Metachronous bilateral testicular tumor associated with microlithiasis

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ABSTRACT

It is estimated that approximately 7920 new cases of testicular cancer were diagnosed in the United States in 2007, 390 of which resulted in death. Groups at highest risk are those between the ages of fifteen to thirty-five years. Testicular tumor bilaterality is characteristic of the disease and can present in synchronous and metachronous form. Given that 25% of men with testicular germ cell tumor present with testicular microlithiasis, it is currently considered to be an associated premalignant condition. The clinical case of a patient with metachronous bilateral testicular tumor associated with testicular microlithiasis is presented here.

Keywords: Bilateral testicular tumor, testicular microlithiasis, Mexico.

RESUMEN

Se estima que en 2007, en los Estados Unidos se diagnosticaron aproximadamente 7920 nuevos casos de cáncer testicular, de los cuales fallecieron 390. Los grupos con mayor riesgo, son las edades comprendidas de 15 a 35 años. La bilateralidad del tumor testicular es un rasgo característico de la enfermedad y se puede presentar de forma sincrónica y metacrónica. Dado que 25% de los hombres con tumor testicular de células germinales presenta microlitiasis testicular, actualmente se considera una condición pre-maligna asociada. Nosotros presentamos el caso clínico de un paciente con tumor testicular bilateral metacrónico asociado a microlitiasis testicular.

Palabras clave: Tumor testicular bilateral, microlitiasis testicular, México.
INTRODUCTION

It is estimated that in 2007 in the United States approximately 7920 new cases of testicular cancer were diagnosed, of which 390 of those patients died. Patients between the ages of 15 and 35 years are at highest risk and are also the most susceptible to treatment. There has been a more than 50% incidence increase in the last 30 years, although it is not yet known why. The risk of developing testicular tumor is approximately 0.3-0.7% and this varies depending on race and nationality. Testicular tumor bilaterality is a characteristic feature of this disease. It can present in both synchronous and metachronous forms and thus surveillance is required for patients that have previously presented with testicular tumor. On the other hand, testicular microlithiasis (TM) has gained importance in relation to testicular tumor since there are studies relating testicular germ cell tumor (TGCT) with TM.

Given that bilateral TGCT treatment is more complex than treatment for unilateral disease, the clinical case of a patient with metachronous TGCT associated with TM is presented here along with a literature review.

CASE PRESENTATION

Patient is a 25-year-old man with past medical history of left orchiectomy 7 years previous with histopathological result of non-seminomatous testicular germ cell tumor. Percentages were embryonic carcinoma 60%, endodermic sinus tumor 20%, and tumor necrosis 20%. Patient was treated with 6 cycles of bleomycin, etoposide, and cisplatin (BEP) along with surveillance. Patient sought medical attention due to progressive testicular volume increase in right testis of 3-month progression. Physical examination revealed a mesomorphic patient with no abdominal masses. Genital examination showed right scrotal increase in size, palpable increase in testicular volume, hard consistency, and uninvolved epididymis and testicular cord. Tumor marker test results were: alpha fetoprotein 4.51 ng/mL (0-9 ng/mL) and F-beta human chorionic gonadotropin 1.30 ng/mL (0.5-2.6 mIU/mL).

Ultrasound (US) revealed increase in testicular volume, hypoechoic images, and microlithiasis (Figures 1 and 2).

Distance metastasis was not observed in chest radiograph and enlarged lymph nodes were not found in abdominopelvic computed tomography (CT) image. Given past medical history and clinical characteristics of the patient, increase in testicular volume, hypoechogenicity, hyperechogenicity, and US images of microlithiasis, right radical orchiectomy was carried out.

Histopathological study reported pure classic seminoma (Figures 3 and 4).

Currently patient is without tumor activity and tumor markers are within normal limits. Patient had received 6 BEP cycles and now receives hormonal replacement with 1000 mg IM testosterone decanoate every 2-3 months.

