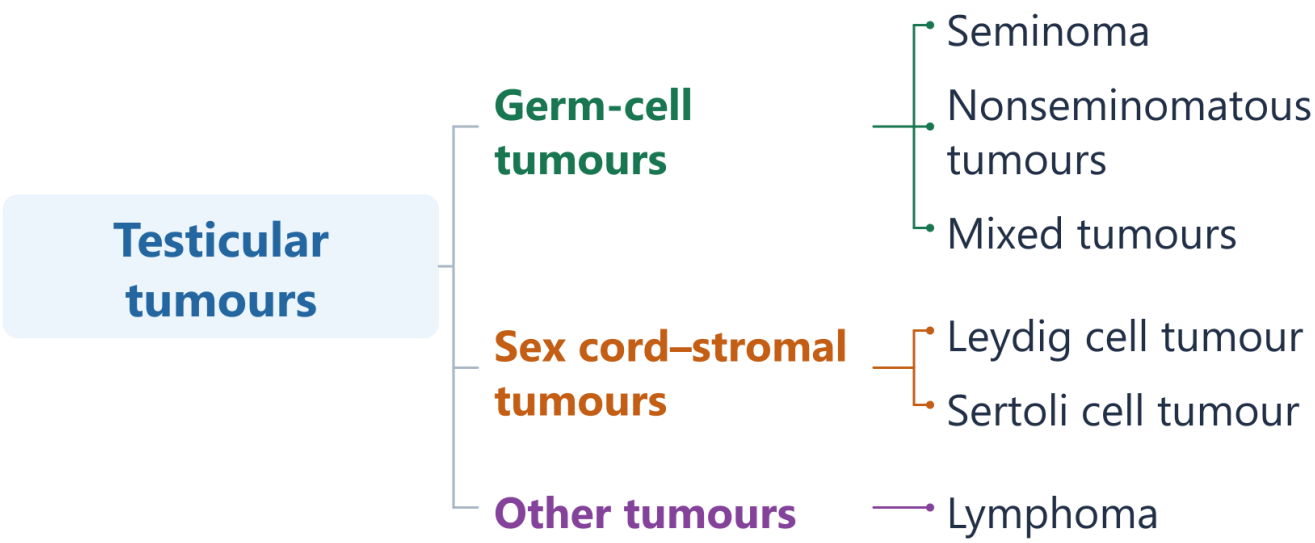
Pathology - Topic 28 - Male Genital Tract

Testicular Tumours

- Testicular tumours are neoplasms arising in the testis and are classified by cell lineage and biological behaviour.



Major Tumour Groups and Risk Factors

- Most malignant testicular tumours in young adults arise from germ cells.
- Sex cord–stromal tumours and other neoplasms form smaller groups.
- Risk factors for germ-cell tumours include cryptorchidism, a previous tumour in the opposite testis and certain disorders of testicular development.
    - An undescended testis carries increased risk even after corrective surgery, although early correction has other important benefits.

Germ-cell Neoplasia in Situ and 12p Changes

- Many postpubertal germ-cell tumours develop from **germ-cell neoplasia in situ**.
- Abnormal germ cells remain within seminiferous tubules before invasive tumour develops.
    - Chromosome 12p gain is a characteristic molecular feature of many invasive postpubertal germ-cell tumours.
- In germ-cell neoplasia in situ, enlarged atypical germ cells line the basal region of seminiferous tubules and may have clear cytoplasm and prominent nucleoli.
- Gain of 12p often takes the form of an isochromosome, in which both chromosome arms are derived from the short arm.

Prepubertal-type Tumour Pathways

- Prepubertal-type tumours follow different pathways.
- Prepubertal-type yolk-sac tumour and teratoma are usually unrelated to germ-cell neoplasia in situ, so age and developmental category affect interpretation.

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Major Germ-Cell Tumour Types

1. Seminoma

Gross Appearance

- Seminoma usually forms a homogeneous, pale, fleshy mass.
- Extensive haemorrhage and necrosis are less typical than in many nonseminomatous tumours.

Microscopic Features

- Microscopy shows large fairly uniform cells with clear cytoplasm, distinct borders and central nuclei.
- Fibrous septa often contain lymphocytes.
- The clear cytoplasm reflects glycogen that can be lost during tissue processing.
- Granulomatous reactions may also occur.

