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Case Report
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The Goal of a Trifecta in Treatment Strategy for Bilateral Synchronous Testicular Seminoma: A Case Report and Literature Review

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Abstract

The most common testicular tumors among young men of reproductive age are Germ Cell Tumors (GCTs). Luckily, these tumors are very treatable with high survival rates. However, some of the long term consequences on survivors such as sterility and hypogonadism do not garner as much attention, given that the majority of tumors are unilateral. In the rare cases of bilateral testicular tumors, treatment consequences have more profound effect on quality of life and should garner serious consideration in devising a treatment strategy for these patients. Here, we report a case of bilateral synchronous seminoma found in a patient managed with a fertility-sparing surgical treatment strategy.

Introduction

The most common solid neoplasms among young men of reproductive age are testicular tumors, peaking in the age range of 20-39 [1,2]. Testicular tumors occur bilaterally with an incidence of 1-5% [3-6]. The standard of care for patients with a bilateral presentation is bilateral radical orchiectomy. However, anorchia results in sterility and hypogonadism requiring lifelong testosterone replacement, it is of interest to physicians and patients to explore fertility-sparing strategies for this subset of men. The aim of this case report is to provide as updated review of literature and to propose a new goal for management of bilateral testicular tumors aimed at achieving a trifecta of good oncologic outcome with fertility and hormonal preservation in carefully selected patients.

Case Report

A 36 year old male was referred to the UC San Diego Urology Department for primary infertility due to azoospermia and an incidentally discovered right testicular masses suspicious for malignancy. The patient's notable past medical history included right-sided cryptorchidism requiring orchiopexy at age eleven. He denied any other known risk factors such as prior testicular exposure to chemicals, radiation, or toxins, history of high fever, epididymitis, orchitis, prostatitis, sexually transmitted diseases, trauma to the testes, varicoceles, testicular torsion, post-pubertal mumps, or family history of infertility. He had a palpable intra-testicular mass on the right and normal exam on the left. Tumor markers included elevated beta human chorionic gonadotropin (β-HCG88 IU/L) with alpha-fetoprotein and lactate dehydrogenase were within normal ranges (AFP <2ng/mL, LDH 191 Units/L).Scrotal sonogram revealed patient's right testis mostly replaced by a heterogeneous mass and left testis with 4mm hypoechoic intra-testicular nodule without vascularity located in the inferior pole (Figure 1). Chest, abdomen and pelvic imaging were negative for metastatic disease. Due to the patient's desire to preserve fertility, testicular sparing procedure with concomitant sperm extraction (TESE) was discussed for his left testicular lesion.

The patient underwent a right radical orchiectomy and a left partial orchiectomy after intraoperatively confirming negative margins on frozen section. A concurrent successful left TESE revealed viable sperm for cryopreservation. The patient's post-operative course was uncomplicated. The final histopathologic diagnosis revealed a 0.6 × 0.3 × 0.3 cm left testicular biopsy specimen consistent with seminoma and a 3.7×2.6×2.3 cm pT1 right seminoma with negative spermatic cord margins (Figure 2). Options of active surveillance with tumor markers, chemotherapy, and radiation therapy were discussed with the patient. The patient elected surveillance until evidence of recurrence

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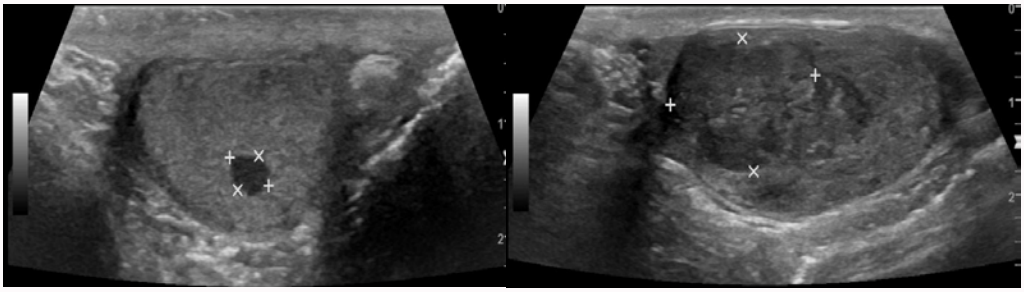

Figure 1: Scrotal ultrasound showing medial longitudinal view of the left testicle showing 0.48 x 0.37cm hypoechoic mass (left) and right testicle showing heterogeneous testicular mass (right).

