A case of synchronic embryonic cancer of the left testicle and benign tumour in the atrophic right testicle

Teresa Gawlik-Jakubczak, Jan Iwanicki, Stanisław Dobrzański, Radosław Brunowicz
Department of Urology, Navy Hospital in Gdańsk, Poland

KEY WORDS

testes ◗ testicular neoplasm ◗ semen quality ◗ semen crioprotection

ABSTRACT

We present a case of a young patient with synchronic tumours of both testicles. There was embryonal cancer found in the right testis, while in atrophic testis benign fibrous tumour was present. During surgery a sample of healthy looking tissue from the left side was collected. Neither signs of spermatogenesis nor carcinoma in situ were found in the specimen. The patient is under ongoing follow-up. Due to the fact that the patient plans to establish a family, his semen was preserved for fertilisation (homologous insemination) prior to the treatment. The atrophic testicle in a sub- or infertile man, who had a history of testicle cancer, increases significantly the risk of carcinoma in situ or invasive cancer in a second testicle.

INTRODUCTION

Testicular cancer is the most frequent neoplasm that is diagnosed in the population of young men between 15-35 years old. The increased risk of cancer in the population of sub- or infertile men is a well-known phenomenon. Following factors are thought to increase the risk of testicular cancer: testicular cancer in family, small atrophic testicle, abnormalities found in semen analysis, gonadal dysgenesis, cryptorchidism, sex hormone fluctuation (exogenous estrogen). Other testicular neoplasia form a heterogeneous group. Those tumors are rather rare and make up approximately 5-10% of all testicle neoplasia. Following tumors are numbered among testicular neoplasia: Leydig's cell tumours, androblastoma, gonadal stromal tumour. Tumours of mesenchymal origins such as benign fibroma, angioma, neurofibroma, leiomyoma and mesothelioma are extremely rare. Another types of testicular tumors are miscellaneous primary non-germ cell tumours, such as epidermoid cyst, adenocarcinoma of rete testis, adrenal rest tumors, adenomatoid tumor, carcinoid. Bilateral testicular tumours are rare and can occur meta- or synchronically. Generally, the risk of development of cancer in the second testis is twenty five times higher than for men without cancer in medical history [1, 2]. The case of two different types of tumours to be found synchronically is extremely rare. Patients at reproductive age that undergo a treatment of neoplasm receive additional impairment of their fertility. Despite the introduction of new techniques of radiotherapy and chemotherapy the decrease in semen quality after oncologic treatment can not be avoided.

THE AIM OF THE STUDY

The aim of this work was to present a case of a young man with synchronic, bilateral testicular tumours: embryonic cancer in the left testicle and benign fibrous tumour in the right testicle. Neither signs of carcinoma in situ nor spermatogenesis were found in the specimen collected from the atrophic right testis

MATERIALS AND METHODS

26-year old patient presenting with a painful enlargement of the left testis reported that the pain started 2 months earlier. Physical examination revealed that the left testis was enlarged and its surface was irregular and firm. The right testis was smaller and limp. Additional lab tests and ultrasonography of the scrotum were performed. In ultrasonography the entire right testis was irregularly rebuilt with nonhomogeneous echoic area. In the right testis two lesions 7 and 4 mm were visualised. AFP was 21.39 IU/ml and bHCG was within normal range. Neither chest radiography nor ultrasound examination of abdomen showed signs of pathology. The patient, childless, planning a family life in the future, was informed about a suspicion of bilateral testicle tumours and about the necessity of treatment and the possibility of the loss of fertility. He decided on sperm storage before surgery and he was referred to the semen criopreservation centre, where his semen was frozen. The left testis was amputated from an inguinal approach. In the right testis, one lesion was detected and excised after clamping the spermatic cord. The other lesion was nonpalpable so was not excised. The right testis was considerably smaller and we decided to take a sample of macroscopically healthy looking tissue for pathologic examination. In this particular case there was no chance to freeze the tissue sample from the left testis because the whole testis was pathologically rebuilt. Surgery and early postsurgical period were without complications. In pathology examination following lesions were visualised: the left testicle – carcinoma embrionale pT1NxMx; the right testicle – a chronic, active inflammatory process with tissue fibrosis. Neither signs of carcinoma in situ nor active spermatogenesis were found. The result of pathologic examination was verified in another independent centre. Testosterone level after surgery was within normal range and reached 15.75 mmol/L. In the CT of abdomen performed after surgery the enlarged lymph nodes 17 x 15 mm between the tile of pancreas, the lower pole of pancreas and the left suprarenal gland were found. Another packet of lymph nodes 18 x 17mm was displayed above aortal bifurcation on the left side, below renal artery. The patient received 3 cycles of chemotherapy consisted of BEP (bleomycin, etoposide, cisplatin). A complete remission was observed. In the next CT of abdomen no evidence of the enlarged lymph nodes was found.

