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CASE REPORT

Mixed Germ Cell Testis Tumor Presenting with Massive Lung Metastasis

Zuhat Urakci[1], Senar Ebinc[1], Ogur Karhan[1], Yasin Sezgin[1], Nadiye Akdeniz[1], Mehmet Kucukoner[1], Muhammet Ali Kaplan[1], Abdurrahman İsikdogan[1]

[1] *Dicle University, Faculty of Medicine, Department of Medical Oncology, Diyarbakir*

Abstract

Testis tumors are the most common malignancies seen in young men aged 20-35 years. Approximately 95% of testis tumors are germ cell tumors. Germ cell tumors can be broadly classified as seminomatous and non-seminomatous. Painless swelling or nodule in testis is usually the most common symptom. Testis tumors metastasize most commonly to retroperitoneal lymph nodes via lymphatic spread and lungs, liver, brain, and bones via hematogenous spread. Lung metastases of germ cell tumors may be symptomatic with cough, chest pain, hemoptysis, and dyspnea. We herein report a patient diagnosed with a germ cell tumor presenting with back pain and dyspnea due to massive lung metastasis. In young males presenting with massive lung metastases, testis tumors should be kept in mind when searching for the primary tumor, and testicular examination should be done.

Keywords: Germ Cell Tumor, Lung, Metastasis.

* Corresponding author: Zuhat Urakci, Dicle University, Faculty of Medicine, Department of Medical Oncology, Diyarbakir

Introduction

Testis tumors are the most common malignancies seen in young men aged 20-35 years. Although their etiology is not entirely clear, several causes have been hypothesized. Cryptorchidism, genetic susceptibility, family history, and past history of testis cancer have been reported as the important risk factors. Their incidence has increased over the past century. Ninety-five percent of testis tumors originate from germ cells while the remaining 5% are Leydig cell tumors and lymphomas (1). Germ cell tumors can be broadly classified as seminomatous and non-seminomatous. Approximately 60% of germ cell tumors are mixed germ cell tumors (2). Painless swelling or nodule in testis is usually the most common symptom. However, metastasis-related symptoms may be the first presenting symptom, albeit rarely (3). We herein report a patient diagnosed with a germ cell tumor presenting with back pain and dyspnea due to massive lung metastasis.

Case Report

A 28-year old man had earlier presented to an outside facility with back pain and dyspnea. A computed chest tomography (CT) revealed multiple solid lesions. On testicular examination, he had been found to have a solid mass lesion in scrotum, for which he had been undergone orchiectomy operation. The pathological examination of the scrotal mass showed a malignant mixed germ cell tumor (teratoma +embryonal carcinoma +seminoma). He had been referred to our hospital for further workup and management. On physical examination performed at our center, the patient had dyspnea and diminished breath sounds. A Chest X-Ray showed multiple mass lesions compatible with metastases (Figure 1). A chest tomography also revealed multiple metastatic solid lesions in both lungs, the largest of which having a diameter of 5.5 cm located in the left lobe (Figure 2,3). His alpha-fetoprotein (AFP) level was 9.54 IU/ml (reference range 0.5-5.5) and beta human chorionic gonadotropin (B-hCG) level 276945 mIU/ml (reference range < 5,3).The bleomycin, etoposide and cisplatin (BEP) chemotherapy protocol was started. After the third course of chemotherapy, he had a partial radiological response, and his B-hCG level regressed to 2218 mIU/ml. The next two courses of chemotherapy was in the form of etoposide and cisplatin (EP). Although his final B-hCG level dropped to 270.1mIU/ml and he had a partial radiological response, his dyspnea symptom worsened. During treatment and close monitoring, the patient died of lung infection.

