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Study of single-center malignant Brenner tumors

Belma Gözde Özdemir*, İkram Kerimoğlu, Rabia Can, Ahmet Bilgi, Çetin Çelik
Department of Obstetrics and Gynecology, Faculty of Medicine, Selçuk University, Konya, Turkey

SUMMARY

Background/Aim: Brenner tumors are usually asymptomatic and are discovered incidentally. If symptomatic, there is abdominal distension, pelvic pain, and a mass sensation. On imaging, they appear as a mixture of solid and cystic components and are typically large. Tumor marker CA125 levels may be elevated in some patients; however, this is a nonspecific finding. This study aimed to present a single-center evaluation of the diagnosis, treatment, and follow-up of malignant Brenner tumors.

Material/Methods: Data were collected from patients aged 18-90 who applied to the Department of Obstetrics and Gynecology at Selçuk University Faculty of Medicine between 2010 and 2024 and underwent surgery due to pelvic mass. Demographic and diagnostic methods, treatment principles, and patient processes were thoroughly analyzed.

Results: A total of 21 patients were evaluated. Eighteen patients did not receive Chemotherapy (CT), and 20 patients did not receive Radiotherapy (RT). Taking into account age and additional diseases, 11 patients underwent hysterectomy and oophorectomy. It was found that 52.4% of the participants included in the study had hysterectomy bilateral Salpingo-oophorectomy, followed by Debulking with 28.6%; 42.9% had a diagnosis of pelvic mass; 95.2% did not receive KT; 95.2% did not receive RT; 55.6% had a diagnosis of Brenner and 25.0% had an additional disease of HT, followed by hypothyroidism with 15%. According to the table above, the average age of the participants was determined to be 65.52 ± 11.04. The average of ca125 was 92.19 ± 222.08; the average of CEA was 1.84 ± 0.88; the average of AFP was 3.69 ± 0.10; the average of ca19.9 was 16.31 ± 13.22, and the average of ca15.34 was 21.07 ± 16.49. According to the findings of the correlation analysis in the table above, there was a statistically significant, moderate, and positive relationship between the age of the participants and Ca125 ($r=0.573$, $p<0.05$). There was no statistically significant relationship between the age of the participants and CEA ($r=-0.614$). There was a statistically significant, high, and positive relationship between the age of the participants and AFP ($r=1.000$, $p<0.01$).

Conclusion: Although they are rare tumor types, an individualized approach is essential, and persistent masses should be closely followed up, especially.

Keywords: Brenner; Malign; Gynecology oncology; Treatment

Address for correspondence:

Belma Gözde Özdemir

Department of Obstetrics and Gynecology, Faculty of Medicine
Selçuk University, Konya, Turkey

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INTRODUCTION

Brenner Tumors (BT) are a rare group of tumors in the ovary [1]. The age range of occurrence is between 30 and 80 years, which is the opposite of ovarian malignancies [2]. There is no specific marker in preoperative imaging in Brenner tumors [3]. When looking at the literature for tumor marker values, studies are using the peroxidase-anti peroxidase method using monoclonal antibodies against CA125 and CA72-4 antigen and the streptavidin-biotin immunoperoxidase complex method using monoclonal antibodies against SCC antigen to examine representative areas with appropriate tumor indicators to determine the degree of tumor burden before treatment and to monitor response to treatment according to clinical course and immunohistochemistry tests [4]. To facilitate diagnosis and follow-up, there is no specific marker. There are benign, borderline, and malignant types in the Brenner histopathological classification. In postmenopausal women, these tumors are typically discovered by chance during imaging tests or surgery. In terms of histology, BTs are distinguished by clearly defined nests of transitional epithelium encircled by a fibromatous backdrop [5].

In this study, we aimed to present the results of a single-center study on malignant Brenner tumors.

LITERATURE REVIEW

Data were collected from patients aged 18-90 who applied to the Department of Obstetrics and Gynecology at Selçuk University Faculty of Medicine between 2010 and 2024 and underwent surgery due to pelvic Mass. Demographic and diagnostic methods, treatment principles, and patient processes were thoroughly analyzed.

Statistics

The descriptive statistical features of the study were analyzed using statistical measures that summarize the underlying structure and distribution of the data set. These features include measures of central tendency (mean, median, mode), measures of spread (standard deviation, variance, range, interquartile range), and measures that describe the shape of the distribution (skewness and kurtosis).

RESULTS

A total of 21 patients were evaluated. Eighteen patients did not receive chemotherapy (KT), and 20 patients did not Receive Radiotherapy (RT). Taking into account age and additional diseases, 11 patients underwent hysterectomy and oophorectomy. It was found that 52.4% of the participants included in the study had hysterectomy bilateral salpingo-oophorectomy, followed by Debulking with 28.6%; 42.9% had a diagnosis of pelvic mass; 95.2% did not receive KT; 95.2% did not receive RT; 55.6% had a diagnosis of Brenner and 25.0% had an additional disease of HT, followed by hypothyroidism with 15%. According to the table above, the average age of the participants was determined to be 65.52 ± 11.04. The average of ca125 was 92.19 ± 222.08; the average of CEA was 1.84 ± 0.88; the average of AFP was 3.69 ± 0.10; the average of ca19.9 was 16.31 ± 13.22, and the average of ca15.34 was 21.07 ± 16.49. According to the findings of the correlation analysis in the table above, there was a statistically significant, moderate, and positive relationship between

the age of the participants and Ca125 (r=0.573, p<0.05). There was no statistically significant relationship between the age of the participants and CEA (r=-0.614). There was a statistically significant, high, and positive relationship between the age of the participants and AFP (r=1.000, p<0.01).

