Chapter 23

TESTIS TUMOR CLASSIFICATION AND STAGING

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Testicular cancer represents for 1% of male neoplasms and 5% of urological tumors. It is the most common tumor in men aged 15-35 years. In western societies, 3 to 10 new cases occur per 100,000 men per year, and the incidence is increasing in industrialized countries (1, 2, 3). Data from the Surveillance Epidemiology and End Results Program (1992 - 2012) suggest that there is an ever-increasing risk for Caucasian and Spanish men in the United States and predicts a higher incidence in the next decade (4, 5). In the diagnosis, 1-2% of the cases are bilateral, and the dominant histology is Germ Cell Tumors (GCT) (90-95% of cases) [1]. Peak incidence is highest in the third decade of life in non-seminomas and in seminomas for the fourth decade.

PATHOLOGICAL CLASSIFICATION

The pathological classification of testicular tumors is based on the 2016 update of the World Health Organization (WHO) pathological classification (6).

1. Germ cell tumours

- Derived from germ cell neoplasia *in situ* (GCNIS)
- Germ cell neoplasia *in situ* (GCNIS)
- Seminoma
- Embryonal carcinoma
- Yolk sac tumour, post-pubertal type
- Trophoblastic tumours
- Teratoma, post-pubertal type
- Teratoma with somatic-type malignancies
- Mixed germ cell tumours

2. Germ cell tumours unrelated to GCNIS

- Spermatocytic tumour
- Yolk sac tumour, pre-pubertal type

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Table 5. Prognostic-based staging system for metastatic germ cell cancer (International Germ Cell Cancer Collaborative Group [29])*	
Good-prognosis group	
Non-seminoma (56% of cases) **5-year PFS 89%** **5-year survival 92%**	All of the following criteria: • Testis/retro-peritoneal primary • No non-pulmonary visceral metastases • AFP < 1,000 ng/mL • hCG < 5,000 IU/L (1,000 ng/mL) • LDH < 1.5 x ULN
Seminoma (90% of cases) **5-year PFS 82%** **5-year survival 86%**	All of the following criteria: • Any primary site • No non-pulmonary visceral metastases • Normal AFP • Any hCG • Any LDH
Intermediate-prognosis group	
Non-seminoma (28% of cases) **5-year PFS 75%** **5-year survival 80%**	Any of the following criteria: • Testis/retro-peritoneal primary • No non-pulmonary visceral metastases • AFP 1,000 - 10,000 ng/mL or • hCG 5,000 - 50,000 IU/L or • LDH 1.5 - 10 x ULN
Seminoma (10% of cases) **5-year PFS 67%** **5-year survival 72%**	All of the following criteria: • Any primary site • Non-pulmonary visceral metastases • Normal AFP • Any hCG • Any LDH
Poor-prognosis group	
Non-seminoma (16% of cases) **5-year PFS 41%** **5-year survival 48%**	Any of the following criteria: • Mediastinal primary • Non-pulmonary visceral metastases • AFP > 10,000 ng/mL or • hCG > 50,000 IU/L (10,000 ng/mL) or • LDH > 10 x ULN
Seminoma	No patients classified as poor prognosis

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