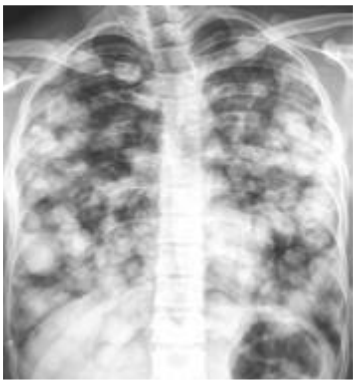

Figure 1. Diffuse metastatic mass lesions on chest X-Ray

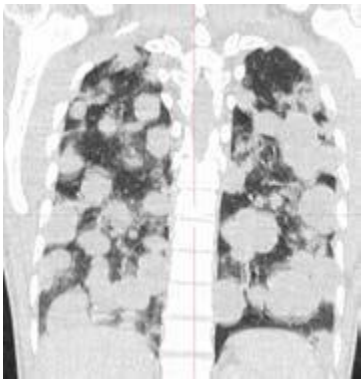

Figure 2. Diffuse metastatic mass lesions on the coronal section of chest CT

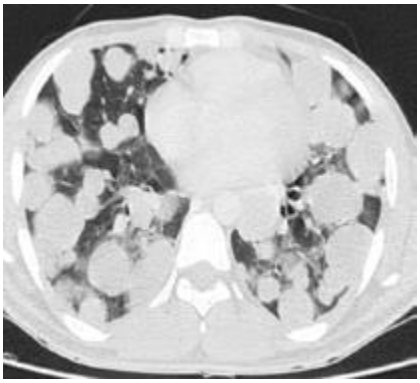

Figure 3. Diffuse metastatic mass lesions on the axial section of chest CT.

Discussion

Ninety-nine of all testis tumors are malignant, and they are the most common type of cancer in young males (2). They are most commonly seen at the age of 15-35 years but make a second peak around the age of 60 years. Patients present with a painless swelling or a nodule. The patients may ignore the mass due to its painless nature (1). In about 10-40% of germ cell tumors, there is a mixed histological structure where benign and malignant structures coexist. Depending on tumor components, elevated serum levels of lactate dehydrogenase (LDH), AFP, and B-hCG may occur. These tumor markers are of diagnostic and prognostic importance (4). They can be used for diagnosis, post-orchiectomy follow-up, and for assessing treatment response (5). AFP and B-hCG are the most commonly used tumor markers for diagnosis, follow-up , and residual tissue detection in germ cell tumors (6,7). Our patient was diagnosed with a mixed germ cell tumor. His AFP was on borderline and B-hCG level excessively elevated. As he had an intense tumor burden due to pulmonary metastases, his B-hCG level remained high despite orchiectomy. B-hCG level only regressed to 2218 mIU/ml after having chemotherapy. Germ cell tumors can only be cured by a combination of early diagnosis and treatment. Prognosis depends on histological subtype, age, stage, anatomic tumor site, histopathological subtype and tumor marker levels, as well as the presence of metastases. Having historically been fatal, the prognosis of testis cancer has been dramatically improving by high dose chemotherapy and stem cell and rescue treatment (1). Deaths due to testis cancer are extremely low at 3.8/100.000 (5). They have a high chance of cure despite being metastatic at diagnosis (1). Treatment outcomes are good in 95% of patients without metastasis and 70-90% of those with metastasis. Cure is possible in 90-95% of low-risk cases. The 5-year survival rate in testis cancers is about 96% (5). While teratomas of benign nature are mostly treated with surgical resection, tumors of malignant nature are treated with chemotherapy and surgical resection (8). BEP chemotherapy is the most commonly used treatment modality for germ cell tumors (9). Using four courses of BEP chemotherapy has become the standard care for moderate-to-high risk group of patients with metastatic non-seminomatous germ cell tumors. As for recurrent cases after complete remission, the second-line treatment is the VIP combination (etoposide, iphosphamide, cisplatin) or TIP (paclitaxel, iphosphamide, cisplatin). (10). High-dose treatment application may attain long-term remission in cases that are unresponsive to conventional treatments or that recur after therapy (11). The histopathological diagnosis of our patient was a mixed germ cell tumor (teratoma +embryonal carcinoma+ seminoma). We obtained a partial radiological response after 3 courses of BEP chemotherapy. We administered two courses of EP combination thereafter. Testis tumors most commonly spread to retroperitoneal lymph nodes via

lymphatic spread and to organs and tissues like lungs, liver, brain, and bone via hematological spread. Pulmonary metastasis occurs in 15% of testis seminomas (10). Cough, chest pain, hemoptysis, and dyspnea may be observed due to lung metastasis of germ cell tumors (1). Approximately 60% of non-seminomatous germ cell tumors present at an advanced stage via lymphatic or hematogenous spread (2). Our patient's initial symptoms, i.e. back pain and dyspnea, were also due to lung metastases.

Conclusion

Although the initial symptom of germ cell tumors is testicular mass, patients affected may present with metastasis-related symptoms. Among young males presenting with massive lung metastases, testis tumors should be remembered, and testicular examination should be absolutely performed when the primary tumor is sought.

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