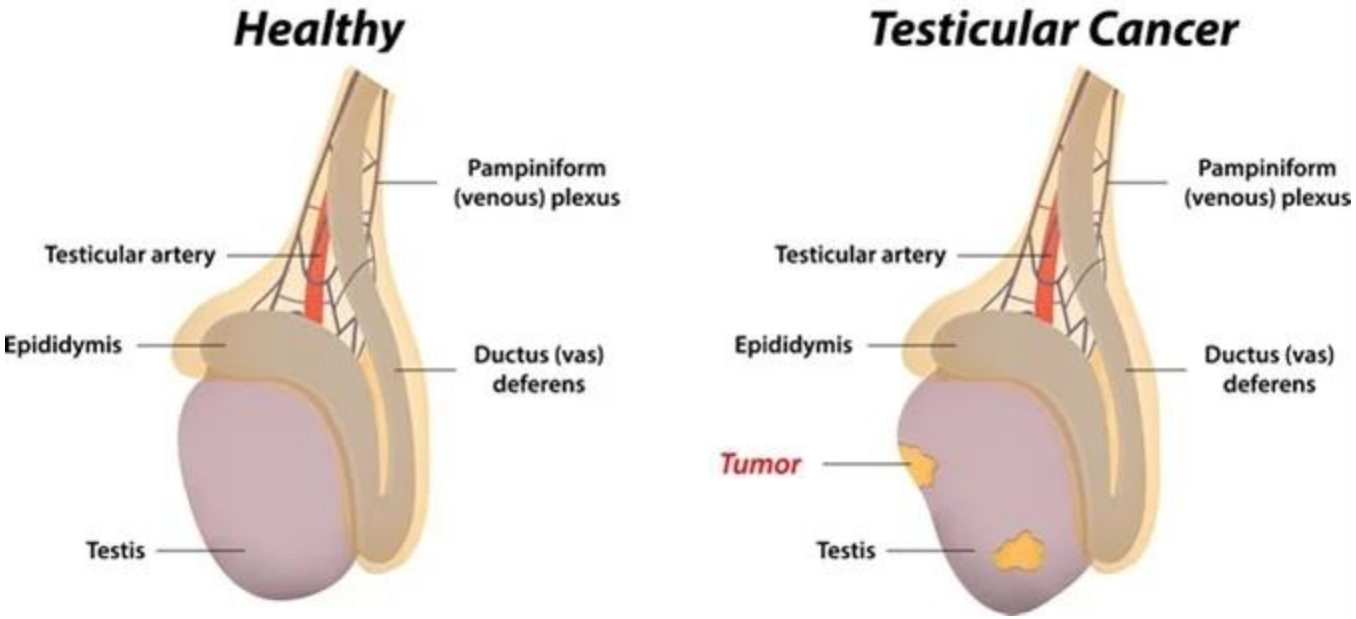
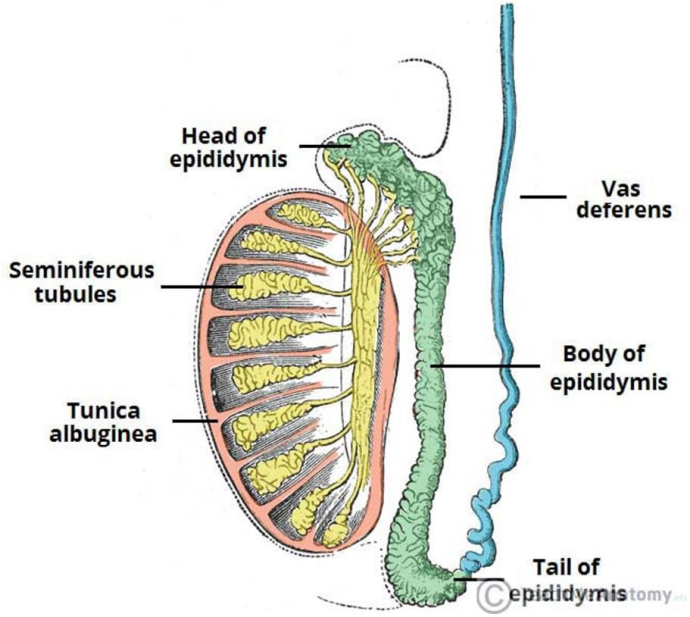
Testicular Tumours



