

TNM classification for testicular cancer (UICC, 2002 Sixth Edition)

pT

pT - Primary Tumour*

- pTX** Primary tumour cannot be assessed
- pT0** No evidence of primary tumour (e.g. histologic 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

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 2cm or less in greatest dimension, or multiple lymph nodes, none more than 2cm in greatest dimension
- N2** Metastasis with a lymph node mass more than 2cm but not more than 5cm in greatest dimension or multiple lymph nodes, any one mass more than 2cm but not more than 5cm in greatest dimension
- N3** Metastasis with a lymph node mass more than 5cm in greatest dimension

pN

pN - Pathological (after lymph node biopsy)

- pNX** Regional lymph nodes cannot be assessed
- pN0** No regional lymph node metastasis
- pN1** Metastasis with a lymph node mass 2cm or less in greatest dimension and 5 or fewer positive nodes, none more than 2cm in greatest dimension
- pN2** Metastasis with a lymph node mass more than 2cm but not more than 5cm in greatest dimension; or more than 5 nodes positive, none more than 5cm; or evidence of extranodal extension of tumour
- pN3** Metastasis with a lymph node mass more than 5cm in greatest dimension

M

M - Distant Metastasis

- MX** Distant metastasis cannot be assessed
- M0** No distant metastasis
- M1** Distant metastasis
 - M1a** Non-regional lymph node(s) or lung
 - M1b** Other sites

* 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; see pT. In other circumstances, TX is used if no radical orchidectomy has been performed.

Treatment of testicular cancer

(pT1) SEMINOMA

- Prophylactic radiotherapy to a para-aortic field with a total dose of 20 Gy
- Surveillance if facilities are available and patient willing and able to comply with a surveillance policy
- Carboplatin-based chemotherapy is an alternative to radiotherapy

(pT1-pT4) NON-SEMINOMA GERM CELL TUMOURS

(pT1, no vascular invasion) Low risk.

- If the patient is able and willing to comply with a surveillance policy and long-term (at least 5 years) close follow-up is feasible, surveillance is recommended. In patients not willing to undergo surveillance or if a surveillance strategy is not feasible, nerve-sparing RPLND or primary chemotherapy are equally effective
- If RPLND reveals PN+ (lymph node disease), adjuvant chemotherapy with two courses of BEP should be considered

(pT2-pT4, vascular invasion) High risk.

Active treatment is recommended:

- Primary adjuvant chemotherapy with two courses of BEP is recommended
- If the patient is not willing to undergo chemotherapy or if chemotherapy is not feasible, nerve-sparing RPLND or surveillance with treatment at relapse (in about 50% of patients) are alternative options

METASTATIC GERM CELL TUMOURS

- Standard treatment of any pT, N1 seminoma is radiotherapy with 30 Gy in an ipsilaterally extended field compared to pT1-pT4 ("hockey stick" = retroperitoneal nodes & ipsilateral iliac lymph nodes); and 36 Gy for any pT, N2. When necessary, chemotherapy can be used as a salvage treatment with the same schedule as for the corresponding IGCCCG prognostic groups for NSGCT
- Any pT, N3 seminoma is treated as "good prognosis" metastatic tumour with three cycles of BEP. Residual tumour resection is usually not necessary in these patients
- Any pT, N1-3 NSGCT with elevated tumour markers should be treated as metastatic tumours (three cycles of BEP). Only any pT, N1-3 NSGCT without marker elevation should undergo surveillance or nerve-sparing RPLND first in order to avoid chemotherapy

in patients with pure teratoma. In terms of long-term recurrence-free survival, patients with any pT, N1-3 NSGCT can be treated either by RPLND (eventually followed by two cycles of chemotherapy) or by primary chemotherapy

- Three courses of BEP chemotherapy is the primary treatment of choice for patients with good-prognosis metastatic NSGCT
- Four courses of BEP chemotherapy is the primary treatment of choice for patients with intermediate- and poor-prognosis metastatic NSGCT
- Surgical resection of residual masses after chemotherapy in NSGCT is indicated in cases of a residual mass >1cm and when tumour marker levels are normal or normalising

BEP = Bleomycin & Etoposide & Platinum combination chemotherapy

Prognostic-based staging system for metastatic germ cell cancer

| PROGNOSIS | SEMINOMA | NON-SEMINOMA |
|---------------------|---|---|
| GOOD | <p>If all criteria are met:</p> <ul style="list-style-type: none"> • Any primary site • No non-pulmonary metastases • Normal αFP/normal LDH, low βhCG | <p>If all criteria are met:</p> <ul style="list-style-type: none"> • Testis/retroperitoneal primary • No non-pulmonary metastases e.g. liver, brain • Lower levels of tumour markers |
| INTERMEDIATE | <p>If all criteria are met:</p> <ul style="list-style-type: none"> • Any primary site • No non-pulmonary metastases • Normal αFP/normal LDH, medium βhCG | <p>If all criteria are met:</p> <ul style="list-style-type: none"> • Testis/retroperitoneal primary • No non-pulmonary metastases e.g. liver, brain • Medium levels of tumour markers |
| POOR | | <p>If any criteria are met:</p> <ul style="list-style-type: none"> • Non-pulmonary metastases e.g. liver, brain • Higher level of tumour markers • Mediastinal primary for NSGCT |

Serum Tumour Markers

Post-orchidectomy half-life kinetics of serum tumour markers

- The persistence of elevated serum tumour markers 3 weeks after orchidectomy may indicate the presence of metastases, while its normalisation does not necessarily mean an absence of tumour
- Tumour markers should be assessed until they are normal, as long as they follow their half-life kinetics and no metastases are revealed on scans

Other Examinations

Assessment of abdominal and mediastinal nodes and viscera (CT scan) and supraclavicular nodes (physical examination)

- Other examinations such as brain or spinal CT, bone scan or liver ultrasound should be performed if metastases are suspected
- Patients diagnosed with testicular seminoma who have a positive abdominal CT scan are recommended to have a chest CT scan
- A chest CT scan should be routinely performed in patients diagnosed with non-seminomatous germ cell tumours (NSGCT) because in 10% of cases small subpleural nodes are present that are not visible radiologically