absent, this represents germinal aplasia of the testis. There is no evidence of maturation of germ cells. The decrease in number of germ cells has unmasked the Sertoli cells which are the most prominent cells in the tubules. The tubular tunic propria is not significantly thickened.
Germ Cell Aplasia
“Sertoli Only”
G.D. Abrams, University of Michigan Medical School
(Both Images)
G.D. Abrams, University of Michigan Medical School
(Both Images)
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