DISCUSSION

A study including 26 cases operated between 2008 and 2015 has similar characteristics in terms of the total number of patients, whether it is unilateral or incidental, and postoperative diagnosis [6]. Transitional cell tumors are positive for CK, EMA, and WT1. Most are CK7(+) and CK20(-), similar to other primary surface epithelial tumors. Transitional cell tumors of the urinary tract are positive for CK7 and CK20 [7]. The tumors express various immunohistochemical markers of urothelial differentiation, including uroplakin III, thrombomodulin, GATA3, p63, and cytokeratin 7. The primary treatment method is surgical excision. Due to their rarity, the exact role and regimen of adjuvant chemo-radiation therapy for MBT has not been determined.

Here, a review of the literature on a case of MBT, with an emphasis on primary treatment and management of recurrent disease, including the use of adjuvant pelvic radiation, is presented. In the case report, a 77-year-old patient was diagnosed with MBT and received standard chemotherapy after surgery, carboplatin-paclitaxel. However, within a year, the disease relapsed and progressed despite the addition of a second chemotherapy and Bevacizumab. At this point, radiotherapy was administered after surgical Debulking, and the patient remained disease-free for two years. This case demonstrates for the first time that radiotherapy can be effective in refractory cases of MBT.

Although surgery is considered the first step in the treatment of MBT, the place of adjuvant chemotherapy and radiotherapy is not clear. The carboplatin-paclitaxel combination is usually applied by analogy with epithelial ovarian cancer, but data on radiotherapy are limited. However, the radiosensitivity of these tumors, combined with the practical results of modern radiotherapy techniques and low toxicity, makes this approach attractive, especially in cases of recurrence [8]. In the series of the study, the majority were classified as early-stage and did not receive chemotherapy, radiotherapy, or immunotherapy.

This study addresses the ruptured form of Malignant Brenner Tumor (MBT), a scarce type of epithelial ovarian cancer. The case was incidentally detected in a 39-year-old woman who initially presented to the emergency department with a presumptive diagnosis of perforated appendicitis. During surgery, a 25 × 20 × 15 cm, irregular-surfaced, cystic-solid mass originating from the right adnexa was detected, and a rupture was observed on the posterior surface of this Mass. Histopathological examination revealed a diagnosis of a malignant Brenner tumor. Since this type of tumor cannot be easily distinguished by clinical, laboratory, or imaging methods, the diagnosis is usually made in the late stages and is recognized during surgery. As in this case, surgical resection (optimal debulking) plays a crucial role in the treatment of MBT; however, the efficacy of adjuvant chemotherapy remains controversial. The patient received a standard paclitaxel-carboplatin chemotherapy protocol, and no recurrence was observed in the first month. The study provides essential information for clinicians who may encounter this tumor due to its rarity, diagnostic challenges, and uncertainty regarding management strategies [9].

Brenner tumors are rare ovarian neoplasms composed of ovarian transitional cells surrounded by dense fibrous tissue. Most are small tumors (<2 cm) and are detected incidentally in asymptomatic women. Their predominantly fibrous content causes the relatively low signal on T2-weighted images and forms the differential diagnosis with ovarian fibroma and thecoma.

Some studies have observed a recurrence of the disease after 30 months [10]. However, no recurrence was observed in this study. Epithelial tumors are primarily cystic and, when malignant, are associated with a solid component in varying proportions. Papillary projections are a distinguishing feature of epithelial tumors. Abundant papillary projections strongly suggest a borderline (low malignant potential) or malignant tumor. Ovarian teratomas typically exhibit lipid material on Computed Tomography (CT) and Magnetic Resonance (MR) imaging. Malignant germ cell tumors usually present as a large, complex abdominal mass that contains both solid and cystic components. Tumor markers are helpful in diagnosis. The radiological appearance of sex cord-stromal tumors varies from small solid masses to large multicystic masses. Granulosa cell tumors are usually large multicystic masses with solid components. Fibrothecoma, sclerosing stromal tumors, and Sertoli-Leydig cell tumors are typically solid masses. Fibromas have very low signal intensity on T2-weighted MR images. Specific radiological findings predominate for each tumor type. Knowledge of these basic features of ovarian tumors provides criteria for establishing a particular diagnosis or significantly narrowing the differential diagnosis [11]. In conclusion, we found that Walthard rests and transitional metaplasia are common findings associated with CTs [12].

CONCLUSION

The definition of histopathological features of ovarian cancer is essential for follow-up and treatment planning. It provides an evaluation in terms of chemotherapy, radiotherapy, and the order of treatment. While the preoperative approach is valuable in determining the type of surgery and differential diagnoses, the definitive diagnosis is the primary determinant of the process.

ETHICAL APPROVAL

Ethical approvals have been received, and it complies with the Declaration of Helsinki.

CONFLICT OF INTEREST

No conflict of interest.

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