Medical Education

Case Review on Testicular Cancer

Grace Perez-Lirio, MD

[N A J Med Sci. 2010;3(1): 028-030.]

Background

The risk of testicular cancer is thought to be higher among men seeking infertility treatment compared with the general population. Confirmation of this risk in a large US cohort of at-risk patients is lacking. This study explored the association between male infertility and subsequent development of testicular cancer in a US-based cohort. METHODS: A total of 51 461 couples evaluated for infertility from 1967 to 1998 were recruited from 15 California infertility centers. We linked data on 22 562 identified male partners to the California Cancer Registry. The incidence of testicular cancer in this cohort was compared with the incidence in an age-matched sample of men from the general population using the Surveillance Epidemiology and End Results program. We analyzed the risk for testicular cancer in men with and without male factor infertility using a Cox proportional hazards regression model. RESULTS: Thirty-four post-infertility-diagnosis cases of histologically confirmed testicular cancer were identified. Men seeking infertility treatment had an increased risk of subsequently developing testicular cancer (standardized incidence ratio, 1.3; 95% confidence interval, 0.9-1.9), with a markedly higher risk among those with known male factor infertility (2.8; 1.5-4.8). In multivariable analysis, men with male factor infertility were nearly 3 times more likely to develop testicular cancer compared with those without (hazard ratio, 2.8; 95% confidence interval, 1.3-6.0). CONCLUSION: Men with male factor infertility have an increased risk of subsequently developing testicular cancer, suggesting the existence of common etiologic factors for infertility and testicular cancer.

Clinical History

RR is a 31 year old Hispanic male with no significant past medical history who presented to his new primary care physician because of abdominal discomfort. He has a 4 year history of acid reflux disease diagnosed by his previous primary care physician for which he takes ranitidine. Over the past few months, he has noticed worsening abdominal pain which he describes as a vague intermittent periumbilical discomfort associated with early satiety, nausea and vomiting. This was worse when lying on his back but otherwise was not associated with food intake. He has noticed a 20 lb weight loss over the past 1 year which he attributes to poor appetite and eating habits. He denies any fever, chills, headache, dizziness, chest pain, palpitations, constipation, diarrhea or urinary complaints. He has no recollection of any work up other than routine laboratory tests which he brought with him. He also mentioned recent onset of mid-back pains for which he takes ibuprofen.

Other than blood transfusion for injuries sustained from a motor vehicle accident when he was 5 years old, he has no history of diabetes, heart disease, asthma, thyroid problems, anemia, hypercholesterolemia, cancer, HIV, hepatitis or mental health issues.

His family history is significant for a brother who is alcoholic. His parents were otherwise healthy without known illnesses like cancer, diabetes, heart disease, asthma or hepatitis.

He smoked and consumed alcohol heavily for a few years during his teens and admits to presently using recreational marijuana. He denies ever using intravenous drugs, cocaine or heroine. He was born and raised in Massachusetts but is of Puerto Rican descent. He completed third year high school and worked for a gas company for many years until he was laid off 3 months prior. He lives with his wife and has no children.

He has no allergies and takes over-the-counter ranitidine and ibuprofen as needed.

On exam, he had normal vital signs. He did not have any skin lesions. He was pale but not icteric. His chest and lungs were normal except for mild gynecomastia. His abdominal exam was significant for minimal distention and slight tenderness on direct palpation mostly on lower abdominal quadrants. His rectal exam was unremarkable and he was guiac negative. Testicular exam was reported as normal.

Laboratory tests taken 1 month prior showed a normal complete blood count (CBC) except for elevated platelet count of 578,000. He had normal liver enzymes.

He was sent home with a prescription for famotidine and instructed to get additional laboratory tests, upright abdominal film (KUB) and abdominal ultrasound.

Grace Perez-Lirio, MD
Department of Medicine
Beth Israel Deaconess Medical Center, Boston, MA
Tel: 617-754-1600 Fax: 617-754-1650
gplirio@bidmc.harvard.edu

He came back to 2 weeks later for follow up. His laboratory tests revealed an elevated alanine aminotransferase (ALT) of 55 and alkaline phosphatase of 184. His aspartate aminotransferase (AST), amylase and lipase levels were normal. Further studies revealed negative hepatitis viral serologies, human immunodeficiency virus antibody (HIV) and Helicobacter pylori antibody.

