Case report

Huge alveolar soft part sarcoma of the retroperitoneum – case report

Dariusz Janczak[1], Malgorzata Mimier[2], Aleksandra Mimier[2], Dawid Janczak[2], Mariusz Chabowski[2], Katarzyna Mularz[3], Michal Jelen[4]

[1]Department of Clinical Proceedings, Faculty of Health Science, Wroclaw Medical University, Wroclaw, Poland
[2]Department of Surgery, 4th Military Teaching Hospital, Wroclaw, Poland
[3]Department of Tumor Pathology, Center of Oncology – M. Skłodowska-Curie Memorial Institute, Krakow Branch, Poland
[4]Pathology Department, Wroclaw Medical University, Wroclaw, Poland

Alveolar soft part sarcoma (ASPS) is a rare type of neoplasm, typically occurring in adolescents and young adults. Because of the rarity of this disease, there is no standard treatment plan. Chemotherapy and radiotherapy are not effective in this type of malignancy. Surgical excision is considered to be the treatment of choice. We report a case of a young woman with a painless mass in her left lower abdomen. Ultrasonography and CT scan revealed a large (21 cm) hard tumor occupying the left retroperitoneal space, which was surgically excised in our surgery department. The pathological diagnosis was ASPS.

Key words: alveolar soft part sarcoma (ASPS), sunitinib, retroperitoneal space.

Introduction

Alveolar soft part sarcoma (ASPS) is a rare, malignant tumor, first described by Christopherson *et al*. in 1952 [1]. It represents 0.5-1% of all sarcomas [2] and affects mainly adolescents and young adults, with a peak between the ages 15 to 35 and a slight female predilection [3]. The most common sites where it occurs are the lower extremities and the head and neck. It is characterized by indolent growth with a high frequency of late metastases [4]. Brain metastases are present almost 3 times more often than in other sarcomas [5]. It usually appears as a painless mass, which may be highly vascularized in radiological findings. The majority of alveolar soft part sarcomas are resistant to conventional chemotherapy [4]. Because of the rarity of this disease, there is no standard treatment plan.

This case report presents a case of a huge, retroperitoneal alveolar soft part sarcoma in a young woman, together with the radiological and histopathological findings.

Case report

A 24-year-old woman came to our department with a swelling in her left groin which had been gradually growing for 5 months. There was no associated pain, there were not any palpable lymph nodes, and the patient did not report any other symptoms. The physical examination did not detect any other abnormalities. All the blood parameters were within the standard limits: RBC – 4.05 T/l, WBC 7.8 G/l, PLT 251 G/l, HGB 12.1 g/dl.

An ultrasonography and CT scan of the abdomen revealed a highly vascularized 21 cm mass in the craniocaudal view, which was 9 cm across and had an anteroposterior size of 6.5 cm in the retroperitoneum – starting from 2.5 cm below the lower margin of the left kidney, along the left psoas major muscle and external iliac vessels, and through the inguinal canal into the left groin (Fig. 1). The mass showed intense, inhomogeneous enhancement after intravenous contrast administration and multiple arteriovenous fistulas, dilated vessels and collateral circulation

