ACCM/

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Dr. Muhammad Idrees declares he has no conflicts of interest to disclose.

<table>
<thead>
<tr>
<th>Edition</th>
<th>Publication Year</th>
<th>Effective Year</th>
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<td>8</td>
<td>2016</td>
<td>2018</td>
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Testicular TNM AJCC staging 1977

- **Primary Tumor (T)**
  - T0: Tumor cannot be located
  - T1: Limited to tunica albuginea
  - T2: Extends beyond the tunica albuginea
  - T3: Rete testis or epididymis
  - T4a: Invasion of spermatic cord
  - T4b: Invasion of scrotal wall

- **Nodal Involvement (N)**
  - N0: No evidence of nodal involvement
  - N1: Limited to homolateral regional lymph nodes
  - N2: Bilateral or multiple regional lymph nodes
  - N3: Palpable abdominal mass
  - N4: Juxtaregional nodes

- **Distant Metastasis (M)**
  - M0: No distant metastasis
  - M1: Distant metastasis present
Testicular TNM AJCC staging 1977

- T stage was based on the extent of tumor
  - Extent of involvement of adjacent structures
  - No size criteria
- N stage, extent of disease
  - Based on focality, laterality, palpability and juxtaregional nodes
- M stage, any metastasis
  - Presence or absence of metastasis
  - No S category defined

Changes Summary in Testicular TNM Staging

<table>
<thead>
<tr>
<th>Change</th>
<th>Level of Evidence</th>
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<tbody>
<tr>
<td>In pure seminoma, T1 is subclassified</td>
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<tr>
<td>Epididymal invasion is considered T2 rather than T1</td>
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<tr>
<td>Hilar soft tissue invasion is considered T2</td>
<td>1</td>
</tr>
<tr>
<td>Discontinuous involvement of the spermatic cord by vascular-lymphatic invasion represents M1 disease</td>
<td>1</td>
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</table>

Cancer Not staged with AJCC

<table>
<thead>
<tr>
<th>Pathologic Types of Tumor</th>
<th>Staging Classification</th>
</tr>
</thead>
<tbody>
<tr>
<td>Seminomatous tumors</td>
<td>No AJCC staging system</td>
</tr>
<tr>
<td>Non-malignant sex cord-/gonadal-stromal tumors</td>
<td>No AJCC staging system</td>
</tr>
<tr>
<td>Prepubertal germ cell tumors</td>
<td>No AJCC staging system</td>
</tr>
<tr>
<td>Hematolymphoid tumors</td>
<td>Hematologic malignancies</td>
</tr>
<tr>
<td>Paratesticular neoplasms</td>
<td>No AJCC staging systems</td>
</tr>
</tbody>
</table>

Germ Cell Neoplasia In Situ (GCNIS)

- Replaced “intratubular germ cell neoplasia, unclassified”. (WHO 2016)
- GCNIS associated tumors
  - Seminomatous and nonseminomatous germ cell tumor
- Non-GCNIS tumors
  - Spermatocytic Tumor,
  - Prepubertal teratoma, prepubertal yolk sac tumor and mixed
  - Prepubertal YST and mixed tumor classification
    - AJCC or alternatively COG
### Macroscopic Evaluation of Orchiectomy

- The extent of primary tumor is usually evaluated after radical orchiectomy
- Tumor size
- Multifocality
- Location
  - Invasion of adjacent structures
    - hilum, tunica albuginea, tunica vaginalis, epididymis, spermatic cord and scrotum

### Seminoma size

- Tumors limited to the testis in the absence of lymphovascular invasion are classified as pT1
- Subclassify seminoma based on size
  - 3 cm or less: pT1a
  - > 3 cm: pT1b
- Size matters - adjuvant radiation or carboplatin-based chemotherapy
- Conservative approach by AJCC, higher cut-off may be considered
- No size criteria for other germ cell tumors.
- Seminoma with syncytiotrophoblasts is not a mixed germ cell tumor.

