



Microinvasive Germ Cell Tumor of the Testis: Two Cases

Mikroinvasif Germ Hücreli Testis Tümörü: İki Olgu

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ABSTRACT

We reported two cases of microinvasive seminoma. One is alone and one is with classical seminoma. There was no macroscopic palpable mass. Both of them had risk factors as undescended testicle and microlithiasis. Both of them treated with orchiectomy. None of them had relapse after. Herein we reported two cases after getting written consent. We also reviewed the literature.

Key Words

Microinvasive seminoma, testicle tumor, microlithiasis

ÖZET

Burada iki mikroinvasif seminom olgusunu ele aldık. Bir olgu yalnız, bir olgu klasik seminomla beraberdi. Her iki olguda da palpe edilebilir bir kitle yoktu. Her iki olguda da inmemiş testis ve mikrolitiasis gibi risk faktörleri mevcuttu. Her ikisi de orşiektomi ile tedavi edildi. Her ikisinde de nüks görülmedi. Burada hastalardan onam alarak iki olguyu değerlendirdik. Ayrıca literature de gözden geçirdik.

Anahtar Kelimeler

Mikroinvasif seminom, testis tümörü, mikrolitiasis

Introduction

Microinvasive germ cell tumors (MGCTs) are preclinical precursor lesions for testicular germ cell tumors (TGCT) (1,2). The cells in these precursor lesions are similar to seminoma cells. They develop from germ cells and do not manifest epithelial features (3). While these lesions can be adjacent to a TGCT, they can also be an isolated testicular abnormality (4). As a rule, tumor marker levels are within normal ranges in all MGCT patients (5).

While TGCTs are frequent in young population, precursor lesions are rare (6). The incidence of precursor lesions in patients treated for maldescended testis is 1.8% (7). Among infertile or subfertile patients, the incidence of intratubular germ cell neoplasia (IGCN) is 0.3% and the incidence of MGCT is lower (7).

Herein, we report two cases of microinvasive seminoma. The first patient underwent orchiectomy for a maldescended testicle, besides, he was infertile. The second one underwent orchiectomy for a maldescended testicle and tumor prophylaxis.

Case Presentation

Case 1

A 24-year-old male patient presented to our outpatient clinic with a palpable testicular mass. His medical history revealed two orchidopexy operations for undescended testicles in 1997 and 1999. He attended a urology outpatient clinic with right testicle pain and swelling in May 2010. Tumor markers were normal. Ultrasonographic evaluation revealed a 55x30 mm testicular mass which completely replaced the testicle but no significant blood supply to the mass was observed. The patient was followed up. After two years, the patient went to another urology outpatient clinic for control. His tumor markers were normal and ultrasonography revealed a 15.5x10.5 mm mass. The lesion had normal vascular pattern and, thus, was thought to be benign. Again the patient was followed up. All after these, the patient presented to our outpatient clinic in December 2012. He had a palpable mass at his right testicle and grade III varicocele at the left side. His tumor markers were normal. Ultrasonographic evaluation revealed a right

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testicle with 5 cc volume and a mass measuring 9x7.7 mm diameter in the testicle. Sperm count and analysis revealed azoospermia with a total of 2.5 cc volume. We suggested orchiectomy and obtained written informed consent for operation. The patient underwent right radical orchiectomy and left varicocelectomy. In macroscopic examination, the resected right testicle was 1.8 cm in greatest dimension. Histopathological examination of the testicle revealed diffuse IGCN. The tubular basement membranes were thickened and a few of them had calcifications (microliths) in their lumens (Figure 1a). In addition, there was tubular atrophy with sclerosis (Figure 1b). No spermatogenesis was evident. In one focus, a few numbers of atypical cells with large nuclei, prominent nucleoli and large clear cytoplasm were seen in the intertubular area of the testicle (Figure 1c). The tumor cells did not form an expansile mass. Diastase-sensitive PAS positivity was seen in the cytoplasm of these atypical cells (Figure 2a, Figure 2b). These atypical cells showed immunoreactivity for placental-like alkaline phosphatase (PLAP), CD117 and OCT3/4 (Figure 3). The greatest dimension of the intertubular area infiltrated by these cells was below 1 mm. Then, the whole testicle was submitted for histological examination and there was no additional focus of a tumour. Finally, the pathologic diagnosis of the resected specimen suggested microinvasive seminoma and diffuse IGCN (also called unclassified (IGCNU), with extratubular extension).