DISCUSSION

Testicular microlithiasis: In 1970 Priebe and Garret described testicular microlithiasis (TM) in a 4-year-old boy. In 1982 testicular microcalcification was first associated with testicular cancer. And in 1988 the association of TM diagnosed by means of ultrasound with testicular tumor was first reported. Ringdhal et al. found a great incidence of testicular neoplasia together with TM, emphasizing follow-up for those patients.

Testicular microlithiasis is an abnormality of unknown etiology that has been associated with trauma and previous infection. In histological terms it is characterized by smooth lamelated bodies inside the seminiferous tubules. Microliths are found diffusely disseminated in the entire testicular parenchyma varying in size from 1-3 mm. They do not exhibit a “shadow” and they display a certain symmetry.

There are two categories of testicular microlithiasis: classic testicular microlithiasis that is defined as the presence of 5 microliths in an ultrasound image, and limited testicular microlithiasis.
Testicular microlithiasis (TM) prevalence in a referred population has been reported at approximately 0.6%. In a population study prevalence was shown to be approximately 5% and the same author stated that it was variable and race-dependent: 5% in white populations and Asians, 10% in Latin Americans, and 15% in black populations, and the association with testicular cancer in select series was as high as 40%.

In regard to histopathology there are two reported histological subtypes of microlithiasis: one is believed to be secondary to a cellular "twist", a hematoxylin body consisting of an amorphous calcified debridement. This subtype is thought to be highly associated with germ cell tumor. The second type is described as classic: laminated calcification associated with cryptorchidism, germ cell tumor, as well as with normal testes. Pathogenesis is not clear but it is believed to be due to a defect of the Sertoli cells that are responsible for intratubular debridement phagocytosis. It is thought that microcalcifications are the result of the defect in this process. It is not yet known if microlithiasis leads to tumor development or if it is part of a spectrum of these abnormalities that finally leads to carcinogenesis.

A large number of entities are related to TM: cryptorchidism, Down syndrome, infertility, pulmonary microlithiasis as well as germ cell tumors.

Intraepithelial germ cell neoplasia (carcinoma in situ) that develops into testicular cancer has been associated with TM. One of the series reported an increase of 40% in carcinoma in situ (CIS) in men with bilateral TM compared with those that did not present with TM.

On the other hand, an additional study reported an elevated CIS prevalence in a group of patients with TM and contralateral carcinoma. Given the possibility that 50% of CIS cases will eventually progress into cancer, it is reasonable for patients programmed for orchiectomy due to testicular tumor to undergo biopsy of the contralateral testis when there is TM.

It is worth noting that authors such as Peterson et al., in an asymptomatic population study, rejected the theory that TM is associated with the development of cancer.

Bilaterality in testicular tumors: Bilaterality of testicular tumors presents in 0.5 - 7% of cases, and incidence has been on the rise for the past few decades. There are established bilaterality factors in TGCT that include: cryptorchidism, relatives with past history of TGCT, patient having presented with TGCT (the highest risk factor). Klatte T et al. found that the risk for developing another testicular tumor in patients that had
Biopsy of testicular parenchyma should be taken during surgery to rule out TGCT and to diagnose ITN.

Intratubular neoplasia is observed in 80% of specimens which means local adjuvant radiotherapy with 18.20Gy should be carried out.23 Serum testosterone levels can remain normal with this procedure and hormonal replacement can be avoided. Another alternative in treating bilateral tumor is unilateral orchietomy of the larger tumor followed by three chemotherapy cycles with bleomycin, etoposide, and cisplatin.24

■ CONCLUSIONS

Contralateral testis surveillance after unilateral tumor is necessary. Medical consultation for tumor marker testing and measuring should be carried out 4 times in the first two years, every 6 months in years 3 and 4, and then annually. Yearly ultrasound is recommended in TM cases.

BIBLIOGRAPHY


Figure 4. Histopathological slice. Solid nests of cells with clear polygonal cytoplasm, round nucleus, and prominent nucleolus.