DISCUSSION

In the articles dedicated to testicular neoplasia the connection between cancer occurrence and infertility was described. Testicular cancers more frequently appear in subfertile testicles such as atrophic ones, with a history of cryptorchism or dysgenesis [1, 2, 3]. Decreased fertility is not only connected with the destruction of healthy tissue by neoplasm. In several trials decreased semen quality after neoplasmatic orchidectomy in part of patients was confirmed. Researches from Denmark showed that a high percentage of men with cancer of one testis have disturbances in spermatogenesis [2, 3]. It means that the second testis, theoretically normal, has a disruption of spermatogenesis. The frequency (prevalence) of testis cancer and carcinoma in situ is significantly higher in the population of infertile men [1, 2, 3]. After the examination of 453 men with abnormal results of sperm quality analysis, TIN (testicular intraepitelial neoplasia) was detected in 10 patients. All of them had severe oligospermia [3]. It was showed that TIN in 50% of cases transforms into invasive cancer within 5 years and in 70% within 7 years [1, 2]. The frequency of TIN is higher in the group of risk and, for example, in the population with unilateral cancer and with the second small, atrophic testis reaches 30%. In comparison to that in the group with history of testicular cancer – 5%, cryptorchism – 3%, hermaphroditism 25-100%, infertile men 0.4-1,1%, respectively [1]. In the article from Berlin, TIN frequency was estimated as 4,9% in the population of men diagnosed with unilateral cancer. There were 1954 men with previously diagnosed testicular cancer investigated and biopsies of contralateral testis were performed. Among patients with recognised TIN, an undescendent or atrophic testis were most frequently found in their medical history. The only independent factor connected with TIN in multivariate analysis was atrophy [4]. Generally, a cumulative risk of a metachronic cancer development in the second testis was evaluated on 5.2% [1]

The treatment of testicular neoplasm by radiotherapy or chemotherapy causes temporary impairment of spermatogenesis and reduction of fertility. Huddart et al. compared the influence of orchiectomy alone, radiotherapy alone, chemotherapy alone with the chemotherapy in conjunction with radiotherapy on following matters: fertility, testosterone, LH, FSH level. They noticed that the treatment with the greatest impairing effects on fertility and FSH elevation was chemotherapy. In the other groups they found similar but smaller changes. The elevation of LH and decrease of testosterone level was higher after radiotherapy [5]. Apart from decreased parameters of semen prior to the treatment in the group of men with testicle cancer there was further decrease of semen parameters after orchiectomy. In this group of patients testosterone and estradiol remained within normal range. One of the possible mechanism of such a situation is the effect of elevated bHCG level detected in the ultrasensitive diagnostic tests. Authors underlined the significant role of bHCG and its direct action on Leydig cells [6]. For the last decades the constant tendency in decreasing the quality of semen have been observed. It is well-known particularly in Scandinavian countries and documented in clinical researches. The number of sub- or infertile men is still growing. The reason of this phenomenon remains unknown. Scientists indicate that many factors may play role in it, including environment pollution, high concentration of estrogens in the environment, hormonal problems in foetal life [1, 2, 7]. Richardi et al. surveyed the relationship between the length of pregnancy, age of mother, presence of nausea, birth weight, sequence of birth. No connection with infertility in men was found [7]. However, many different factors influence on fertility. It is a matter of great importance to inform patients about possibility to preserve the semen before the treatment, even if the second testicle is left. Regardless of rush that usually appears while dealing with testicular cancer, one should remember to inform patients about possibility of the semen banking. The quality of frozen semen of the patient described in the article is unknown because he has not done semen examination previously.

The interesting phenomenon is coincidence of two different pathologic type of neoplasm. The incidence of synchronic bilateral different testicular tumours is very low. In the literature rare cases of patients were described [8, 9]. The prognosis is not worse than for unilateral tumours.

CONCLUSIONS

Bilateral synchronic testicular tumours with different pathologic type are extremely rare.

About 25% of patients have impaired spermatogenesis before treatment and 25% will be azoospermic after chemotherapy.

One should always inform patients with testicular cancer about possibility of sperm banking prior to the treatment.

REFERENCES

1. Richie JP, Steele GS: *Neoplasm of the Testis;* in Wein AJ, Kavoussi LR, Novick AC, Partin AW, Peters CA Campbell-Walsh Urology, 9 th edition, Saunders Elsevier, Philadelphia 2007, vol 1, chapter 29, pp. 893-935.
2. Hoei-Hansen CE, Rajpert-De Meyts E, Dougard G, Skakkebaek NE: *Carcinoma in situ testis, the progenitor of testicular germ cell tumours: a clinical review.* Ann Oncol 2005; 16; 863-868.
3. Olsen I, Hoei-Hansen Ch, Skakkebaek N et al: *Testicular carcinoma in situ in subfertile Danish men.* Int J Androl 2007, vol 30, issue 4, 406-412.
4. Dieckmann KP, Loy V: *Prevelance of contralateral testicular intraepitelial neoplasia in patients with testicular germ cell neoplasms.* J Clin Oncol 1996, vol 14, 3126-3132
5. Huddart RA, Norman A, Moynihan A et al: *Fertility,gonadal and sexual function in survivors of testicular cancer.* Br J Cancer 2005; 25; 93 (2); 200-207.
6. Petersen PM, Skakkeba NE, Vistisen K et al: *Semen quality and reproductive hormones before orchidectomy in men with testicular cancer.* J Clin Oncol 1999, vol 17, issue 3, 941-948.
7. Richardi L, Pettersson A, Akre O: *Genetic and environmental risk factors for testicular cancer.* Int J Androl 2007, vol 30, issue 4, 230-241.
8. Gnacik W, Kupajski M, Myrta J: *Jednoczasowe występowanie różnych histologicznie nowotworów jąder o niskim stopniu zaawansowania.* Urol Pol 1999; 2; 223-226.
9. Zdrojowy R: *Obustronny, synchroniczny zarodkowy nowotwór jądra.* Urol Pol 1996; 4; 501-505.

Correspondence

Teresa Gawlik-Jakubczak
7. Szpital Marynarki Wojennej
Oddział Urologii
ul. Polanki 117
80-305 Gdańsk, Poland
phone: +48 601 20 88 44
teresaj@amg.gda.pl