Case Reports in Oncology

Case Rep Oncol 2024;17:82–90
DOI: 10.1159/000535747
Received: August 29, 2023
Accepted: November 29, 2023
Published online: January 10, 2024

Case Report

Trabectedin and Radiotherapy in Endometrial Stromal Sarcoma: A Case Report

Irene Carrasco García[a] Johana Benedetti Pedroza[a]
Isabel Miras Rodriguez[a] Inmaculada Rincón[b]

[a]Medical Oncology Department, Virgen del Rocio University Hospital, Seville, Spain;
[b]Radiotherapy Oncology Department, Virgen del Rocio University Hospital, Seville, Spain

Keywords
Endometrial stromal sarcoma · Treatment · Trabectedin · Radiotherapy · Stable disease

Abstract
Introduction: Endometrial stromal sarcoma (ESS) is a rare tumor that remains a diagnostic and therapeutic challenge to physicians worldwide. The metastatic setting implies a poor prognosis, with a 5-year survival rate below 40%. Patients with advanced-stage high-grade ESS (HG-ESS) have limited therapeutic options, often involving various chemotherapy regimens. ***Case Presentation:*** This report depicts the case of a 47-year-old female diagnosed with HG-ESS. She underwent several lines of treatment starting with radiotherapy and brachytherapy, followed by multiple lines of treatment including trabectedin over several months. After retreatment with trabectedin and achieving disease stabilization for 10 months, treatment was optimized by trabectedin combined with radiotherapy, leading to stable disease that is still ongoing and lasts for over 17 months. ***Conclusion:*** Our case underscores the challenging nature of treating patients with HG-ESS and highlights the safety of long-term retrial with trabectedin, coupled with radiotherapy administration. This approach maintained a durable stable disease response in the metastatic setting.

Introduction

Uterine sarcomas account for approximately 3–7% of all uterine cancers with an incidence of 1–2 per 100,000 women [1, 2]. Endometrial stromal sarcoma (ESS) is a rare malignant tumor of mesenchymal origin [3], known to metastasize to the peritoneum, lymph

Correspondence to:
Irene Carrasco García, irenecg1990@gmail.com

Case Rep Oncol 2024;17:82–90
DOI: 10.1159/000535747

nodes, bones, and lungs [4]. ESS is more commonly found in women 42–58 years of age; however, detection at a younger age has also been reported in the literature [2]. ESS represents 1% of all uterine malignancies and can be classified as either an endometrial stromal nodule, low-grade endometrial stromal sarcoma, high-grade endometrial stromal sarcoma (HG-ESS), or undifferentiated uterine sarcoma [5]. These categories are defined by the presence of distinct translocations as well as tumor morphology and prognosis [6, 7]. Endometrial stromal nodule and low-grade endometrial stromal sarcoma present a less aggressive disease with a favorable prognostic outcome and a 5-year overall survival rate above 85%. In contrast, HG-ESS and undifferentiated uterine sarcoma have an adverse prognosis with a 5-year survival rate below 40% [8]. HG-ESS presents atypical clinical manifestations and has characteristic genetic rearrangement (10; 17) (q22; P13), leading to the YWHAE-NUTM2 fusion protein [7, 9]. Although HG-ESS can present other mutations and genetic alterations showing distinct histological patterns [10], these tumors characteristically present a high-grade round cell/epithelioid component positive to cyclin D1, are negative to CD10 marker, and have a weak or absent staining for estrogen and progesterone receptors [11].

Due to the rarity of these tumors, information regarding the selection of treatment and prognostic factors remains limited to a few retrospective studies, small case series, and case reports [12–14]. Total hysterectomy with bilateral salpingo-oophorectomy remains the standard treatment for ESS. Due to the HG-ESS recurrence pattern, which is often distant and visceral, the use of adjuvant chemotherapy in the management of ESS is usually considered. Some commonly used chemotherapy regimens for ESS include doxorubicin combined with ifosfamide or dacarbazine, or gemcitabine combined with dacarbazine [15]. Hormonal and targeted therapy for ESS has been widely discussed; however, only case reports are available in the literature [16, 17]. Patients with advanced-stage HG-ESS at have few therapeutic options when the tumor cannot be surgically removed [10].