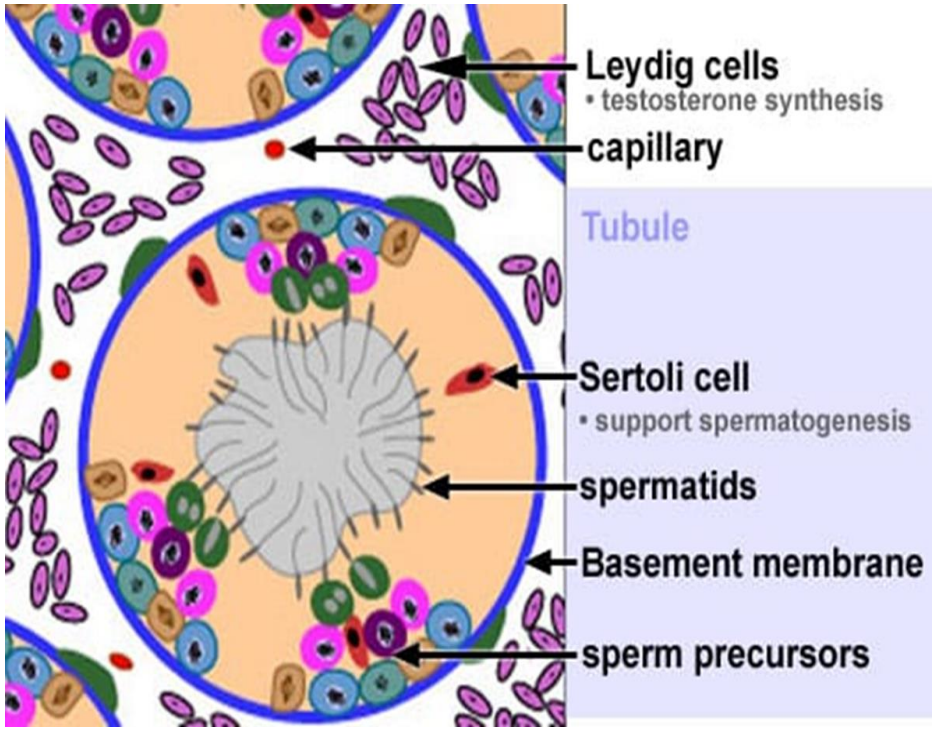
Anatomy

- Testis
- Epididymis - lies on the posterior aspect of the testis
- Vas deference

- Testicular artery - from the abdominal aorta just below the renal arteries
- Testicular veins drain into the renal vein on the left and the inferior vena cava on the right
- Lymphatic drainage- para-aortic nodes that are the draining lymph nodes



- Testicle is divided into lobules by loose connective tissue bands
- Lobules are composed of tubules lined by stratified epithelium composed of maturing germ cells and Sertoli cells
- Leydig or interstitial cells- present between seminiferous tubules- testosterone secretion



Testicular tumours

- Represents around 1–1.5% of male neoplasms
- Commonest malignancy in men between the ages of 18 and 40
- Annual incidence 6 per 100 000 males per year
- Vast majority are germ cell tumours

Risk factors

1. History of testicular maldescent,
2. History of a contralateral testicular tumour
3. Klinefelter's syndrome

Classification

Germ cell tumours (90%-95%)

1. Seminoma
2. Embryonal cell carcinoma
3. Yolk sac tumour
4. Teratoma
5. Choriocarcinoma

Interstical tumours (1%-2%)

1. Leydig cell tumours

Lymphoma (3%-7%)

Other tumours (1%-2%)

Seminoma

- Occurs in 35-45 years of age
- Smooth and enlarged testis
- Rapidly growing tumour
- Metastasize via lymphatics

Para aortic LNs

Common iliac nodes

Inguinal lymphnodes – only if scrotal skin in involved

- Haematogenous spread is uncommon
- Radiosensitive

- Two histological variants

1. Anaplastic
2. Spermatocytic seminoma

- Typically has a cut surface that is homogeneous and pinkish cream in colour
- Compress neighbouring testicular tissue
- Consists of oval cells with clear cytoplasm and large, rounded nuclei with prominent acidophilic nucleoli
- Active lymphocytic infiltration of the tumour suggests a good host response and a better prognosis

Non-seminomatous germ cell tumours (NSGCT)

- Size - may be tiny but can reach the size of a coconut

Histological types (can coexsist within single tumour)