Serum Tumour Markers

- Some seminomas contain syncytiotrophoblastic cells and produce hCG. **Pure seminoma does not produce AFP**.
- An unexplained raised AFP requires consideration of a nonseminomatous component or another source, even when a sampled area resembles seminoma.

Ancillary Differentiation

- OCT4 and KIT commonly support seminomatous differentiation within an appropriate immunohistochemical panel.

2. Embryonal Carcinoma

➢ Embryonal carcinoma is an aggressive primitive germ-cell tumour.

Gross and Microscopic Morphology

- The gross mass is often irregular, with haemorrhage and necrosis.
- Large atypical cells form solid sheets, glands or papillary structures.
- Nuclear pleomorphism and mitotic activity are prominent.
- It commonly occurs as part of a mixed germ-cell tumour.
- Immunohistochemistry helps distinguish it from seminoma and other poorly differentiated tumours.

Ancillary Differentiation

- Embryonal carcinoma commonly expresses OCT4 and CD30, helping distinguish it from seminoma and other primitive germ-cell components.
- Interpret stains with architecture because a mixed tumour can contain several differently staining components.

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3. Yolk Sac Tumour

- Yolk sac tumour is an important testicular tumour of young children and also occurs in mixed tumours of adults.
- It commonly produces AFP.
- A reticular or microcystic pattern is common. **Schiller–Duval bodies** resemble a central vessel surrounded by tumour cells within a space lined by tumour cells.
    - Eosinophilic hyaline globules may occur. A classic Schiller–Duval body is helpful when present but is not found in every sample.
- PAS-positive hyaline globules and AFP expression can support the diagnosis.
- Serum AFP is physiologically higher in infancy, so an age-appropriate interval and serial trend are necessary when assessing a young child.

4. Choriocarcinoma

- Choriocarcinoma contains malignant trophoblastic cells and commonly produces high hCG levels. A small primary lesion can already have widespread bloodborne metastases.
- Microscopy shows cytotrophoblast and syncytiotrophoblast associated with extensive haemorrhage and necrosis.
- Chorionic villi are absent.
    - Lung, brain and other vascular metastases may bleed.
    - Many testicular examples are components of mixed tumours.

5. Teratoma

- Teratoma contains differentiated tissues derived from one or more germ layers, such as cartilage, glandular epithelium and neural tissue.
- A prepubertal-type testicular teratoma usually has different behaviour from a postpubertal-type teratoma.
- Postpubertal teratoma has malignant potential even when its tissues look mature.
    - The appearance of mature tissue therefore does not establish benign behaviour in a postpubertal testis.

6. Mixed and Other Germ-Cell Tumours

A. Mixed Germ-Cell Tumours

- Mixed germ-cell tumours contain more than one germ-cell component.
- Each component and its proportion should be identified through adequate sampling.

B. Spermatocytic Tumour

- Spermatocytic tumour mainly affects older men and is biologically distinct from classic seminoma.

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- It is usually not associated with germ-cell neoplasia in situ.
- Most spermatocytic tumours have an indolent course, although rare aggressive transformation can occur.