Trabectedin is indicated for the treatment of adult patients with advanced soft-tissue sarcoma after failure of previous treatment with anthracycline and ifosfamide or for those who are not candidates to receive them [18]. Moreover, several trabectedin clinical trials have shown clinical benefit in patients with advanced uterine sarcomas (e.g., uterine leiomyosarcoma [uLMS]), after failure of an anthracycline-containing regimen, with a favorable safety profile [19–21].

Here, we report the case of a patient with metastatic HG-ESS who was treated with trabectedin as her fourth line of treatment with stable disease for 13 months (19 cycles). After retreatment with trabectedin in the ninth line and achieving disease stabilization for 10 months, the patient received an optimized treatment with trabectedin and radiotherapy for more than 17 months achieving long-lasting stable disease. The CARE Checklist has been completed by the authors for this case report, attached as supplementary material (for all online suppl. material, see https://doi.org/10.1159/000535747).

Case Report

A 47-year-old female patient initiated an extensive clinical journey after hypermenorrhea symptoms and the detection of a localized mass at the intrauterine pelvis by echography. On August 15, 2013, a hysterectomy with double adnexectomy was performed, and the diagnosis of HG-ESS in contact with resection borders was provided by histology. Based on the diagnostic, it was decided to start the treatment with adjuvant radiotherapy in the surgical bed (54 Gy, 1.8 Gy/fraction, 28 fractions) and brachytherapy (two applications, 6.6 Gy per application) (Fig. 1). Disease progression to the liver (with peritoneal implants and liver lesions up to 18 mm) was observed and diagnosed during a follow-up in June 2016 (Fig. 2a). The

Case Rep Oncol 2024;17:82–90
DOI: 10.1159/000535747

patient initiated systemic treatment with epirubicin combined with ifosfamide, finishing this treatment in December 2016, when the patient had completed six cycles of treatment. In June 2017, the patient showed disease progression, and consequently, treatment with pazopanib at 800 mg orally once a day was initiated. After 5 months of treatment, the disease progressed. Therefore, in November 2017, a third line of treatment was initiated with gemcitabine combined with docetaxel and olaratumab, as part of a clinical trial [22]. However, in March 2018, the patient showed disease progression (Fig. 2b), and the treatment was changed to trabectedin (fourth line). Trabectedin was infused at 1.5 mg/m^2 per cycle in a continuous treatment regime for 19 cycles, and the patient had achieved stable disease at the time of the first reevaluation, which lasted until April 2019. Additionally, changes in tumor density were observed. However, in June 2019, the patient had disease progression in the liver (Fig. 2c). Since the patient was tested for all standard treatment lines, dexrazoxane in combination with epirubicin and ifosfamide was then administered for three cycles of treatment as fifth line of treatment. After the third cycle, a new disease progression was observed, and since the patient was showing a good clinical state, a new line of treatment ifosfamide at high doses was administered in sixth line for 1 year (from July 2019 until July 2020), when disease progression was again observed. At this point, there was an option for next-generation sequencing in pretreated patients. A sequencing study was performed, and a mutation in the fibroblast growth factor receptor (FGFR) was detected. Since the enrollment in a basket trial was not possible, the patient was treated with gemcitabine combined with dacarbazine biweekly as seventh line. Stable disease was observed for six cycles until January 2021 when hepatic and peritoneal progression were observed. At that time, the patient received compassionate treatment with erdafitinib for FGFR mutation targeting as eighth line of treatment, developing severe nail toxicity. After 4 months of treatment, growth of the hepatic lesions (from 118 mm to 132 mm in the major axis) and very striking growth of the peritoneal lesion (56 mm at the beginning of the line to 176 mm) from above 20% was again observed, fulfilling Response Evaluation Criteria in Solid Tumors (RECIST) version 1.1 criteria for progression. (Fig. 2d, e).

At this point, the patient remained in a good clinical state, with preserved ejection fraction in the cardiological study and presenting only abdominal distension without analytical alteration. Following a review of the previous treatment regimens, the option of retreatment with trabectedin as ninth line of treatment was presented based on a consideration of the balance between tolerability, accumulated toxicity, and prior treatment responses. The patient initiated trabectedin at 1.5 mg/m^2 given as a 24-h intravenous infusion in July 2021 with dexamethasone premedication. The patient presented good tolerance without grade 3 toxicity (at both analytical and clinical levels), and only grade 1 asthenia was observed after 1 week of treatment.