He had a KUB which showed normal gas pattern. An abdominal ultrasound showed a large ovoid hypoechoic retroperitoneal mass associated with lymphadenopathy. He had an urgent CT scan of the abdomen which showed an 8.5x10.5x15.7cm intraperitoneal mass displacing the adjacent organs. This did not appear to be invasive but differential diagnoses include mesenchymal neoplasia, neural tumor or lymphoma.

Shortly thereafter, he was scheduled for CT-guided biopsy which was not conclusive. He subsequently underwent a repeat CT-guided core. Final biopsy was consistent with epitheloid neoplasm of unclear etiology. Immunohistochemistry was inconclusive and flow cytometry showed no phenotypic evidence of lymphoma.

Upper endoscopy and colonoscopy were both normal.

Tumor markers like carcinoembryonic antigen (CEA), alpha-fetoprotein (AFP), prostate specific antigen (PSA), human choronic gonadotropin (HCG) were within normal range. Gamma glutamyl transpeptidase (GGT) and lactate dehydrogenase (LDH) were elevated. Coagulation panel and plasma metanephrine levels were normal.

He had a scrotal ultrasound to evaluate for testicular cancer and this showed a suspicious ovoid hypoechoic lesion approximately 19x19x12mm on the left. He went on to have a left orchiectomy which on pathology was reported as unclassified germ cell tumor.

He had a total of 3 cycles of chemotherapy with bleomycin, etoposide and cisplatin followed by resection of the paraaortic mass with retroperitoneal lymph node dissection. All 17 of the lymph nodes biopsied were negative for malignant cells and the mass showed extensive fibrosis and necrosis with no viable tumors, which is expected after chemotherapy.

Final diagnosis is Grade IIC unclassified testicular cancer.

RR went on to recover from the treatment although suffered from post-operative complications like chronic abdominal pain thought to be from extensive adhesions and retrograde ejaculation. He is free of cancer and has a very good prognosis.

Although he declined pre-operatively to participate in sperm banking, he is expected to be able to father a child with the help of fertility experts.

Discussions

Epidemiology:

Testicular cancer, although rare accounts for about 1% of all cancers in men and is known as the most common solid tumor affecting the age groups 15 to 35[1,2] The American Cancer Society estimated approximately 8,400 new cases of and 380 associated deaths from testicular cancer in the United States in 2009.[3] Fortunately, this has become the most curable form of cancer as a result of advances in treatment and research.

Before the 1970's, testicular cancer was associated with 11 percent of all cancer deaths in men between 25 to 34 with a five-year survival rate of 64 percent.[4] Currently, according to the National Cancer Institute, the five-year survival rate for all men is over 95%, with a better chance at 99% if the cancer has not spread and 96% if it has spread to nearby lymph nodes.[5] Moreover, the five-year survival rate if the cancer has spread beyond the lymph nodes is still around 71%.[5]

Testicular cancer more commonly affects White men but it does affect Asian Americans as well.[6] A study by Nguyen and Ellison in 2004 demonstrated racial differences between White males and Asian-Americans with testicular cancer during the stage at diagnosis.[6] It appears that Asian-American males more often presented initially with higher disease stage and had a poorer unadjusted survival rates compared to Whites.[6] This seem to be related to the late presentation at diagnosis and histologic type. Also, because of perceived cultural barriers with the male genitalia, it is not unusual that Asian males delay in seeking their doctor's advice. Access to routine testicular examination is also a limiting factor.

Another study by Walsh et al, published in 2008 concluded that testicular germ cell tumors are more likely to be present in Asian/Pacific boys when compared to White pre-pubertal boys.[8]

While the incidence of testicular cancer in the United States remain steady,[8] very low death rates from early diagnosis and treatment advances have made this the one of the most curable malignancies.

