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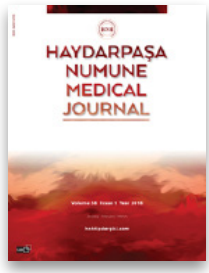

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ORIGINAL ARTICLE

Our 10 years' Experience in Testicular Tumors

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Abstract

Introduction: Testicular cancer is usually seen among young men and has lower incidence when compared with other urologic malignancies. This study aims to share the results of testicular cancer during the last ten years.

Methods: In this study, the patients who underwent orchiectomy in our unit between January 2009 and January 2019 were reviewed retrospectively. Age of the patients, the laboratory results and pathological reports were recorded. The patients who were diagnosed as benign tumor and inflammation were excluded from this study.

Results: There were 131 patients in the present study. The patients' age was between 21 and 90, with a mean age of 37.16+12.18 years. The germ cell tumor was reported in 125 patients. The remaining of the six patients had a sex-cord stromal tumor (n=3), liposarcoma (n=2) and lymphoma (n=1). Of these 125 patients, seminomas were seen in 39.2% and nonseminomatous germ cell tumor in 60.8% of the patients. Mixed germ cell tumor was reported in 65 (85.52%) patients; embryonal carcinoma was detected in seven (9.21%) patients. Four (5.26%) patients were diagnosed as a teratoma.

Discussion and Conclusion: Most of the patients had germ cell tumors. Mixed germ cell tumor was the commonest tumor and followed by seminoma.

Keywords: Germ cell tumor; testes; tumor.

Testicular tumors are among rarely seen diseases and constitute approximately 1% of the cancer cases in men [1]. These tumors are frequently seen, especially in the most active and functional periods of young men [2]. Many risk factors have been identified, such as undescended testicle, testicular malignancy, age (20-34), ethnicity (white race), infertility, intersex syndromes, presence of HIV and familial testicular malignancy [3]. Testicular tumors are generally divided into two groups as germ cell tumors (GHT) and stromal-sex cord tumors. Germ cell tumors (GCTs) are classified as seminomas and nonseminomatous GCTs.

Ultrasound is the first imaging method used in the diagnosis of testicular tumors. It has advantages, such as the absence of radiation exposure, being cheap and accessible, and providing information about the vascularity of the lesion [3]. For a definitive diagnosis, testicular tissue should be excised from the inguinal level and evaluated histologically. In our study, our patient series with testicular tumors in the last 10 years that are not common in daily practice were examined and presented.

Materials and Methods

A total of 152 patients who underwent inguinal orchiectomy with an initial diagnosis of a scrotal mass in our clinic between January 2009 and January 2019 were retrospectively reviewed in this study. Patients reported as having

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chronic inflammation and benign testicular tumors were excluded from the study. A total of 131 patients who reportedly had malignant testicular tumors were included in this study. Patients' age, tumor marker values and pathological diagnoses were recorded. Normal reference values for tumor markers as AFP, b-HCG and LDH were <5 IU/l, <5 mIU/l and 5-248 U/l, respectively.

Results

The patients were between 21 and 90 years old, and the average age was 37.16±12.18 years. Germ cell tumor was detected in 95.42%, seminomas in 49 of 125, embryonal carcinoma in seven, teratoma in four and mixed germ cell tumor in 65 patients. In the remaining six patients, sex-cord stromal tumors were detected in three (2.3%), lymphoma in one patient and liposarcoma in two patients (Table 1).

Classic seminomas were reported in 43, anaplastic seminomas in three patients, and spermatocytic seminomas in two patients, and atypical seminoma in one patient. Two patients with spermatocytic seminoma were diagnosed at an advanced age (63 and 90), as stated in the literature. The patient with atypical seminoma was at an advanced stage and demonstrated carcinomatous differentiation. Patients diagnosed with seminoma were between 26 and 90 years of age, and the mean age was 42.71±11.79 years. Most patients (19 patients) were diagnosed in the 4th decade.

Nonseminomatous germ cell tumors were detected in 76 patients. The patients received the diagnoses of mixed germ cell tumor (85.52%), embryonal carcinoma (9.21%), and teratoma (5.26%). Two of the four patients diagnosed with teratoma had mature, and the other two patients had immature teratomas. The patients in this group were between 21 and 61 years old and the mean age was 32.56±8.23 years. The third decade was the age group, with the largest number of patients (33 patients). The distribution of germ cell tumors is shown in Figure 1.

Increased levels of the tumor markers were determined in 109 of the patients (83.20%). In these patients higher AFP (n=72: 54.96%), bHCG (n=52: 39.69%), and LDH (n=72: 54.96%) levels were measured. In 28 (21.37%) patients, levels of all these three markers increased. These 28 patients were reported as having mixed germ cell tumors (n=26), embryonal carcinoma (n=) and seminoma (n=1).