At the first reevaluation, after four cycles of treatment, increased necrosis of the lesion with density changes was identified, but the disease remained stable by RECIST criteria. After 6 months of treatment, a reduction of 1 cm in the major lesion and density changes (hypodensity) was observed (Fig. 2f). At 8 months of treatment, this lesion continued to diminish at the left flank site. In April 2022, after 10 months of treatment, an increase of an implant next to the right ureter was observed, with marked ureterohydronephrosis but without repercussions regarding renal function (Fig. 2g). Since a synergy between trabectedin and radiotherapy is known [23–25] and after committee approval, radiotherapy was delivered within 1 h after completion of the trabectedin infusion at a fixed low dose of 30 Gy (3 Gy/day for 10 days). Two months after, a reduction of 1 cm of this lesion was observed together with a global control of the metastatic disease (Fig. 2h). The patient is still on treatment with stable disease after 1 year and 5 months (24 cycles), with good tolerance and without the need for dose reduction.

Case Rep Oncol 2024;17:82–90
DOI: 10.1159/000535747

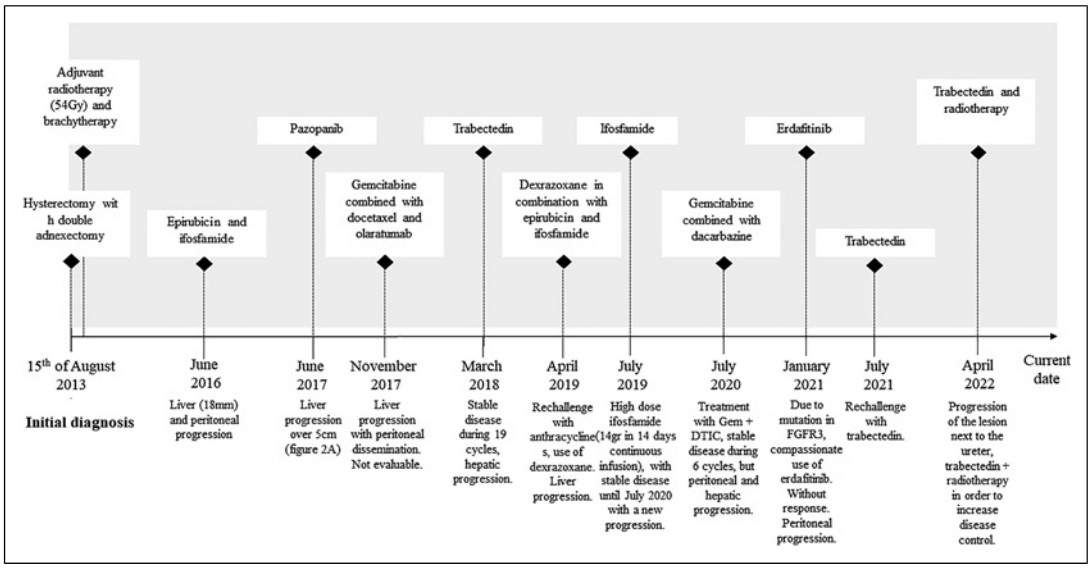

Fig. 1. Timeline of lines of treatment used in this case report of HG-ESS.

Discussion

ESS are rare malignant tumors of the uterus and represent a unique and complicated subset of uterine mesenchymal cancers [10]. These tumors are aggressive and associated with poor prognosis and high rates of recurrence [26]. Several chemotherapeutic regimens have been introduced for the treatment of ESS including carboplatin plus docetaxel or gemcitabine plus docetaxel [27]. In addition, as reported in retrospective studies, pazopanib, a selective multi-targeted receptor tyrosine kinase inhibitor, seems to be an efficient agent for ESS [28, 29]. Moreover, some case reports have demonstrated good results with hormonal therapy in the management of ESS [30, 31]. However, the effect of treatment on persistent and/or recurrent HG-ESS is known to be poor, particularly for patients who have recurrence after the first line of chemotherapy [32]. It is known that after the second-line chemotherapy, the effectiveness of reusing a single agent or using a new multi-agent is only 5–27% [33, 34]. The beneficial outcome of radiotherapy against HG-ESS has been suggested in some studies, while others report a modest effect against low- or high-grade forms of ESS [35].