Risk Factors:

Risk factors for developing testicular cancer include congenital abnormalities of the penis, kidneys or testicles like cryptorchidism or undescended testes and Klinefelter's syndrome. Inguinal hernia is also considered as a congenital anomaly that may increase a man's risk of testicular cancer. Exposure to some chemicals and HIV infection are thought to be associated with testicular cancer. It is still unclear whether this is related to anti-retroviral therapy or primarily from the HIV virus itself. Prior history of testicular cancer confers a higher risk of developing a contralateral malignancy. A family history especially if this involves a father or a brother, and infertility have been shown to be associated with increased risk.[14] Trauma to the testicles and vasectomy,

although controversial, are not considered to be associated with testicular cancer.[3]

Symptoms:

Some of the more common complaints associated with testicular cancer include scrotal swelling, painless enlargement and scrotal heaviness. Abdominal discomfort and back pain associated with bulky retrioeritoneal mass can also occur, as in this patient. Gynecomastia is sometimes seen in men with testicular cancer and along with this patient's marijuana use, was appreciated on physical exam more readily.

Prevention:

There is no known means to fully prevent the occurrence of testicular cancer. Routine testicular examination is very important and is encouraged at least once a year or every other year. Because some testicular cancers have been detected by men incidentally, self-testicular examination is important in diagnosing this condition early.

Treatment:

As mentioned above, testicular cancer is one of the most curable cancers with a very low death rate compared to other malignancies. This is because of advances in research and treatment. Chemotherapy, radiation and surgery are mainstays of treatment depending on the stage. In this patient's case, he underwent orchiectomy, chemotherapy and retroperitoneal lymph node dissection.

Complications:

Chronic pain and concerns about sexual function and fertility are both very important since men affected by this particular cancer are generally very young. Although sexual problems may already have been present prior to the diagnosis of testicular cancer, sperm banking should be offered and encouraged. In this patient's case, he has been married for several years and has not been able to father a child. His chance of having children after treatment is lower but is still possible with the help of fertility experts. Retrograde ejaculation and erectile dysfunction are both known complications and counseling pre and post-treatment should be offered.

References

1. Jemal A, Siegel R, Ward E, et al. Cancer statistics, 2008. CA Cancer J Clin. 2008; 58:71.
2. M Dror Michaelson MD, et al. Epidemiology of and risk factors for testicular germ cell tumors. Up-To-Date Aug. 27, 2009.
3. American Cancer Society, Inc. Cancer Facts and Figures 2005. Atlanta: American Cancer Society, Inc., 2005. http://www.cancer.org/downloads/STT/CAFF2005f4PWSecured.pdf.
4. Einhorn, LH. Treatment of testicular cancer: a new and improved model. J Clin Oncol. 1990;8:1777.
5. Ries LA, Eiser MP, Kosary CL, et al. SEER Cancer Statistics Review, 1975-2001, National Cancer Institure, Bethesda, MD 2004.
6. Nguyen MM and Ellison LM. Testicular cancer patterns in Asian-American males: An opportunity for public health education to impact outcomes. Elsevier. 2004.
7. Walsh T, Davies BJ, Croughan MS, Carroll PR and Turek PJ. Racial differences among boys with testicular germ cell tumors in the United States. J Urol. 2008;179(5):1961-1965.
8. Holmes L Jr, Escalante C, Garrison O, Folid BX, Ogungbade GO, Essien EJ, Ward D. Testicular cancer incidence trends in the USA (1975-2004): plateau or shifting racial paradigm? Public Health. 2008;122(9):862-872.
9. Shah MN, Devesa SS, Zhu K, McGlynn KA. Trends in testicular germ cell tumours by ethnic group in the United States. Int J Androl. 2007;30(4):206-213.
10. Manecksha RP, Fitzpatrick JM. Epidemiology of testicular cancer. BJU Int. 2009;104(9 Pt B):1329-1333.
11. Marsa K, Johnsen NF, Bidstrup PE, Johannesen-Henry CT, Friis S. Social inequality and incidence of and survival from male genital cancer in a population-based study in Denmark, 1994-2003. Eur J Cancer. 2008;44(14):2018-2029.
12. Powe BD, Ross L, Wilkerson D, Brooks P, Cooper D. Testicular cancer among African American college men: knowledge, perceived risk, and perceptions of cancer fatalism. Am J Mens Health. 2007;1(1):73-80.
13. Osswald M, Harlan LC, Penson D, Stevens JL, Clegg LX. Treatment of a population based sample of men diagnosed with testicular cancer in the United States. Urol Oncol. 2009;27(6):604-610.
14. Walsh TJ, Croughan MS, Schembri M, Chan JM, Turek PJ. Increased risk of testicular germ cell cancer among infertile men. Arch Intern Med. 2009;169(4):351-356.