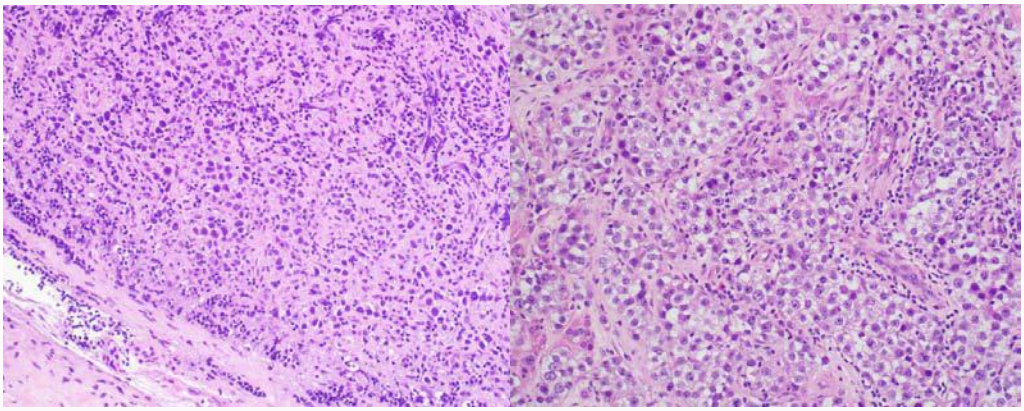

Figure 2: Histopathologic examination of the formalin fixed paraffin embedded and H&E stained left testicular biopsy specimen (left, 20x objective) and right radical orchiectomy specimen (right, 20x objective). The sections show sheets of large, round polyhedral neoplastic cells with abundant clear cytoplasm, large central nuclei and prominent irregular nucleoli. The tumor cells are in a poorly demarcated lobular architecture with delicate fibrous septa intimately associated with a lymphoplasmacytic inflammatory infiltrate. There was rare mitotic figures and no necrosis identified. Overall, the findings are consistent with bilateral seminomas.

or after the couple achieve pregnancy and complete family planning. At the time of this case report, the patient has not demonstrated any evidence of recurrence and his post-operative hypogonadism is well-managed with clomiphene citrate.

Discussion

Testicular GCTs remain one of the most treatable cancers, with survival rates over 90% [7]. Much of that credit goes to platinum-based chemotherapy that makes even widely metastatic disease treatable. However, less attention is given to the long term effects of treatment on these young testicular cancer survivors such as sexual dysfunction and hypogonadism [7-9]. Given that GCTs present typically in young males of reproductive age, this should be an important consideration. The fact that even management of unilateral tumors still have such treatments effects means bilateral synchronous or metachronous presentations presents a unique challenges and special considerations for specialists in urologic oncology and male fertility. While unilateral tumors have traditionally been managed with radical orchiectomy, a similar approach to bilateral synchronous seminomas warrant more dedicated conversations with patients about their fertility plans and quality of life. Bilateral radical orchiectomy remains the standard of care with excellent oncologic control for these patients. However, it results in sterility and often low quality of life due to hypogonadism requiring life-long hormonal replacement therapy.

Our literature review revealed mounting evidence of successful management of bilateral testicular GCTs with testis-sparing surgery with good oncologic control and preservation of testosterone levels. Tomita et al. demonstrated three cases successfully managed with unilateral orchiectomy for the larger tumor, followed by three courses of chemotherapy with cisplatin, etoposide and bleomycin [10]. After demonstrating a 98.6% non-recurrence rate at 7 year follow-up in 52 metachronous and 17 synchronous bilateral testicular germ cell tumor cases, Heidenreich et al. [11] suggested that organ-sparing surgery may be viable for cases with cold ischemia, organ confinement, size less than 20 mm, multiple biopsies of the tumor bed, adjuvant local irradiation postoperatively to avoid local recurrence, close follow-up and high compliance. Another case of a patient with bilateral synchronous testicular cancer and azoospermia demonstrated the successful delivery of a healthy baby after Intracytoplasmic Sperm Injection (ICSI) of sperm cryopreserved during bilateral orchiectomy [12], highlighting the importance of planning for TESE before orchiectomy procedures. Whenever feasible, sperm cryopreservation should be offered to all patients with testicular tumors prior to intervention given the importance of fertility preservation in the management of these patients. A clear indication for partial orchiectomy for management of testicular tumors is synchronous or metachronous disease. With data supporting good oncologic and hormonal preservation outcomes associated with partial orchiectomy, we propose that, a new goal of a trifecta for management of bilateral testicular tumors: oncologic control with hormonal and fertility preservation. However, current literature is limited by the primary outcomes not including all three components. Future studies with the aim of achieving the proposedtrifecta are therefore needed to further confirm potential shift in the standard of care for carefully selected young males with bilateral testicular tumors.

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