Trabectedin is a substance derived from a type of marine invertebrate currently used in previously treated advanced soft-tissue sarcoma. Several reports in patients with uLMS have reported clinical responses, or at least disease stabilization, with trabectedin [36–39]. Due to the fact that uLMS is driven almost exclusively by the inactivation of tumor suppressor genes, therapeutic strategies should target the main genetic drivers of oncogenesis [40], as trabectedin does. For instance, Sanfilippo et al. [37] in a retrospective analysis of 66 patients with metastatic uLMS, most in progression after 2–3 lines with different treatments, reported that 11 patients achieved a radiological partial response according to RECIST criteria and further 23 demonstrated stable disease following treatment with trabectedin [37]. Moreover, results from clinical studies have demonstrated that trabectedin is an appropriate second-line option for advanced uLMS since it provides long-term tumor stabilization and is generally well tolerated [38, 39].

Combining radiotherapy with trabectedin for the treatment of soft-tissue sarcomas showed substantial tumor shrinkage beyond first-line systemic therapy in metastatic patients [23]. In a clinical trial phase I/II, patients with metastatic soft-tissue sarcomas were treated

Case Rep Oncol 2024;17:82–90
DOI: 10.1159/000535747

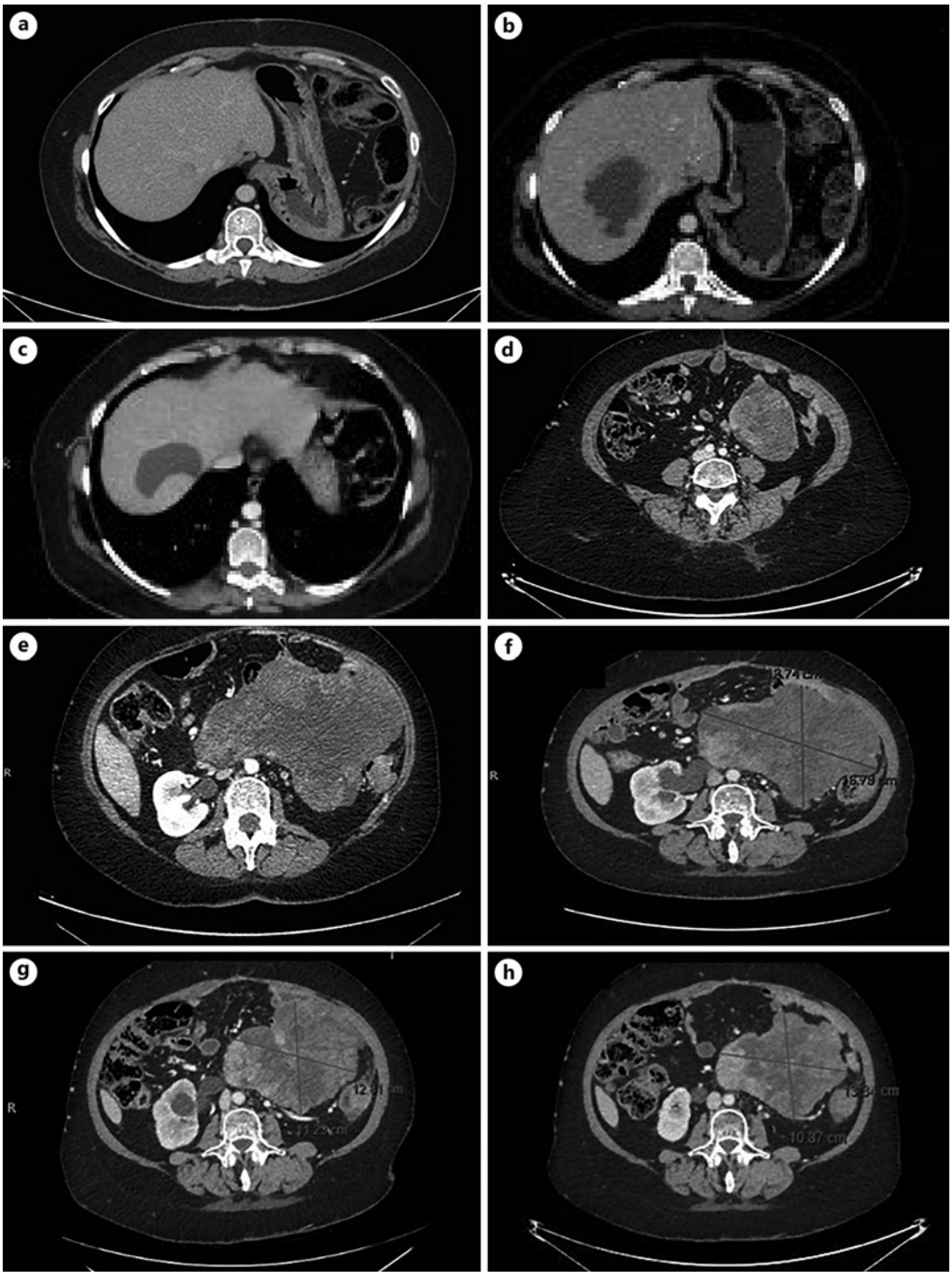

Fig. 2. a–g Disease progression and changes during treatment. The initial metastatic disease, with hepatic metastasis (18 mm). **a** Progression 6 month after finishing first-line treatment with epirubicin + ifosfamide. **b** Hepatic disease before initiating treatment with trabectedin. **c** Density response observed by image after 19 cycles. Comparative peritoneal disease before (**d**) and after (**e**) treatment with erdafitinib. **f** Response, change in density observed of the main peritoneal implant. **g** Dimensional response of the implant. Right ureterohydronephrosis. **h** Stable disease, with reduction of 1 cm, of the radiated implant.

Case Rep Oncol 2024;17:82–90
DOI: 10.1159/000535747