Table 1. Distribution of the testicular tumors according to their histological types

	n (%)
Germ cell tumors	125 (95.42)
Sex-chord stromal tumor	3 (2.29)
Others	3 (2.29)
Total	131 (100)

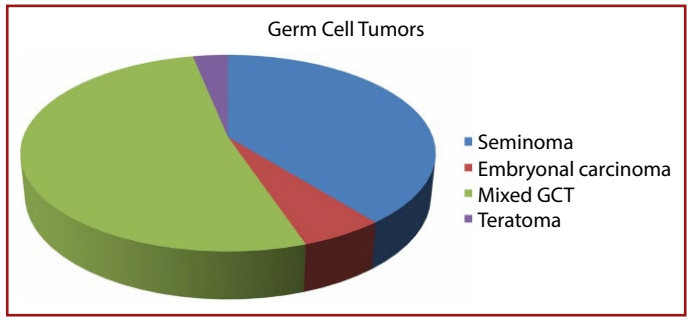

Figure 1. The distribution of germ cell tumors.

Discussion

Testicular tumors have an incidence of 2-3 in 100.000 and are seen in men in the 3rd and 4th decades after the hematological malignancies [2]. They constitute 1-2% of all cancer types and 5% of the urological cancers seen in men, and 1-2% of them are bilateral at the time of diagnosis [5].

Testicular tumors may usually emerge as a finding detected as a mass in the painless testis or by chance in ultrasonography [6]. Scrotal pain is seen in up to 27% of the cases, while in 11% of the cases, there is low back and side pain. The first radiological assessment is ultrasonography in a patient with the suspected testicular tumor. The sensitivity of ultrasonography in the testicular tumor has been shown as 92-98%, and its specificity as 95-99.8%. Magnetic resonance imaging or computed tomography is used for postoperative staging.

Testicular tumors are classified as germ cell tumors, sex-cord stromal tumors and other tumors [7]. Germ cell tumors are divided into two groups as seminomas and nonseminomatous germ cell tumors [8]. Seminomas are the most common germ cell tumors and constitute 50% of the cases [3]. Patients are generally diagnosed between the ages of 40-50, and 3% of the patients have bilateral involvement. Nonseminomatous tumors are classified as germ cell tumors, embryonal carcinoma, teratoma, yolk sac choriocarcinoma and mixed tumors [8]. Pure embryonal carcinoma accounts for approximately 2-3% of all testicular tumors.

Yolk sac tumors constitute 80% of the pediatric testicular tumors and the diagnosis is usually made under two years of age. AFP levels increase in this group. Choriocarcinoma is rare and accounts for less than 1% of the pure germ cell tumors. Patients are diagnosed in the 2nd and 3rd decades. Teratomas are the second most common testicular tumor

in children and occur below the age of four. In their study on 45 patients, Bozkurt et al.[4] reported that mostly germ cell tumors in 86.7% of their patients, mixed germ cell tumors being the most frequently seen histological subtype with an incidence of 37.77%.

In a study from Cerrahpaşa University Faculty of Medicine performed on 137 patients, seminoma was detected in 12.4% of the patients, and germ cell tumor in the remaining cases [9]. In the study conducted by Hamidi et al. on 67 patients, pure seminoma was detected in 21 (31.4%) cases, pure nonseminomatous type in 23 (34.3%) cases and mixed histological type in 23 (34.3%) cases [10]. In our study, germ cell tumor was observed in 95.42% of the patients, and mixed germ cell tumors being the most common histological type (49.61%)

In the literature, sex-cord stromal tumors constitute approximately 5% of the testicular tumors [3]. In our study, we found this rate as 2.92%. This group includes Leydig cell, Sertoli cell, granulosa cell tumors, gonadoblastoma, monoma-fibroma and mixed tumors. Leydig and Sertoli cell tumors are generally seen in childhood. Gonadablostomas are generally benign tumors commonly associated with diseases of sexual differentiation [7]. Other tumors are seen at a much lower rate.

Other testicular tumors include lymphoma, leukemia, sarcoma, leiomyoma and vascular tumors [5]. The most common testicular tumor in men over the age of 60 is lymphoma. In addition, lymphoma is the most common bilateral testicular tumor [3]. Leukemia and lymphoma may also be seen in childhood [11]. We detected lymphoma in one patient and liposarcoma in two patients.

Three tumor markers are used in the diagnosis as alpha-fetoprotein (AFP), β-human chorionic gonadotropin (β-HCG) and lactate dehydrogenase (LDH) [6]. They have an important role in determining the diagnosis and prognosis. Tumor markers are increased in 51% of the patients with testicular germ cell tumors. In a study from Pakistan, tumor markers were found to be higher in 64% of the patients with nonseminomatous testicular germ cell tumors and in 31% of the patients with seminomas [2]. In our study, in a higher number of patients (28.37%), increased levels of three tumor markers were detected.

Conclusion

In conclusion, testicular tumors are seen at a younger age compared to other urological tumors. Orchiectomy is the first procedure to be carried out since there is a need for pathological examination for definitive diagnosis. In accordance with the literature, germ cell tumors were the most common group in our study, and as a histological type, mixed germ cell tumors ranked first in this group.

Ethical Committee Approval: Retrospective study.

Peer-review: Externally peer-reviewed.

Authorship Contributions: Concept: S.K., S.Ç.; Design: S.K., S.Ç.; Data Collection or Processing: S.K., S.Ç.; Analysis or Interpretation: S.K., S.Ç.; Literature Search: S.K., S.Ç.; Writing: S.K., S.Ç.

Conflict of Interest: None declared.

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