13. Screening for Testicular Cancer

RECOMMENDATION

There is insufficient evidence to recommend for or against routine screening of asymptomatic men in the general population for testicular cancer by physician examination or patient self-examination. Recommendations to discuss screening options with selected high-risk patients may be made on other grounds (see *Clinical Intervention*).

Burden of Suffering

Testicular cancer is a relatively uncommon disease, with an overall annual incidence of about 4/100,000 men.[1] It is, however, the most common form of cancer in young men between ages 20 and 35,[2] accounting for an estimated 7,100 new cases and 370 deaths in the U.S. in 1995.[3] The peak annual incidence ranges from 8 to 14/100,000 men between 20 and 35 years of age, with a smaller peak in early childhood.[4] The incidence in black men is less than one fifth that of white men.[4] The major predisposing risk factor is cryptorchidism.[1] In men with a history of cryptorchidism, 80–85% of testicular tumors occur in the cryptorchid testicle, while 15–20% occur in the contralateral testicle. Other risk factors include previous cancer in the other testicle, a history of mumps orchitis, inguinal hernia, or hydrocele in childhood, and high socioeconomic status.[1]

Ninety-six percent of testicular cancers are of germ cell origin, of which seminoma is the most common type. Prognosis and treatment depend on the cell type and stage of disease; however, recent advances in treatment have resulted in a 92% overall 5-year survival.[3] Even among the small proportion of patients (12%) with advanced disease at diagnosis, 5-year survival is close to 70%.[4]

Accuracy of Screening Tests

The two screening tests proposed for testicular cancer are physician palpation of the testes and self-examination of the testes by the patient. Detection of a suspicious testicular mass constitutes a positive test, and the diagnosis is confirmed by biopsy and histologic examination of tissue. There is no information on the sensitivity, specificity, or positive predictive value of testicular examination in asymptomatic persons whether done by providers or by patients. Even if they were known, measures of sensitivity

and specificity for palpation of the testes might not be very meaningful because of the low incidence of testicular cancer and the high cure rate. If sensitivity is defined as the probability that disease, when present, is detected at a curable stage, then sensitivity is probably high because the overall cure rate (in the absence of systematic screening) is 92%. The negative predictive value is probably also quite good due to the low incidence of the disease. The positive predictive value, however, of palpation of the testes is probably very low due to the low incidence of disease and large number of other causes of scrotal masses.

There is evidence from older literature that between 26% and 56% of patients presenting initially to their physician with testicular cancer are first diagnosed as having epididymitis, testicular trauma, hydrocele, or other benign disorders,[6–8] and these patients often receive treatment for these conditions before the cancer is diagnosed.[7,9,10]

There have been few studies of whether counseling men to perform self-examination motivates them to adopt this practice or to perform it correctly. Research to date has demonstrated only that education about testicular cancer and self-examination may enhance knowledge and self-reported claims of performing testicular examination.[11,12] One study found that men who reviewed an educational checklist on how to perform self-examination were able to demonstrate greater skill when self-examination was performed moments later; they were also able to recall the contents of the checklist in a telephone survey months later.[13] Few studies, however, have examined whether education or self-examination instructions actually increase the performance of self-examination. It is also unclear whether persons who detect testicular abnormalities seek medical attention promptly. Patients with testicular symptoms may wait as long as several months before contacting a physician.[6]

Finally, no studies have been conducted to test whether persons who perform testicular self-examination are more likely to detect early-stage tumors or have better survival than those who do not practice self-examination.[5] Published evidence that self-examination can detect testicular cancer in asymptomatic persons is limited to a small number of case reports.[14]

Tumor markers, including α-fetoprotein and human chorionic gonadotropin are useful in following nonseminomatous testicular cancers but are not useful for early detection or screening.[1,15]