with trabectedin (every 3 weeks in a 24-h infusion) and radiotherapy started within 1 h after completion of the first trabectedin infusion (3 Gy/day for 10 days). In the phase II study, among 25 patients, the overall response rate was 72% for local assessment and 60% for central assessment [23]. A retrospective series reviewed metastatic sarcoma patients treated with trabectedin concomitantly with radiotherapy treatment with palliative intention. That study observed that in 40 pretreated metastatic soft-tissue sarcoma patients, the overall response rate by RECIST was 32.5%, median progression-free survival was 7.5 months, and median overall survival was 23.5 months [41].

In this case, we report the case of a patient with advanced HG-ESS with good tolerance to treatments but with low disease control for most of the treatment lines tested. These treatment responses and patient conditions enabled the testing of different treatment regimens. Treatment with anthracyclines induced a good response but had limited doses due to toxicity [42]. Trabectedin, at the first use, allowed for disease control of 13 months, with similar results to ifosfamide at high doses. With the second treatment of trabectedin, disease control was maintained. Moreover, since the improvements in clinical outcomes of trabectedin in combination with radiotherapy are known [23], disease control was optimized in the event of oligoprogressive disease with control of systemic repercussions (ureterohydronephrosis). Having reached 17 months of treatment, progression at 10 months was controlled by radiotherapy, and the disease was stable until the time of writing this case.

Conclusion

The present case suggests that durable stable response can be achieved with trabectedin therapy combined with radiotherapy in HG-ESS patients. Combination therapy has the potential to improve the outcome for patients with sarcomas and other cancer types. However, further studies and trials are still needed to establish a protocol for the treatment of such tumors.

Acknowledgments

Authors express gratitude to Meisys (Madrid, Spain) for writing assistance.

Statement of Ethics

This retrospective review of patient data did not require ethical approval in accordance with local/national guidelines. The authors state that they have followed the principles outlined in the Declaration of Helsinki for all human or animal experimental investigations. Written informed consent was obtained from the patient for publication of the details of their medical case and any accompanying images.