CT of the chest and abdomen were normal. No recurrences or metastasis were seen in his twenty months follow-up.

Case 2

A 21-year-old male patient admitted to the general surgery outpatient clinic with right inguinal hernia. Ultrasonography revealed no testicle on the right side and microlithiasis in the left testicle, except for findings suggestive of right inguinal hernia. With these findings, the patient underwent right inguinal hernia repair. During the operation, the right testicle was found to be in the proximal inguinal canal. Following urology consultation, right orchiectomy was performed simultaneously for tumor prophylaxis. In macroscopic examination, the resected right testicle was 2.8 cm in its greatest dimension. As in the first case, macroscopic examination did not reveal any gross abnormalities except for small testis size. Histopathological examination of the testicle also revealed diffuse IGCN, thickened tubular basement membranes, microliths in a few of tubule lumens and tubular atrophy with sclerosis, similar to that in the first patient. In one focus, between the lymphocytic cells, a small group of malignant germ cells with large nuclei, prominent nucleoli and large clear cytoplasm that destroy the architecture of the interstitium by expanding the intertubular space of the testis were observed (Figure 4a). These atypical cells showed immunoreactivity for PLAP with cytoplasmic membrane staining (Figure 5a). In addition, PAS positivity was seen in the cytoplasm of these atypical cells (Figure 5b). The greatest dimension of the intertubular area infiltrated by these cells was 1.2 mm. Then, the whole testicle was submitted for histological examination and there were 2 more additional foci of these atypical cells with 1 mm (Figure 4b) and 0.8 mm (Figure 4c). Finally, the pathologic diagnosis of the resected specimen suggested seminoma and diffuse IGCN. In this case, the diagnosis of seminoma was established due to multifocality and the dimension of the infiltrated area (>1 mm). There was no vascular invasion, rete testis, epididymis or spermatic cord invasion.

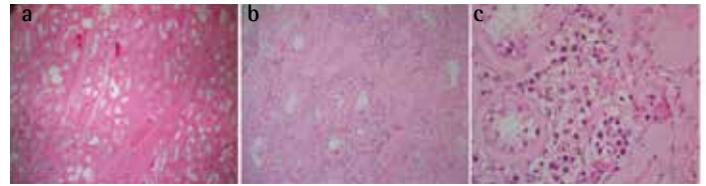


Figure 1. a) A microlith is seen in the left bottom part of the image (H&E, original magnifications x40), b) Between atrophic tubules, a few number of atypical cells can be seen in the interstitium (H&E, original magnifications x100), c) Seminoma cells with large nuclei, prominent nucleoli and large clear cytoplasm are seen in high power field (H&E, original magnifications x400)

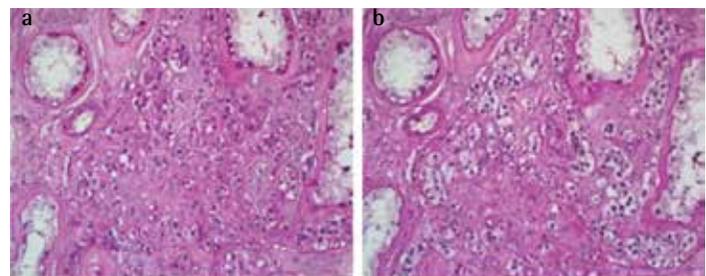


Figure 2. a) Glycogen present in the cytoplasm of the microinvasive seminoma cells by PAS staining reaction (original magnifications x200), b) Glycogen removed with diastase digestion (original magnifications x200)

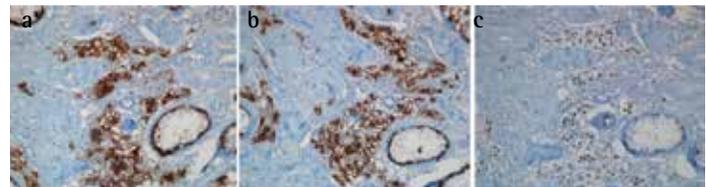


Figure 3. a) Placental-like alkaline phosphatase (PLAP), b) CD117 and c) oct3-4 immunostaining in microinvasive seminoma cells (original magnifications x200)