Effectiveness of Early Detection

The prognosis for advanced stages of testicular cancer has improved dramatically in the past decade with the introduction of better chemotherapy. Current cure rates are greater than 80%.[5,16] Survival, however, is still better for patients with Stage I cancer than in those with more advanced

disease, and the treatment of early cancer has less cost and morbidity. Treatment for all types and stages of testicular cancer includes removal of the involved testicle. The current 5-year survival for Stage I seminoma treated with radiotherapy is 97%.[3] Stage I nonseminomatous cancers (e.g., teratoma, embryonal carcinoma, choriocarcinoma) treated with radical retroperitoneal lymph node dissection have a reported 3–5-year survival approaching 90%.[17] With the advent of cisplatin-based chemotherapeutic regimens, a 3-year survival of 90–100% has been reported. Reported survival in patients with disseminated testicular cancer, however, is lower (about 67–80%), and these persons require intensive treatment with chemotherapeutic agents that produce a variety of systemic side effects.[3,5,16]

Although lead-time and length biases may account for part of the improved survival observed for persons with early-stage testicular cancer, it is likely that the prognosis is better for persons with less advanced disease. No studies have been done to determine whether screening increases the proportion of cancers diagnosed at early stages, or improves outcomes. Even without screening, 60–80% of seminomas are Stage I at diagnosis.[17] There is evidence that once testicular symptoms have appeared, diagnostic delays are associated with more advanced disease and lower survival.[6,7,18]

The appropriate management and follow-up of patients with a history of an undescended testicle is controversial.[19,20] It is known that orchiopexy at puberty does not reduce malignant transformation. It is uncertain whether earlier orchiopexy prior to school age, which is now common practice, will prevent development of testicular cancer.[19] Giwercman et al. found carcinoma in situ in 2% of men with a history of cryptorchidism who had testicular biopsies.[20] They predicted 50% of these lesions would progress to invasive cancer and recommended that testicular biopsy be offered to all men with a history of cryptorchidism. Many experts recommend that intraabdominal testes should be removed.[1] The survival for patients with a history of cryptorchidism who develop testicular cancer is excellent, as it is in noncryptorchid patients. No studies have been done to evaluate benefits of formal screening of men with a history of cryptorchidism.

Recommendations of Other Groups

The American Cancer Society recommends a cancer checkup that includes testicular examination every 3 years for men over 20 and annually for those over 40.[21] No recommendation is given for testicular self-examination. The American Academy of Family Physicians recommends a clinical testicular examination for men aged 13–39 years who have a history of cryptorchidism, orchiopexy, or testicular atrophy; this policy is currently

under review.[22] The American Academy of Pediatrics recommends testes self-examination beginning at age 18 years.[23] The Canadian Task Force on the Periodic Health Examination concluded that there is insufficient evidence to include or exclude routine screening for testicular cancer by palpation in the periodic health examination.[24]

Discussion

There is no direct experimental evidence on which to base a recommendation for or against screening for testicular cancer by either physician examination or patient self-examination, since no studies of screening have been done. It seems unlikely that screening would substantially improve the already favorable outcome in this uncommon disease. If a population of 100,000 men aged 15–35 years were screened with a 100% sensitive test, at most 10 cancers would be detected. At least nine of these would be expected to be cured in the absence of a formal screening program. It is unknown whether the tenth patient would also be cured as a result of the cancer being detected by screening. A primary care physician with 1,500 males in his/her practice could expect to detect one testicular cancer every 15–20 years. The vast majority of men screened by either physician or self-palpation would have normal examinations; of those with suspicious masses, most would have benign disease (false positives). Many of these cases, however, would require referral to urologists, radiographic studies, or invasive procedures (e.g., biopsy or inguinal exploration) before malignancy could be ruled out.[17] These interventions would incur considerable costs and possible morbidity.

Men with a history of undescended testes or testicular atrophy have a much greater incidence of testicular cancer. Although screening in this population has also not been shown to improve outcome, it would be expected to have a much higher yield than screening in the general population.

CLINICAL INTERVENTION

There is insufficient evidence to recommend for or against routine screening of asymptomatic men for testicular cancer by physician examination or patient self-examination ("C" recommendation). Patients with an increased risk of testicular cancer (those with a history of cryptorchidism or atrophic testes) should be informed of their increased risk of testicular cancer and counseled about the options for screening. Such patients may then elect to be screened or to perform testicular self-examination. Adolescent and young adult males should be advised to seek prompt medical attention if they notice a scrotal abnormality.

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