Conflict of Interest Statement

Irene Carrasco García has received personal fees for advisory board, consulting, and travel expenses from PharmaMar. She has also gotten research funding for clinical studies (institutional) from PharmaMar, Eli Lilly and Company, AROG, Bayer, Eisai, Lixte, Karyopharm, Deciphera, GlaxoSmithKline, Novartis, Blueprint, Nektar, Forma, Amgen, and Daichii Sankyo.

Johana Benedetti Pedroza has collected research funding for clinical studies (institutional) from PharmaMar, Eli Lilly and Company, AROG, Bayer, Eisai, Lixte, Karyopharm, Deciphera, GlaxoSmithKline, Novartis, Blueprint, Nektar, Forma, Amgen, and Daichii Sankyo. Isabel Miras Rodriguez has obtained research funding for clinical studies (institutional) from PharmaMar, Eli Lilly and Company, AROG, Bayer, Eisai, Lixte, Karyopharm, Deciphera, GlaxoSmithKline, Novartis, Blueprint, Nektar, Forma, Amgen, and Daichii Sankyo. Lastly, Inmaculada Rincón has taken research funding for clinical studies (institutional) from PharmaMar, Eli Lilly and Company, AROG, Bayer, Eisai, Lixte, Karyopharm, Deciphera, GlaxoSmithKline, Novartis, Blueprint, Nektar, Forma, Amgen, and Daichii Sankyo.

Funding Sources

This research was funded by PharmaMar, S.A.

Author Contributions

I.C.G., J.B.P., I.M.R., and I.R. made substantial contributions to the conception or design of the work and acquisition, analysis, and interpretation of the data. All authors also contributed to the drafting and critical review of the content, approved the final version to be published, and are accountable for all aspects of the work.

Data Availability Statement

All data generated or analyzed during this study are included in this article. Further inquiries can be directed to the corresponding author.

References

1 Mbatani N, Olawaiye AB, Prat J. Uterine sarcomas. Int J Gynaecol Obstet. 2018;143(Suppl 2):51–8.
2 Sohail R, Kanwal S, Murtaza A, Haq B. Endometrial stromal sarcoma in a 20-year-old woman. BMJ Case Rep. 2019;12(12):e228874.
3 Park GE, Rha SE, Oh SN, Lee A, Lee KH, Kim MR. Ultrasonographic findings of low-grade endometrial stromal sarcoma of the uterus with a focus on cystic degeneration. Ultrasonography. 2016;35(2):124–30.
4 Sreerekha J, Gochhait D, Karthik DK, Siddaraju N, Parvathi T, Kayal S. Endometrial stromal sarcoma metastasis in a supraclavicular lymph node: a diagnostic conundrum on cytology. Cytopathology. 2019;30(5):567–9.
5 WHO Classification of Tumours Editorial Board. Female genital tumours: WHO classification of tumours. 5th ed. Lyon, France: IARC Publications; 2020.
6 Yim GW, Nam EJ, Kim SW, Kim YT. FIGO staging for uterine sarcomas: can the revised 2008 staging system predict survival outcome better? Yonsei Med J. 2014;55(3):563–9.
7 Conklin CMJ, Longacre TA. Endometrial stromal tumors: the new who classification. Adv Anat Pathol. 2014; 21(6):383–93.
8 Wang F, Dai X, Chen H, Hu X, Wang Y. Clinical characteristics and prognosis analysis of uterine sarcoma: a single-institution retrospective study. BMC Cancer. 2022;22(1):1050.
9 Li C, Wang C. LG-ESSs and HG-ESSs: underlying molecular alterations and potential therapeutic strategies. J Zhejiang Univ Sci B. 2021;22(8):633–46.
10 Kim Y, Kim D, Sung WJ, Hong J. High-grade endometrial stromal sarcoma: molecular alterations and potential immunotherapeutic strategies. Front Immunol. 2022;13:837004.
11 Ali RH, Rouzbahman M. Endometrial stromal tumours revisited: an update based on the 2014 WHO classification. J Clin Pathol. 2015;68(5):325–32.
12 Capozzi VA, Monfardini L, Ceni V, Cianciolo A, Butera D, Gaiano M, et al. Endometrial stromal sarcoma: a review of rare mesenchymal uterine neoplasm. J Obstet Gynaecol Res. 2020;46(11):2221–36.

