EAU Guidelines on Testicular Cancer (TC)

Epidemiology, staging and diagnosis

Powered by the European Association of Urology

EPIDEMIOLOGY:

1% of adult neoplasms and 5% of urological tumours. Its incidence has increased particularly in industrialised countries.
1-2% bilateral. Predominant histology is germ cell tumours (GCT) (90-95%).
Peak incidence is in the third decade of life for non-seminoma (NS) and mixed GCTs, and the fourth decade for pure seminoma.
Risk factors: cryptorchidism, hypospadias, decreased spermatogenesis and sub- or infertility, familial history of TCs among first-degree relatives and the presence of a contralateral tumour or GCNIS.

HISTOLOGICAL CLASSIFICATION, WHO 2016:

Germ cell tumours: **Germ cell neoplasia in situ (GCNIS)**
Derived from GCNIS: **Seminoma • Embryonal carcinoma • Yolk sac tumour, post-pubertal type • Trophoblastic tumours • Teratoma, post-pubertal type • Teratoma with somatic malignant components • Mixed germ cell tumours**
Germ cell tumours unrelated to GCNIS: **Spermatocytic tumour • Yolk sac tumour, pre-pubertal type • Mixed germ cell tumour, pre-pubertal**
Sex cord/stromal tumours: **Leydig cell tumour • Sertoli cell tumour • Granulosa cell tumour • Thecoma/fibroma group of tumours • Other sex cord/gonadal stromal tumours • Tumours containing both germ cell and sex cord/gonadal stromal - Gonadoblasto**
Miscellaneous non-specific stromal tumours: **Ovarian epithelial tumours • Tumours collecting ducts and rete testi**

STAGING: TNM UICC, 2016, 8th edn:

pT - Primary Tumour[1]	
pTX	Primary tumour cannot be assessed (see note 1)
pT0	No evidence of primary tumour (e.g., histological scar in testis)
pTis	Intratubular germ cell neoplasia (carcinoma *in situ*)*
pT1	Tumour limited to testis and epididymis without vascular/lymphatic invasion; tumour may invade tunica albuginea but not tunica vaginalis*
pT2	Tumour limited to testis and epididymis with vascular/lymphatic invasion, or tumour extending through tunica albuginea with involvement of tunica vaginalis**
pT3	Tumour invades spermatic cord with or without vascular/lymphatic invasion**
pT4	Tumour invades scrotum with or without vascular/lymphatic invasion
N - Regional Lymph Nodes – Clinical	
NX	Regional lymph nodes cannot be assessed
N0	No regional lymph node metastasis
N1	Metastasis with a lymph node mass 2 cm or less in greatest dimension or multiple lymph nodes, none more than 2 cm in greatest dimension
N2	Metastasis with a lymph node mass more than 2 cm but not more than 5 cm in greatest dimension; or more than 5 nodes positive, none more than 5 cm; or evidence of extranodal extension of tumour
N3	Metastasis with a lymph node mass more than 5 cm in greatest dimension
Pn - Regional Lymph Nodes – Pathological	
pNX	Regional lymph nodes cannot be assessed
pN0	No regional lymph node metastasis
pN1	Metastasis with a lymph node mass 2 cm or less in greatest dimension and 5 or fewer positive nodes, none more than 2 cm in greatest dimension
pN2	Metastasis with a lymph node mass more than 2 cm but not more than 5 cm in greatest dimension; or more than 5 nodes positive, none more than 5 cm; or evidence of extranodal extension of tumour
pN3	Metastasis with a lymph node mass more than 5 cm in greatest dimension
M - Distant Metastasis	
MX	Distant metastasis cannot be assessed
M0	No distant metastasis
M1	Distant metastasis **
	M1a Non-regional lymph node(s) or lung metastasis
	M1b Distant metastasis other than non-regional lymph nodes and lung

