Management of Stage I Testicular Seminoma

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KEYWORDS

• Seminoma • Surveillance • Radiation • Chemotherapy
• Stage I

Testicular cancer is a rare tumor accounting for only 1% to 2% of all cancers in men.[1] An American Caucasian man has an estimated 0.2% cumulative lifetime risk for developing testicular cancer.[2] Despite the relative rarity of this tumor, it is still the most common solid tumor in young men aged 20 to 35 years and the incidence has increased by 61% from 1973 to 2003, with the majority of the rise caused by seminomas rather than nonseminomas.[3] In 2010, there was an estimated 8480 new diagnoses and 350 deaths from testicular cancer in the United States.[4] Approximately 60% of testicular cancers will have seminoma histology and 80% of these men, or approximately 4300 men, will have disease confined to the testicle (stage I).[5] Thus, stage I seminoma is the most common presentation of testicular cancer.

Adjuvant treatment options for stage I seminoma include surveillance, radiation, and chemotherapy. Historically, adjuvant radiation had been the treatment of choice with excellent cure rates and overall survival rates. Chemotherapy has recently emerged as an alternative option, although longer follow-up is required to ensure that long-term relapse rates and toxicities are acceptable in comparison to radiation. Despite excellent results for both adjuvant chemotherapy and radiotherapy (RT), many concerns have been raised in regards to the potential long-term toxicities, such as secondary cancers, gonadal toxicity, and cardiac toxicity.

To minimize the burden of treatment, there has been a shift away from adjuvant treatments for stage I testicular seminomas toward surveillance protocols for seminoma survivors. This article reviews the evidence for all adjuvant treatment options for stage I testicular seminomas with a particular focus on surveillance.

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INITIAL EVALUATION AND MANAGEMENT

The initial management of a testicular mass or suspected testicular seminoma includes a full history and physical examination. A testicular ultrasound is helpful in differentiating between a solid mass and a potential hydrocele. After confirmation of a solid testicular mass, an inguinal orchidectomy should be performed rather than testicular biopsy. Histology of the testicular mass will guide further adjuvant treatments. Routine laboratory testing includes a complete blood count (CBC); creatinine; and tumor markers, including βHCG, AFP, and LDH. A computed tomography (CT) scan of the abdomen and pelvis and a chest radiograph should be obtained to complete staging. If the CT abdomen and pelvis demonstrates metastatic lymph nodes, a CT scan of the thorax should be included to better evaluate for lung metastases.

SURVEILLANCE

There is now mature data demonstrating that patients with stage I seminoma enrolled in surveillance protocols have a relapse rate of 15% to 20% (**Table 1**).[6–14] The largest series of patients placed on a surveillance protocol is from Canada with 421 patients with a median follow-up of 8.2 years and a 5-year relapse-free rate of 85.5%.[7] Similarly, the Danish Testicular Cancer Study Group (DATECA) reported on 394 patients with a median follow-up of 60 months and a relapse rate of 17%.[8] Interestingly, 2 independent Japanese studies report lower relapse rates of 10% to 11%, which may represent differences in tumor biology compared with North American and European data.[13,14] The most common site of relapse was the para-aortic lymph nodes in 82% and 89% of all relapses in the Danish and Canadian series, respectively.[7,8] Relapses are typically detected at 12 to 18 months in most series; however, late relapses more than 4 years from orchidectomy have been reported.[15] Ultimately, patients managed with surveillance can expect excellent cause-specific survival rates approaching 100%, which is attributable to highly effective salvage radiation or chemotherapy. A review of the Princess Margaret Hospital (PMH) database demonstrated a 6-fold decrease in treatment episodes per patient in patients managed with surveillance (0.16) compared with patients managed with adjuvant RT (1.05).[16]

Table 1
Outcomes for patients with stage I seminoma enrolled on surveillance programs

Author	Year	Median Follow-up (mo)	Number of Patients	Relapse (Number of Patients)	Relapse (%)	Cause-Specific Survival (%)
Horwich et al[10]	1992	62	103	17	16.5	100.0
Ramakrishnan et al[11]	1992	44	72	13	18.0	100.0
Von der Maase et al[12]	1993	48	261	49	18.8	98.9
Oliver et al[6]	2001	98	110	21	19.0	100.0
Germa-Lluch et al[9]	2002	33	233	38	16.0	100.0
Daugaard et al[8]	2003	60	394	69	17.5	100.0
Warde et al[7]	2005	98	421	64	15.2	99.7
Yoshida et al[14]	2009	124	64	7	11.0	98.4
Kamba et al[13]	2010	45	186	19	10.0	100.0