13 Masand RP, Euscher ED, Deavers MT, Malpica A. Endometrioid stromal sarcoma: a clinicopathologic study of 63 cases. Am J Surg Pathol. 2013;37(11):1635–47.
14 Zhang YY, Li Y, Qin M, Cai Y, Jin Y, Pan LY. High-grade endometrial stromal sarcoma: a retrospective study of factors influencing prognosis. Cancer Manag Res. 2019;11:831–7.
15 Koh WJ, Greer BE, Abu-Rustum NR, Apte SM, Campos SM, Cho KR, et al. Uterine sarcoma, version 1.2016: featured updates to the NCCN guidelines. J Natl Compr Canc Netw. 2015;13(11):1321–31.
16 Altal OF, Al Sharie AH, Halalsheh OM, Tashtush N, Shaban S, Alfaqih M, et al. Complete remission of advanced low-grade endometrial stromal sarcoma after aromatase inhibitor therapy: a case report. J Med Case Rep. 2021;15(1):262.
17 Verschoor AJ, Warmerdam FARM, Bosse T, Bovée JVMG, Gelderblom H. A remarkable response to pazopanib, despite recurrent liver toxicity, in a patient with a high grade endometrial stromal sarcoma, a case report. BMC Cancer. 2018;18(1):92.
18 European Medicines Agency. Yondelis (trabectedin). European public assessment report. https://www.ema.europa.eu/en/medicines/human/EPAR/yondelis [Accessed date: 04 January 2023].
19 Rubio MJ, Lecumberri MJ, Varela S, Alarcón J, Ortega ME, Gaba L, et al. Efficacy and safety of trabectedin in metastatic uterine leiomyosarcoma: a retrospective multicenter study of the Spanish ovarian cancer research group (GEICO). Gynecol Oncol Rep. 2020;33:100594.
20 Hensley ML, Patel SR, von Mehren M, Ganjoo K, Jones RL, Staddon A, et al. Efficacy and safety of trabectedin or dacarbazine in patients with advanced uterine leiomyosarcoma after failure of anthracycline-based chemotherapy: subgroup analysis of a phase 3, randomized clinical trial. Gynecol Oncol. 2017;146(3):531–7.
21 Amant F, Lorusso D, Mustea A, Duffaud F, Pautier P. Management strategies in advanced uterine leiomyosarcoma: focus on trabectedin. Sarcoma. 2015;2015:704124.
22 Tap WD, Wagner AJ, Schöffski P, Martin-Broto J, Krarup-Hansen A, Ganjoo KN, et al. Effect of doxorubicin plus olaratumab vs doxorubicin plus placebo on survival in patients with advanced soft tissue sarcomas: the ANNOUNCE randomized clinical trial. JAMA. 2020;323(13):1266–76.
23 Martin-Broto J, Hindi N, Lopez-Pousa A, Peinado-Serrano J, Alvarez R, Alvarez-Gonzalez A, et al. Assessment of safety and efficacy of combined trabectedin and low-dose radiotherapy for patients with metastatic soft-tissue sarcomas: a nonrandomized phase 1/2 clinical trial. JAMA Oncol. 2020;6(4):535–41.
24 Simoens C, Korst AE, De Pooter CM, Lambrechts HAJ, Pattyn GGO, Faircloth GT, et al. In vitro interaction between ecteinascidin 743 (ET-743) and radiation, in relation to its cell cycle effects. Br J Cancer. 2003;89(12):2305–11.
25 Romero J, Zapata I, Córdoba S, Jimeno JM, López-Martín JA, Tercero JC, et al. In vitro radiosensitisation by trabectedin in human cancer cell lines. Eur J Cancer. 2008;44(12):1726–33.
26 Rauh-Hain JA, del Carmen MG. Endometrial stromal sarcoma: a systematic review. Obstet Gynecol. 2013;122(3):676–83.
27 Takano T, Niikura H, Ito K, Nagase S, Utsunomiya H, Otsuki T, et al. Feasibility study of gemcitabine plus docetaxel in advanced or recurrent uterine leiomyosarcoma and undifferentiated endometrial sarcoma in Japan. Int J Clin Oncol. 2014;19(5):897–905.
28 Kim HJ, Kim Y, Lee SJ, Lee J, Park SH. Pazopanib monotherapy in the treatment of pretreated, metastatic uterine sarcoma: a single-center retrospective study. J Gynecol Oncol. 2018;29(1):e3.
29 Sunar V, Korkmaz V, Akin S, Can Guven D, Arik Z, Ates O, et al. Efficacy of Pazopanib in patients with metastatic uterine sarcoma: a multi-institutional study. J BUON. 2019;24(6):2327–32.
30 Alkasi O, Meinhold-Heerlein I, Zaki R, Fasching P, Maass N, Jonat W, et al. Long-term disease-free survival after hormonal therapy of a patient with recurrent low grade endometrial stromal sarcoma: a case report. Arch Gynecol Obstet. 2009;279(1):57–60.
31 Shoji K, Oda K, Nakagawa S, Kawana K, Yasugi T, Ikeda Y, et al. Aromatase inhibitor anastrozole as a second-line hormonal treatment to a recurrent low-grade endometrial stromal sarcoma: a case report. Med Oncol. 2011;28(3):771–4.
32 Horng HC, Wen KC, Wang PH, Chen YJ, Yen MS, Ng HT, et al. Uterine sarcoma Part II-Uterine endometrial stromal sarcoma: the TAG systematic review. Taiwan J Obstet Gynecol. 2016;55(4):472–9.
33 Ducoulombier A, Cousin S, Kotecki N, Penel N. Gemcitabine-based chemotherapy in sarcomas: a systematic review of published trials. Crit Rev Oncol Hematol. 2016;98:73–80.
34 Han Y, Li S, Holt HK, Wu L. Curative effect of bevacizumab combined with chemotherapy in advanced or recurrent uterine sarcoma. Mol Clin Oncol. 2016;4(2):245–8.
35 Barney B, Tward JD, Skidmore T, Gaffney DK. Does radiotherapy or lymphadenectomy improve survival in endometrial stromal sarcoma? Int J Gynecol Cancer. 2009;19(7):1232–8.
36 Galizia D, Palesandro E, Nuzzo AM, Pignochino Y, Aliberti S, Aglietta M, et al. Prolonged disease stability with trabectedin in a heavily pretreated elderly patient with metastatic leiomyosarcoma of the thigh and renal failure: a case report and review of the literature. Oncol Res. 2013;20(10):483–90.
37 Sanfilippo R, Grosso F, Jones RL, Banerjee S, Pilotti S, D'Incalci M, et al. Trabectedin in advanced uterine leiomyosarcomas: a retrospective case series analysis from two reference centers. Gynecol Oncol. 2011;123(3):553–6.

