ABSTRACT

Purpose: To investigate the clinical and histopathological characteristics of patients with uterine and ovarian sarcomas and analyse surgical operations already performed.

Material and Methods: The retrospective study included 17 patients with uterine and 2 patients with ovarian sarcomas, who were diagnosed and operated on for three years at St. Marina University Hospital in Pleven, Bulgaria.

Results: In the group of uterine sarcomas, the highest incidence was that of leiomyosarcomas (53.3%), followed by endometrial stromal sarcomas (33.3%) and the homologous carcinosarcomas (13.3%). Most of the patients were diagnosed in the first clinical stage (73.3%), and the most common surgery performed was total abdominal hysterectomy with salpingo-oophorectomy, with or without omentectomy (53.3%). The two patients with ovarian tumours were histologically diagnosed with carcinosarcoma.

Conclusions: Genital sarcomas are a heterogeneous group of rare malignant diseases with poor prognoses. Early detection, adequate histological diagnosis and staging are of utmost importance for control.

Keywords: uterine sarcoma, ovarian sarcoma

INTRODUCTION

Sarcomas account for about 5% of uterine neoplasms [1]. The most common histological ones are carcinosarcoma (50%), leiomyosarcoma (30%) and endometrial stromal sarcoma (10%) [2]. Carcinosarcomas are a variable mixture containing malignant epithelial and malignant mesenchymal components. These malignancies can occur in any part of the genital tract, though the most common location is in the uterus [3]. The epithelial component can be endometrioid, clear-cell, serous or squamous. The malignant mesenchymal components defined as homologous or heterologous. If the sarcomatous part contains elements of the Müllerian system (endometrial stromal sarcoma, leiomyosarcoma, and other), it is classified as homologous. The heterologous ones contain malignant tissues such as cartilaginous, bone, and transversely striated muscle tissue, which are not generally found in the genital system. It is suggested that carcinosarcomas belong to the group of carcinomas and be treated as such, rather than as sarcomas, as they are now categorized in the current FIGO classification [4]. Sarcomas account for ≤1% - 4% of all ovarian tumors [5]. The etiology and pathogenesis of these mesenchymal neoplasms remain largely unknown yet, and any subtype is characterized by a variety of risk factors, specific genetic aberrations, clinical course, staging and prognosis.

MATERIALS AND METHODS

Patients

This retrospective study included 17 patients with uterine sarcomas, and 2 patients with ovarian sarcomas, diagnosed and operated on between July 2015 and July 2018 at St Marina University Hospital in Pleven, Bulgaria. The mean age of the patients with uterine sarcomas was 55.5 years (age range 40-76), and ten of them were in menopause. They accounted for 6.3% of all patients operated on for malignant diseases of the uterus at the clinic. The two patients with ovarian sarcomas were 14 and 50 years old and were 0.8% of all patients treated for malignant diseases of the ovaries. We assigned the stage of uterine sarcomas using the FIGO 2009 system. Ovarian tumors were staged according to FIGO 2014.

Statistical analysis

To evaluate the results, we applied the descriptive method.

RESULTS

Of the patients with uterine sarcomas, 11 were admitted for primary surgical treatment, and six because of recurrences or need for additional surgery. Two of them were only diagnosed by testing abrasion/biopsy but were not operated on at the clinic. The rest of the patients underwent surgical operations as follows:
The mean operating time (incision time - skin closure time) was 125 minutes, range 65-420 minutes. No significant complications were found during the 30-day post-operative follow-up. The histological type was defined by comprehensive histopathological and immunohistochemical investigations. The following types were identified:

**Table 1. Major surgical interventions performed.**

<table>
<thead>
<tr>
<th>Intervention</th>
<th>Cases (n)</th>
<th>Percentage (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>TAH + adnexectomy +/- omentectomy</td>
<td>8</td>
<td>53.2%</td>
</tr>
<tr>
<td>Extirpation of recurrent tumor</td>
<td>3</td>
<td>20%</td>
</tr>
<tr>
<td>Radical hysterectomy with lymph node dissection</td>
<td>2</td>
<td>13.3%</td>
</tr>
<tr>
<td>Extended surgery</td>
<td>2</td>
<td>13.3%</td>
</tr>
</tbody>
</table>

