Diseases of the penis & testis

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Diseases of penis, Condyloma Acuminatum

• A benign tumor
  *Tend to recur but only rarely progress into in situ or invasive cancers

• = genital wart

• Sexually transmitted

• Caused by HPV

• May occur on any moist mucocutaneous surface of the external genitals or perineum in either sex

• HPV type 6, and less frequently type 11
Diseases of penis, Condyloma Acuminatum, cont’d

• In the penis, mostly about the coronal sulcus and inner surface of the prepuce

• Single or multiple sessile or pedunculated, red papillary excrescences that may be up to several millimeters in diameter

• Histologically:
  - a branching, villous, papillary connective tissue stroma is covered by epithelium that may have considerable superficial hyperkeratosis and thickening of the underlying epidermis (acanthosis)
  - normal orderly maturation of the epithelial cells is preserved
  - koilocytic atypia
  - no dysplasia
Malignant tumors of penis

• Carcinoma in Situ (CIS):
  ...Bowen disease and Bowenoid papulosis
  ...strongly associated with HPV...especially 16

*Bowen disease:
  ...in the genital region of both men and women
  ...usually older than 35
  ...in men: mainly the skin of the shaft of the penis and the scrotum
  ...grossly: a solitary, thickened, gray-white, opaque plaque...may be red
  ...histologically:
    -numerous mitoses, some atypical
    -the cells are markedly dysplastic with large hyperchromatic nuclei and lack of orderly maturation
    -intact basement membrane
  ...transform into cancer over many years in 10% of the cases
Malignant tumors of penis, cont’d

*Bowenoid papulosis

- Younger age
- Multiple (rather than solitary)
- Reddish brown papular lesions
- Histologically indistinguishable from Bowen disease
- It virtually never develops into an invasive carcinoma
- Many cases regresses spontaneously
Malignant tumors of penis, invasive squamous cell carcinoma

• Most commonly on the glans penis or prepuce

• More with HPV & poor hygiene & non-circumcised

• In many cases, infiltration of the underlying connective tissue produces an indurated, ulcerated lesion with irregular margins

• The prognosis is related to the stage of the tumor

• A variant called: verrucous carcinoma is locally invasive but do not metastasize
Cryptorchidism & testicular atrophy

• Cryptorchidism = failure of testicular descent into the scrotum

• The diagnosis of cryptorchidism is only established with certainty after the age of 1 year, particularly in premature infants, because testicular descent into the scrotum is not always complete at birth

• By 1 year of age, cryptorchidism affects 1% of the male population

• Bilateral in approximately 10% of affected patients

• Undescended testes become atrophic & bilateral cryptorchidism causes sterility

• Even unilateral cryptorchidism may be associated with atrophy of the contralateral descended gonad and therefore may also lead to sterility
In addition to infertility, failure of descent is associated with a 3- to 5-fold increased risk of testicular cancer...even in the contralateral testis

Surgical placement of the undescended testis into the scrotum (orchiopexy) before puberty decreases the likelihood of testicular atrophy and reduces but does not eliminate the risk of cancer and infertility

Atrophic changes similar to those in cryptorchid testes may be caused by several other insults, including: chronic ischemia, trauma, irradiation, and antineoplastic chemotherapy, as well as conditions associated with chronically elevated estrogen levels (e.g., cirrhosis)
Testicular neoplasms

- Most commonly in the 15- to 34-year-old age group
- They include germ cell tumors and sex cord–stromal tumors
- In postpubertal males, 95% of testicular tumors arise from germ cells, and all are malignant
- More common in whites
- Cryptorchidism is associated with a three- to five-fold increase in the risk of cancer in the undescended testis, as well as an increased risk of cancer in the contralateral descended testis
- A history of cryptorchidism is present in 10% of testicular cancer cases
- Intersex syndromes are at increased risk
- Family history...brothers of males with germ cell tumors have an 8- to 10-fold increased risk
Testicular neoplasms, cont’d

