D. Testis Cancer

Testicular tumors are the most common solid malignancies in men aged 15 to 34 years, and the incidence of testis cancer appears to have increased over the last 25 years. The advent of platinum-based chemotherapy in the 1970s and a more recent systematic multidisciplinary approach have greatly improved the survival of patients with testicular cancer over the last 40 years. Survival now approaches 99% for low-risk disease and 80% for high-risk disease.

Cryptorchidism (undescended testicle) is a well-accepted risk factor for subsequent development of testicular cancer. Abnormalities in spermatogenesis are well documented and are thought to be a primary effect of testicular tumors; up to 15% of patients are diagnosed with testicular cancer during a work-up for male factor infertility. Also, it appears that patients with an atrophic testicle have an increased risk of testicular cancer. Testicular microlithiasis does not appear to connote an increased risk of testicular cancer, although this conclusion is somewhat controversial; patients with this incidental finding on testicular ultrasonography do not require additional surveillance beyond monthly testicular examinations. Between 2% and 3% of patients have bilateral tumors at presentation, and 5% to 10% of those with involvement of only one testicle will go on to develop cancer in the normal contralateral testicle. Despite impairments in spermatogenesis, most men with testicular cancer are capable of fathering children; discussion of fertility issues is extremely important, especially in patients who may require adjuvant therapies such as external-beam radiation and systemic chemotherapy.

The most common presenting sign or symptom of testis cancer is a firm, painless mass arising from the testis. However, patients may also have an acute scrotum at presentation as a result of tumor hemorrhage, and up to 33% of patients are treated for presumed epididymitis. Scrotal ultrasonography is diagnostic; testis cancer is usually distinguishable from benign scrotal disease because of the clear involvement of the testicular parenchyma rather than the paratesticular tissues. Signs and symptoms of advanced disease include cough, gastrointestinal symptoms (mass), back pain (retroperitoneal metastasis), neurologic symptoms (brain metastasis), lower-extremity swelling (iliac or inferior vena cava thrombus), and supraclavicular lymphadenopathy.

DIAGNOSIS AND STAGING

Initial management of the primary tumor is inguinal orchiectomy with high ligation of the spermatic cord. Histopathology distinguishes germ cell tumors (GCTs) from stromal tumors. Seminoma is the most common GCT occurring in pure form. Teratoma, yolk sac tumor, embryonal carcinoma, and choriocarcinoma are classified as nonseminomatous GCT and frequently occur as mixed GCT (more than one histologic pattern within the primary tumor). Testicular cancer is unique in that serum tumor markers (STMs) play an important role in tumor staging. STMs include HCG, α-fetoprotein (AFP), and serum lactate dehydrogenase. Elevations of serum HCG may be seen in choriocarcinomas, in embryonal carcinomas, and in 15% of seminomas. Elevated AFP can be seen in yolk sac tumors and embryonal carcinomas, and this finding excludes a diagnosis of seminoma. These STMs may be secreted either by the primary tumor or by metastatic foci (Table 71-6).

The retroperitoneal lymph nodes are the most common initial site of metastasis. Therefore, staging of the retroperitoneum with an abdominal CT scan is important in evaluating the extent of disease. However, accurate staging of the retroperitoneum remains problematic, with the literature quoting false-negative and false-positive rates of 20% to 30% with CT scanning. Common landing zones for lymph node metastasis include the precaval, interaortocaval, and preaortic lymph nodes below the renal hilum and above the aortic bifurcation. Chest radiography or thoracic CT scanning completes the clinical staging because the lungs and posterior mediastinum are the most common sites of distant metastatic disease.

TREATMENT

Histopathology, pathologic stage, and STM status are used to determine subsequent treatment after inguinal orchiectomy. All patients with elevated STMs after orchiectomy receive cisplatin-based chemotherapy, regardless of histology. Radiation therapy and retroperitoneal lymph node dissection (RPLND) have a high likelihood of failure in the face of elevated STMs.

Seminoma manifests as clinical stage I in 70% of cases, stage II in 20%, and stage III in 10%. In the past, most experts recommended radiation therapy to the retroperitoneum for patients with stage I or II disease because of the radiosensitivity of seminomas. However, patients with stage I seminoma are now more likely to undergo surveilance because of the recognition that new retroperintoneal metastases found during surveilance are sensitive to either chemotherapy or radiation. Patients with bulky stage II disease (lymph node >5 cm) and those with stage III disease should receive combination chemotherapy.

Nonseminomatous GCTs manifest more frequently at an advanced stage (stage I, in 30%, stage II in 40%, and stage III in 30%). RPLND is frequently recommended in patients with clinical stage I or low-volume stage II disease. Reasons for recommending RPLND include accurate pathologic staging of the retroperitoneum, low relapse rate (<2%) after properly performed RPLND, curative potential in the face of viable GCT, and the potential for retroperitoneal teratoma, which is resistant to chemotherapy. Side effects associated with RPLND include lymphocele, chylous ascites (0.4%), and small bowel obstruction (1% to 2%). Nerve-sparing RPLND is able to preserve antegrade ejaculation in more than 80% of patients.

TABLE 71-6 TESTIS CANCER STAGING STUDIES

Tumor markers
AFP—elevated only with nonseminomatous tumors
HCG—may be increased with either seminoma or nonseminomatous tumors
Abdominal CT scan—retroperitoneal nodes are most common site of regional nodal metastasis
Chest radiograph or CT scan—lung is most frequent site of distant metastasis

AFP, α-Fetoprotein; HCG, β-human chorionic gonadotropin; CT, computed tomography.