Case Rep Oncol 2024;17:82–90
DOI: 10.1159/000535747

38 Gadducci A, Grosso F, Scambia G, Raspagliesi F, Colombo N, Grignani G, et al. A phase II randomised (calibrated design) study on the activity of the single-agent trabectedin in metastatic or locally relapsed uterine leiomyosarcoma. Br J Cancer. 2018;119(5):565–71.
39 Demetri GD, von Mehren M, Jones RL, Hensley ML, Schuetze SM, Staddon A, et al. Efficacy and safety of trabectedin or dacarbazine for metastatic liposarcoma or leiomyosarcoma after failure of conventional chemotherapy: results of a phase III randomized multicenter clinical trial. J Clin Oncol. 2016;34(8):786–93.
40 Astolfi A, Nannini M, Indio V, Schipani A, Rizzo A, Perrone AM, et al. Genomic database analysis of uterine leiomyosarcoma mutational profile. Cancers. 2020;12(8):2126.
41 Hindi N, Carrasco García I, Sánchez-Camacho A, Gutierrez A, Peinado J, Rincón I, et al. Trabectedin plus radiotherapy for advanced soft-tissue sarcoma: experience in forty patients treated at a sarcoma reference center. Cancers. 2020;12(12):3740.
42 Volkova M, Russell R 3rd. Anthracycline cardiotoxicity: prevalence, pathogenesis and treatment. Curr Cardiol Rev. 2011;7(4):214–20.