- **Embryonal carcinoma**: highly malignant tumours that occasionally invade cord structures
- **Yolk sac tumour**: tumours with this component secrete alpha fetoprotein (AFP)

- **Choriocarcinoma**: often produces human chorionic gonadotrophin (hCG)

Highly malignant tumour

Metastasises early via both the lymphatics and the bloodstream

- **Teratoma**: these tumours contain more than one cell type with components derived from ectoderm, endoderm and mesoderm

Tumours may range from ‘mature’ with well-differentiated tissue elements, to ‘immature’ with undifferentiated primitive tissues

All can metastasise

Interstitial cell tumours

- Arise from Leydig or Sertoli cells
- Leydig cell tumour masculinizes
- Sertoli cell tumour feminises
- 10% are malignant
- Most prepubertal interstitial cell tumours (around 25% of cases) produce androgens - cause sexual precocity
- Regression of the symptoms after orchidectomy may be incomplete

Clinical features

- Painless testicular lump – Usual presentation
- Sensation of heaviness can occur if the testis is two or three times its normal size
- Swelling
- Epididymo-orchitis
- Severe pain and acute enlargement of the testis – haemorrhage into the tumour
- Symptoms of metastatic disease

Abdominal or lumbar pain and the in the epigastrium – intra abdominal disease

- Chest pain, dyspnoea and haemoptysis - Lung metastases
- On examination

Intratesticular solid mass

Secondary hydrocele

Epididymis becomes more difficult to feel when it is flattened or incorporated in the growth

Vas is never thickened

Rectal examination is normal

- 1–2% of cases the tumour is bilateral at the time of diagnosis

Investigations

- Diagnosis is confirmed by ultrasound scanning of the testis
- Assess the contralateral testis is a mandatory
- Tumour markers

1. Beta HCG- Teratoma, seminoma
2. Alpha feto protein - Teratoma, not seen in seminoma
3. LDH - Teratoma and seminoma
4. Placental alkaline phosphatase – Increased in seminoma

Markers are used to monitor the response to treatment

- Chest x-ray - cannon ball metastases
- Computed tomography (CT) of chest, abdomen and pelvis

✓The most useful means of detecting metastatic disease

✓For monitoring the response to therapy

✓Usually undertaken after the affected testis has been removed

- Biopsy – not indicated

Staging

- TNM staging

❑Stage I: Tumour is confined to the testis and epididymis

❑Stage II: Nodal disease is present but is confined to nodes below the diaphragm

❑Stage III: Nodes are present above the diaphragm

❑Stage IV: Non lymphatic metastatic disease (most typically within the lungs)

Treatment

Scrotal exploration and orchidectomy for suspected testicular tumour

- Orchidectomy is undertaken via an inguinal incision
- Soft clamp is placed across the cord to stop dissemination of malignant cells
- If there is doubt about the diagnosis, the testis should be bisected along its anterior convexity to examine its internal structure

Management by staging and histological diagnosis (after orchidectomy)

- Treatment of patients with germ cell tumours
- Usually successful
- Excellent response of these tumours to platinum-based chemotherapy and (for seminomatous tumours) to radiotherapy
- Identification of those patients who do not need chemotherapy - escape the side effects of treatment

Stage I tumours

- Seminomas – radiosensitive

Also excellent response to platinum-based chemotherapy

- NSGCTs are not radiosensitive

Highly sensitive to combination chemotherapy with bleomycin, etoposide and cis-platinum (BEP chemotherapy)

Subclinical metastases - will relapse

Stage II–IV tumours

- Combination BEP chemotherapy is the mainstay of treatment - seminoma and NSGCT
- Retroperitoneal lymph node dissection - NSGCT when retroperitoneal masses remain after chemotherapy
- The operation can be formidable if the tumour mass is large
- Retrograde ejaculation is likely complications – Prevention- preserve the sympathetic outflow to the bladder neck

Interstitial tumours

- Most of these tumours are benign (around 80%)
- Conservative treatment of small lesions - organ-sparing surgery
- For larger tumours - orchidectomy is necessary
- Multimodality treatment - malignant forms of tumours

Prognosis

- Depends on

1. Histological type
2. Stage at presentation

- Seminoma, if there are no metastases - 90–95% of 5 year survival rate
- NSGCTs a 5-year survival rate - more than 90%
- Advanced tumours, the 5-year survival - 60%