Distribution by stages was as follows:

**Fig. 1.** Histological types of uterine sarcomas, distributed by number and percentage.

**Fig. 2.** Distribution of uterine sarcomas by stage (number of cases and percentage).
DISCUSSION
Sarcomas and carcinosarcomas of the genital tract are rare neoplasms, and most studies cover a small number of cases. A large-scale 10-year study, including 40 ovarian carcinosarcomas, revealed an incidence of 1.3% of such tumors in the group of the malignant ovarian tumors [6]. Most often, the cases diagnosed are in FIGO stage III-IV [7]. The two cases in our study were with carcinosarcomas. The case of the 14-year-old girl, diagnosed shortly after menarche is unusual for her age – the disease is generally seen between the age of 60 and 70 years. The main purpose of surgical treatment is to remove all visible tumor masses and full surgical staging. Surgery usually includes peritoneal wash cytology, total hysterectomy with bilateral adnexectomy, omentectomy. Pelvic and para-aortic lymph node dissection, peritoneal pelvic, paracolic and subdiaphragmatic biopsy are also performed. In advanced cases (FIGO III-IV), an as extensive as possible cytoreduction, sometimes with greater interventions like bowel resection and splenectomy is needed. Adjuvant chemotherapy is administered in all cases, usually including platinum preparations and taxanes. In cases of tumor resistance and recurrence, alternative treatment regimens include Gemcitabine, Topotecan, Etoposide, Ifosfamide, Doxorubicin. The role of hyperthermic intraperitoneal chemotherapy (HIPEC) for the treatment of ovarian carcinosarcomas is still subject to debate. Irrespective of the sarcomatous component, the necessity for radiotherapy has not been established. Target radiotherapy may be indicated in individual patients, e.g.those with bone metastases.

Uterine carcinosarcomas are the most frequent subtype and usually occur in 50- to 70-year-old patients. Unlike these, leiomyosarcomas are seen at an earlier age (40-55 years) and are usually limited to the uterus (stage I) [2]. Primary surgical treatment for all types of uterine sarcomas includes TAH with bilateral adnexectomy with or without omentectomy and lymph node dissection. Adjuvant chemotherapy depends on the staging, the histological type, and the degree of differentiation and the pres-
ence of lymphovascular invasion. For patients with higher grading, a combination of Ifosfamide and Paclitaxel is recommended [8]. Effective chemotherapy for leiomyosarcoma includes Doxorubicin, Ifosfamide, Gemcitabine and Paclitaxel [9]. Endometrial stromal sarcoma has positive hormonal receptors and treatment with progestins and aromatase inhibitors is often administered. Postoperative radiotherapy in the early stages of genital sarcomas is aimed to improve local control and includes external pelvic radiotherapy, followed by intravaginal brachytherapy [2].

The analysis of the histological types of uterine sarcomas in our study showed the highest prevalence of leiomyosarcomas (53.3%), followed by endometrial and homologous carcinosarcomas. The dominant group was that of tumors in stage I (73.3%). Comparison by staging the different subtypes is not applicable since they have different stages by FIGO 2009. The surgical operations performed vary from extirpation of recurrence to radical hysterectomy and interventions extended to other abdominal organs. In some of the cases, multidisciplinary teams were needed. The procedure most commonly applied was TAH with bilateral adnexectomy, with or without omentectomy (53.3%).

**CONCLUSION**

Genital sarcomas are a heterogeneous group of rare malignant diseases with poor prognoses. Early detection, accurate histological diagnosis and staging are crucial for controlling the condition. When treatment is carried out in specialized centers, it is more successful.

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