### Retes testis Invasion

- Rete testis invasion is not upstaged in new AJCC 8th edition
- Retes testis invasion may be associated with a higher clinical stage
- Limited evidence
- Future refinements possible
- Pagetoid extension versus stromal invasion of rete testis.
Rete testis stromal invasion

Pagetoid Spread to Rete Testis

pT2

Hilar Soft Tissue and Epididymal Invasion

- Hilar soft tissue upstaged to pT2
- Epididymal invasion upstaged to pT2
  - Some evidence to even stage higher
Vascular Invasion

- Any vascular invasion is pT2
  - Intratesticular
  - Spermatic cord

Intratesticular Vascular invasion

Spermatic cord LVI

Spermatic cord vascular invasion

Spermatic cord lymphatic invasion
Continuous spermatic cord invasion is pT3
Discontinuous invasion
- Likely due to vascular transport and invasion of soft tissue
- Upstaged as M1
- With or without vascular invasion

Which of these is T3 disease?

M1
- Extremely Rare
- Advanced clinical stage disease
Testicular TNM AJCC staging 2017

Regional lymph node (pN)

- NX: Regional lymph nodes cannot be assessed
- N0: No regional lymph node metastasis
- pN1: Metastasis with a lymph node mass 2 cm or less in greatest dimension and less than or equal to 5 nodes positive, 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 tumor
- pN3: Metastasis with a lymph node mass more than 5 cm in greatest dimension

Post-RT Necrosis & Reaction

Solid YST

"Fibrosis"
Testicular TNM AJCC staging 2017

- Distant Metastasis (M)
  - M0 No distant metastasis
  - M1 Distant metastasis
    - M1a Non-retroperitoneal nodal or pulmonary metastasis
    - M1b Non pulmonary visceral metastasis

Serum Tumor Markers (S)

- SX Marker studies not available or not performed
- S0 Marker study levels within normal limits
- S1 LDH < 1.5 × N AND hCG (mlu/ml) < 5000 AND AFP (ng/ml) < 1000
- S2 LDH 1.5–10 × N OR hCG (mlu/ml) 5000–50,000 OR AFP (ng/ml) 1000–10,000
- S3 LDH > 10 × N OR hCG (mlu/ml) > 50,000 OR AFP (ng/ml) > 10,000

AJCC Prognostic Score Groups

- Based on TNM and S classification
- Range from Stage group 0 to IIIC
- Stage IV is not assigned because of excellent prognosis

Few other things

- pTx category is only used when the tissue is not available or the specimen is insufficient to render a diagnosis.
  - Avoid if you can
- y qualifier should use for posttherapy specimens
- r qualifier for recurrent cases
- a qualifier for autopsy
- Germ cell tumors are not graded
- Imaging may help in size and extent estimation.
- Topography ICDO codes are provided (WHO)
- Mx is not a valid M category
<table>
<thead>
<tr>
<th>Site</th>
<th>AJCC Change</th>
<th>Details of Change</th>
<th>Level of Evidence</th>
<th>Inclusion in UICC</th>
<th>Comment</th>
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<tbody>
<tr>
<td>Testis</td>
<td>Definition of Primary Tumor (T)</td>
<td>Pure seminoma: T1a is subclassified to T1a1 and T1a2 according to tumor size using a 3 cm cutoff.</td>
<td>3</td>
<td>NO</td>
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<td>Epididymal invasion is considered T2 rather than T1.</td>
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<td>Discontinuous involvement of the spermatic cord by vascular-lymphatic invasion represents M1 disease.</td>
<td>3</td>
<td>NO</td>
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<td>Other Issues</td>
<td>For pTis, UICC uses term “Intraepithelial germ cell neoplasia” rather than “Intraepithelial germ cell neoplasia in situ”. Current terminology (WHO 2016) is “Germ cell neoplasia in situ”.</td>
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<td>NO</td>
<td></td>
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"The measure of intelligence is the ability to change"  
Albert Einstein