Sex Cord–Stromal Tumours and Lymphoma

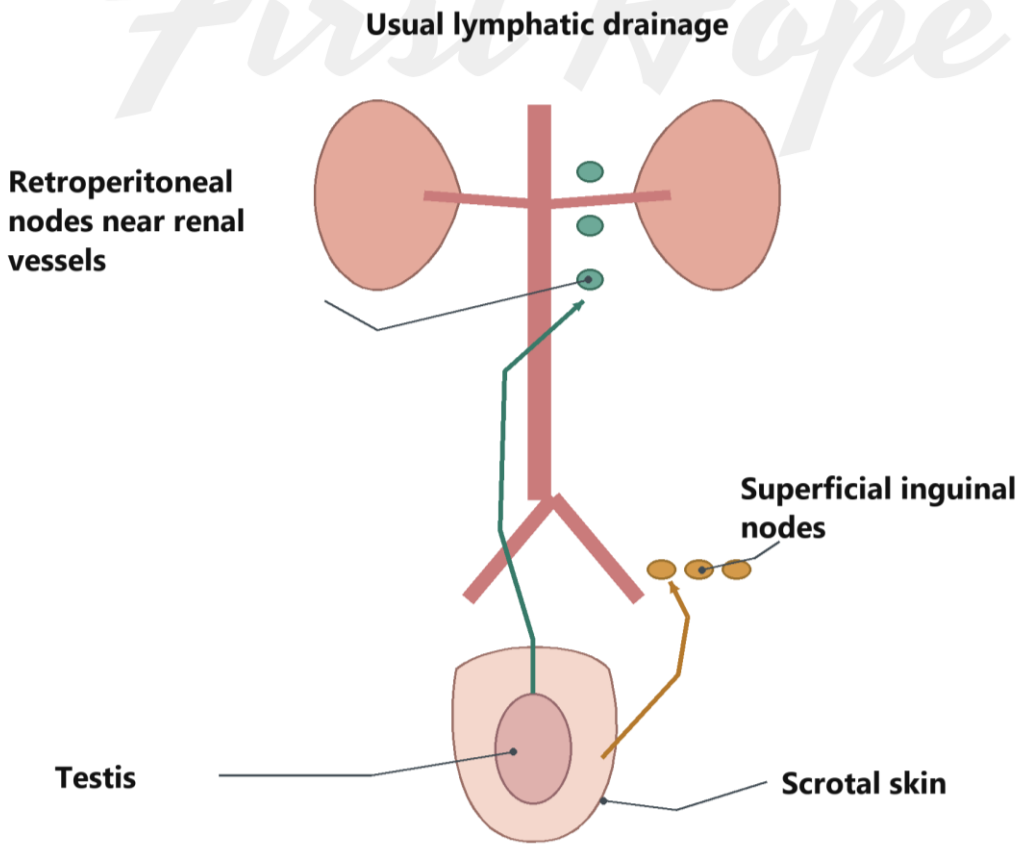
1. Leydig and Sertoli Cell Tumours

- Leydig cell tumours contain cells with abundant granular eosinophilic cytoplasm.
- Some produce hormones and cause precocious puberty or gynaecomastia.
  - Reinke crystals are a useful finding when present but are absent in many cases.
- Sertoli cell tumours may form cords or tubules.
- Most sex cord–stromal tumours are localised, but malignant behaviour can occur.

2. Testicular Lymphoma

- Lymphoma is an important testicular malignancy in older adults.
- It can diffusely replace the testicular tissue and may involve both testes.
  - Age is a useful clue, but diagnosis still requires microscopic and immunophenotypic confirmation.

Presentation, Investigation and Spread



Schematic routes; prior surgery or advanced disease can alter the pattern

The testis and scrotal skin have different usual lymphatic drainage

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Presentation and Ultrasonography

- A painless enlarging testicular mass is a common presentation.
- Pain does not exclude a tumour because haemorrhage or infarction may occur.
- Ultrasonography assesses whether a lesion is intratesticular and defines its structure.

Serum Markers and Follow-up Trends

- Serum AFP, hCG and LDH provide complementary information.
  - Normal tumour markers do not exclude a testicular tumour. LDH is a non-specific indicator that may reflect tumour burden or tissue injury.
- Markers are assessed before and after treatment because their trends aid staging and follow-up.
- Persistently abnormal results require interpretation using marker half-lives and other possible causes.

Lymphatic and Bloodborne Spread

- Testicular lymphatic drainage usually leads first to retroperitoneal nodes near the renal vessels.
  - This differs from the superficial inguinal drainage of scrotal skin.
  - Bloodborne spread commonly reaches the lungs and can involve other organs.
  - The speed and pattern depend on histological type.

Definitive Tissue Assessment

- Definitive tissue assessment is generally obtained through an inguinal surgical approach.
- Routine trans-scrotal biopsy is avoided because it can disrupt normal drainage and local disease assessment.

Condyloma Acuminatum

- **Condyloma acuminatum** is a benign anogenital wart usually associated with low-risk human papillomavirus types **6 and 11**.

Cause and Distribution

- Lesions may affect penile, vulval, perineal, perianal or other anogenital epithelium and may be multiple.

Gross and Microscopic Features

Gross Appearance

- The lesion is commonly a soft, raised papillary growth that may be sessile or pedunculated.
- Several lesions can merge into a cauliflower-like mass.

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