Figure 4. a) Three foci of seminoma, a) In lymphocytic infiltrate atypical cells with large clear cytoplasm have seen in the intertubular area of testicle (H&E, original magnifications x200), b) Around the second focus, microliths in tubul lumens and tubular atrophy with ITGCN can be seen (H&E, original magnifications x100), c) Around the third focus, atrophic seminiferous tubules with sclerosis can be seen (H&E, original magnifications x100)

Chest and abdomen CT was normal. The patient received adjuvant radiation therapy. He had no disease recurrence or metastasis during follow-up.

Discussion

MGCT has been defined by von Eyben et al. as a precursor lesion for TGCT (1). MGCT is a secondary precursor lesion characterized

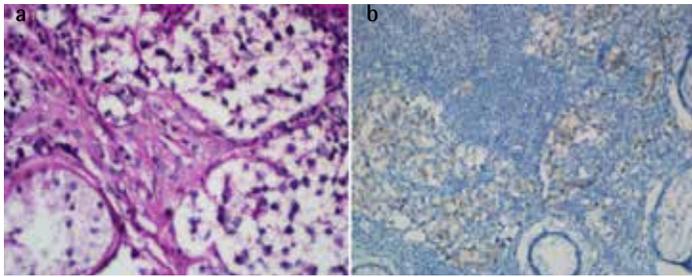


Figure 5. a) Glycogen present in the cytoplasm of microinvasive seminoma cells by PAS staining reaction (original magnifications x400), b) Positive cytoplasmic staining for seminoma cells with placental-like alkaline phosphatase (PLAP) in lymphoid infiltrate (original magnifications x200)

by extratubular malignant germ cells without a macroscopically detected TGCT (8). MGCT is stained positive with PLAP, catepsin D, c-kit and LD subunit (7). There was not any macroscopically lesion or colour change in pathology specimens of the patients. Besides, the specimens stained positive with PLAP.

The incidence of precursor lesions in patients treated for maldescended testicle is 1.8% (7). Among infertile or subfertile patients, the incidence of IGCN is 0.3% and the incidence of MGCT is lower (7). Our first case was treated for undescended testicle and he was also infertile with azoospermia. In addition, spermatogenesis was not observed in the pathology specimen. The second patient also had undescended testicle.

Tumor marker levels are normal in MGCT (5). In our first case, all the three markers were normal. Testicular microlithiasis is a risk factor for TGCT (9). In this patient group, ultrasonography use has increased for the screening of TGCT (4). Precursor lesion diagnosis have also increased with this raise. In our two cases, there was an ultrasonographic finding and also microlithiasis was seen in the pathology specimens.

In case of the progression from MGCT to TGCT, the lesions must be treated (10). Additionally, patients with MGCT can have metastases of germ cell tumor (8). For the treatment of MGCT, orchiectomy following adjuvant radiotherapy can be used safely (2). It can be also treated with orchiectomy and surveillance (11). We followed up our patient after orchiectomy without adjuvant radiotherapy because the chest and abdomen CT was normal.

As a consequence, MGCT is a secondary precursor for TGCT that must be treated with orchiectomy that followed by radiotherapy if necessary. Ultrasonographic surveillance of microlithiasis increases the diagnosis of precursor lesions.

Informed Consent: Consent form was filled out by all participants, **Concept:** Sezgin Okçelik, Hasan Soydan, **Design:** Sezgin Okçelik, İsmail Yılmaz, **Data Collection or Processing:** Sezgin Okçelik, **Analysis or Interpretation:** Ercan Malkoç, Ferhat Ateş, **Literature Search:** Murat Zor, **Writing:** Sezgin Okçelik, İsmail Yılmaz, Hasan Soydan, **Peer-review:** Externally peer-reviewed, **Conflict of Interest:** No conflict of interest was declared by the authors, **Financial Disclosure:** The authors declared that this study has received no financial support.

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