• The development of cancer in one testis is associated with a markedly increased risk of neoplasia in the contralateral testis

• An isochromosome of the short arm of chromosome 12, i(12p), is found in virtually all germ cell tumors, regardless of their histologic type

• Most testicular tumors in postpubertal males arise from the in situ lesion intratubular germ cell neoplasia...foci of these in situ lesions are common to be found adjacent to tumor foci
**Testicular germ cell neoplasms**

<table>
<thead>
<tr>
<th>Tumor</th>
<th>Peak Patient Age (yr)</th>
<th>Morphology</th>
<th>Tumor Marker(s)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Seminoma</td>
<td>40–50</td>
<td>Sheets of uniform polygonal cells with cleared cytoplasm; lymphocytes in the stroma</td>
<td>10% of patients have elevated hCG</td>
</tr>
<tr>
<td>Embryonal carcinoma</td>
<td>20–30</td>
<td>Poorly differentiated, pleomorphic cells in cords, sheets, or papillary formation; most contain some yolk sac and choriocarcinoma cells</td>
<td>Negative (pure embryonal carcinoma)</td>
</tr>
<tr>
<td>Yolk sac tumor</td>
<td>3</td>
<td>Poorly differentiated endothelium-like, cuboidal, or columnar cells</td>
<td>90% of patients have elevated AFP</td>
</tr>
<tr>
<td>Choriocarcinoma</td>
<td>20–30</td>
<td>Cytotrophoblast and syncytiotrophoblast without villus formation</td>
<td>100% of patients have elevated hCG</td>
</tr>
<tr>
<td>Teratoma</td>
<td>All ages</td>
<td>Tissues from all three germ cell layers with varying degrees of differentiation</td>
<td>Negative (pure teratoma)</td>
</tr>
<tr>
<td>Mixed tumor</td>
<td>15–30</td>
<td>Variable, depending on mixture; commonly teratoma and embryonal carcinoma</td>
<td>90% of patients have elevated hCG and AFP</td>
</tr>
</tbody>
</table>

*AFP, alpha fetoprotein; hCG, human chorionic gonadotropin.*

- Schiller-Duvall bodies & eosinophilic hyaline globules
- Most common the most common primary testicular neoplasm in children younger than 3 years of age

Elsevier. Kumar et al. Robbins basic pathology 9th...modified
Seminoma of the testis. Microscopic examination reveals large cells with distinct cell borders, pale nuclei, prominent nucleoli, and a sparse lymphocytic infiltrate.

Embryonal carcinoma. Note the sheets of undifferentiated cells and primitive gland-like structures. The nuclei are large and hyperchromatic.
Yolk sac tumor demonstrating areas of loosely textured, microcystic tissue and papillary structures resembling a developing glomerulus (Schiller-Duval bodies).

Choriocarcinoma. Both cytotrophoblastic cells with central nuclei (arrowhead, upper right) and syncytiotrophoblastic cells with multiple dark nuclei embedded in eosinophilic cytoplasm (arrow, middle) are present. Hemorrhage and necrosis are prominent.
A brief note regarding teratoma

• In males, pure teratomas are rare in adults...but they are common in children & infants (2\textsuperscript{nd} to yolk sac tumors)

In prepubertal males, teratomas are typically benign, whereas teratomas in postpubertal males are malignant, being capable of metastasis regardless of whether they are composed of mature or immature elements.

• Dermoid cysts and epidermoid cysts: common in the ovary & rare in the testis...totally benign

• What is teratoma with malignant transformation???
Testicular germ cell neoplasms, clinical notes

• Present most frequently with a *painless testicular mass* that (unlike enlargements caused by hydroceles) is non-translucent

• Biopsy of a testicular neoplasm is associated with a risk of tumor spillage, which would necessitate excision of the scrotal skin in addition to orchiectomy

• Which is better? seminomatous or nonseminomatous?

• Mention 2 benefits of tumor markers?

• LDH is also increased according to the tumor burden
Thank You