Testicular Tumors

Tutorial handout for 4th year students in Alkindy Collage of Medicine / University of Baghdad

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Epidemiology:

- They are the most common solid malignancy in men aged between 20 and 45 years.
- The peak incidence for NSGCT is 25 years and seminomas is 35 years.
- White : Black = 3:1
- Patient with Cryptorchidism are 3-14 times more likely to develop testicular cancer then normal individual
- Family history, maternal estrogen ingestion & HIV infection are risk factors for testicular carcinoma

WHO histopathological classification of testicular tumors:

- Germ cell tumors (90%)
  - Seminoma(48%)
    - Spermatocytic, classical, and anaplastic subtypes
  - Non-seminomatous GCT (42%)
    - Teratoma
      - Differentiated/mature
      - Intermediate/immature
      - Undifferentiated/malignant
    - Yolk sac tumor
    - Choriocarcinoma
    - Mixed NSGCT
  - Mixed GCT(10%)
- Sex cord stromal tumors (3%) (10% malignant)
  - Leydig cell
  - Sertoli cell
  - Mixed or unclassified
- Mixed germ cell/sex cord tumors (rare)

- Other tumors (7%)
    - Epidermoid cyst (benign)
    - Adenomatoid tumor
    - Adenocarcinoma of the rete testis
    - Carcinoid
    - Lymphoma (5%)
    - Metastatic, from another site (1%)

Presentation:

- Painless lump 86%
- Pain 31%
- Dragging sensation 29%
- Secondary Hydrocele
- Gynaecomastia from B-HCG production
- O/E: The normal side is first examined, followed by the abnormal side. This may reveal asymmetry or slight scrotal skin discoloration with hard, non-tender, irregular, non-transilluminable mass in the testis or replacing the testis

Spread:

- Hematogenous: to the liver, lung, bone and brain (Teratoma).
- Lymphatic: to para- aortic nodes and produce back pain (Seminomas).
- Direct: throhgh tunica albuginea and tunica vaginalis to the scrotal skin.

TNM staging of testicular tumors:

- T—Primary tumor
    - TX: Cannot be assessed
    - T0: No evidence of primary tumor
    - Tis: Intratubular germ cell neoplasia (CIS)
    - T1: Limited to testis and epididymis, no vascular invasion
    - T2: Invades beyond tunica albuginea or has vascular invasion
    - T3: Invades spermatic cord
    - T4: Invades scrotum
- N—Regional lymph nodes
    - NX: Cannot be assessed

- ü N0: No regional lymph node metastasis
- ü N1: Lymph node metastasis ≤2 cm, or multiple nodes, none more than 2 cm. and <6 nodes positive
- ü N2: nodal mass >2 cm and ≤5 cm. or ≥6 nodes positive
- ü N3: Nodal mass >5 cm.

v M—Distant metastasis

- ü MX: Cannot be assessed
- ü M0: No distant metastasis
- ü M1: Distant metastasis present in nonregional lymph nodes or lungs
- ü M2: Nonpulmonary visceral metastases

v S—Serum tumor markers

- ü SX: Markers not available
- ü S0: Marker levels within normal limits
- ü S1: (LDH) <1.5 ×normal and hCG <5000 mIU/mL and AFP <1000 ng/mL
- ü S2: LDH 1.5–10 ×normal or hCG 5000–50,000 mIU/mL or AFP 1000–10,000 ng/mL
- ü S3: LDH >10 ×normal or hCG >50,000 mIU/mL or AFP >10,000 ng/mL

Differential Diagnosis of Scrotal mass:

Painful mass:

- ü *Epididymitis/orchitis; bacterial, STD, mumps, tuberculosis*
- ü *Incarcerated/strangulated hernia*
- ü *Testicular trauma: usually blunt; contusion, rupture; usually associated hematocele.*
- ü *Torsion (testicle, testicular or epididymal appendage)*
- ü *Tumor (pain infrequent unless traumatized or rapidly growing)*

Painless mass:

- ü *tumor of testis, epididymis, rete testis or tunica vaginalis*
- ü *Lipoma or hydrocele of the cord*
- ü *Other scrotal condition like Hydrocele, haematocele, Chylocele and Scrotal edema*
- ü *Sperm granuloma following vasectomy*
- ü *Spermatocele*

- ü *Leukemia or lymphoma*
- ü *Varicocele*

Investigations:

Patients should be referred urgently and seen within 2 weeks if malignancy is suspected:

- Ø Ultrasound of Scrotum.
- Ø Tissue histology can follow an Inguinal Orchidectomy.
- Ø Disease can be staged by thoraco-abdominal CT scanning.
- Ø Tumour markers are useful in staging and assessing response to treatment.
  - ü Alpha-fetoprotein (AFP): is produced by yolk sac elements but not produced by seminomas.
  - ü Beta human chorionic gonadotrophin ($_{\beta}$-HCG) is produced by trophoblastic elements and so may be elevated in both teratomas and seminomas.
  - ü Lactate dehydrogenase (LDH): less specific, correlate with tumor burden, and is most useful in monitoring treatment response in advanced seminoma.

Treatment:

dependant on type of tumour and stage

Seminomas:

Seminomas are radiosensitive:

Removal of primary tumour by Inguinal (Radical) orchidectomy plus:

- ü Stage I and II disease treated by inguinal orchidectomy plus radiotherapy to ipsilateral abdominal and pelvic nodes or surveillance
- ü Stage IIC and beyond are treated with chemotherapy (often cisplatin, etoposide and bleomycin - BEP)
- ü Survielance
- ü Tumour markers are less reliable.

NSGCT:

NSGCT are not radiosensitive:

Removal of primary tumour by Inguinal (Radical) orchidectomy plus:

- ü Chemotherapy for any who relapse or have metastasis at presentation (cisplatin, bleomycin and etoposide - BEP is standard regimen)

- Surveillance
- Tumour markers are very important.