S - Serum Tumour Markers (Pre chemotherapy)			
SX	Serum marker studies not available or not performed		
S0	Serum marker study levels within normal limits		
	LDH (U/l)	**hCG (mIU/mL)**	**AFP (ng/mL)**
S1	< 1.5 x N and	< 5,000 and	< 1,000
S2	1.5-10 x N or	5,000-50,000 or	1,000-10,000
S3	> 10 x N or	> 50,000 or	> 10,000

Stage grouping				
Stage 0	pTis	N0	M0	S0
Stage I	pT1-T4	N0	M0	SX
Stage IA	pT1	N0	M0	S0
Stage IB	pT2 - pT4	N0	M0	S0
Stage IS	Any pT/TX	N0	M0	S1-3
Stage II	Any pT/TX	N1-N3	M0	SX
Stage IIA	Any pT/TX	N1	M0	S0
	Any pT/TX	N1	M0	S1
Stage IIB	Any pT/TX	N2	M0	S0
	Any pT/TX	N2	M0	S1
Stage IIC	Any pT/TX	N3	M0	S0
	Any pT/TX	N3	M0	S1
Stage III	Any pT/TX	Any N	M1a	SX
Stage IIIA	Any pT/TX	Any N	M1a	S0
	Any pT/TX	Any N	M1a	S1
Stage IIIB	Any pT/TX	N1-N3	M0	S2
	Any pT/TX	Any N	M1a	S2
Stage IIIC	Any pT/TX	N1-N3	M0	S3
	Any pT/TX	Any N	M1a	S3
	Any pT/TX	Any N	M1b	Any S

Stage IA: **primary tumours limited to the testis and epididymis, with no evidence of microscopic vascular or lymphatic invasion, no sign of metastases on clinical examination or imaging, and post-orchidectomy serum tumour marker levels within normal limits.**

Stage IB: **more locally invasive primary tumour, but no sign of metastatic disease.**

Stage IS: **persistently elevated (and usually increasing) serum tumour marker levels after orchidectomy, indicating subclinical metastatic disease (or possibly a second GCT in the remaining testis).**

[1] Except for pTis and pT4, where radical orchidectomy is not always necessary for classification purposes, the extent of the primary tumour is classified after radical orchidectomy.
*The current "Carcinoma in situ" nomenclature is replaced by GCNIS.
*AJCC 18 Ed. subdivides T1 Pure Seminoma by T1a and T1b depending on size no greater than 3 cm or greater than 3 cm in greatest dimension.
** AJCC 18 Ed. considers the hilar soft tissue invasion as pT2, while the discontinuous involvement of the spermatic cord is considered as pM1.

SUMMARY OF DIAGNOSTIC EVALUATION:

Physical examination: Perform **physical examination** including supraclavicular, cervical, axillary and inguinal lymph nodes, breast and testicles.
Serum tumour markers (STM): Measure **STM before & after orchidectomy** taking into account half-life.
Imaging:

- Perform **bilateral testicular ultrasound (US) in all patients** with suspicion of TC
- Perform contrast CT scan (chest, abdomen and pelvis) in patients with TC.
  If iodine allergy or other limiting factors perform abdominal and pelvic magnetic resonance imaging.
- Perform MRI of **the brain in patients with multiple lung metastases, or high β-HCG values, or those in the poor-prognosis risk group.**
- Do **not use PET or bone scan for staging.**

Inguinal exploration and initial management:

- Perform **orchidectomy and pathological examination of the testis to confirm the diagnosis and to define the local extension** (pT category).
- Testis **sparing surgery may be offered** in synchronous bilateral, metachronous contralateral tumours or in patients with a solitary testis **in order to attempt to preserve fertility.**
- Discuss **biopsy of the contralateral testis to patients with TC and who are at high-risk for contralateral germ cell neoplasia 'in situ' (GCNIS).**

Others:

- Discuss **sperm banking with all men prior to starting treatment** for TC
- **Encourage patients with TC to perform self-examination and to inform first-degree male relatives of the need for self-examination.**