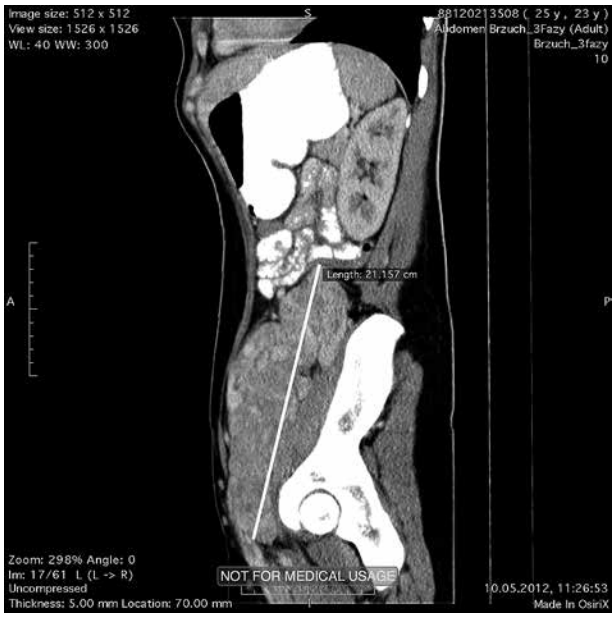

Fig. 1. CT scan of the abdomen showing a 21 cm mass in the retroperitoneum

in the artery phase. Abdominal CT also revealed two similar structures in the left pelvic area, which were 4.7 cm × 4 cm × 5.8 cm and 2.4 cm × 1.8 cm × 2.3 cm in size, and which also showed enhancement after contrast administration. A CT scan of the lungs showed multiple, probably metastatic, pulmonary nodular opacities (mean size 0.75 cm, the largest in the right lung – 1.4 cm × 0.9 cm and 1.3 cm × 1.2 cm) (Fig. 2). No biopsies of the tumors were made preoperatively.

A complete resection using a left pararectal incision was chosen as the treatment for this patient. Intraoperatively, the tumor was highly vascularized,

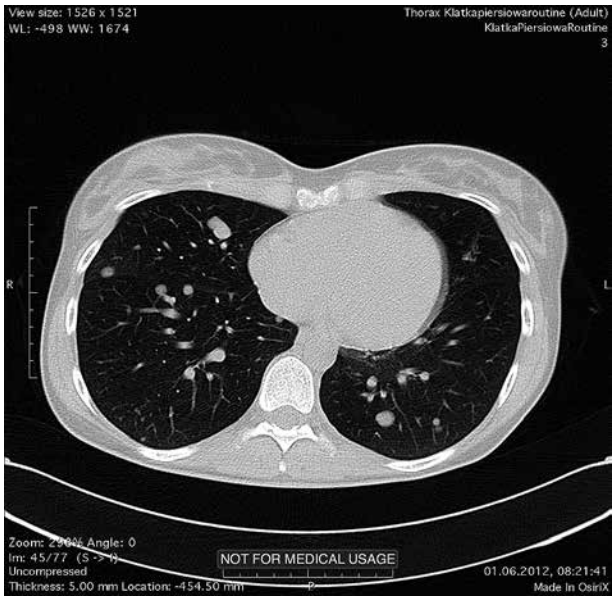

Fig. 2. CT scan of the lungs showing multiple, probably metastatic, pulmonary nodular opacities

well differentiated from the surrounding tissues, positioned from the lower part of the left kidney to the proximal part of the left thigh. A small incision in the left groin was necessary for proper dissection of the lower part of the tumor. A fragment of iliopsoas muscle and branches of the lumbar plexus, forming a femoral nerve, were dissected in order to maintain the negative margin. The operation took 175 min and the bleeding volume was 1,500 ml. Due to the great extent of the surgery, it was decided not to remove small, satellite tumors during the first operation. The dimensions of the tumor that was removed were 20 × 10 × 10 cm. Macroscopically it was elastic, white-pink in color, with areas of necrosis (Fig. 3).

The histopathological examination confirmed a typical texture of alveolar soft part sarcoma. The tumor cells were arranged in nests, which resulted in a loss of central cohesion, and were separated by thin fibro-vascular septa. The cells had an abundance of eosinophilic cytoplasm with large nuclei and prominent nucleoli. These cells contained PAS-positive cytoplasmic granules and presented strong and diffuse reaction against vimentin (Fig. 4). The final diagnosis was confirmed by positive nuclear immunohistochemical reaction with antibody against TFE3 antigen (Fig. 5).

Postoperatively the patient showed sensory alterations in the area innervated by the left iliac nerve and problems with straightening the thigh. There were no other symptoms. Eight weeks after the operation, the patient started treatment with sunitinib malate – 37.5 mg daily.

During one year of follow-up, the patient was in a generally good state of health. Abdominal CT scans showed no recurrence, and pelvic CT scans showed a slow regression of the satellite tumors. There were no changes in the lung metastases. One year after the operation the patient reported severe headaches. A CT scan of the brain revealed a mass 3.5 cm × 3.5 cm × 3.4 cm in size (Fig. 6). The mass was dis-

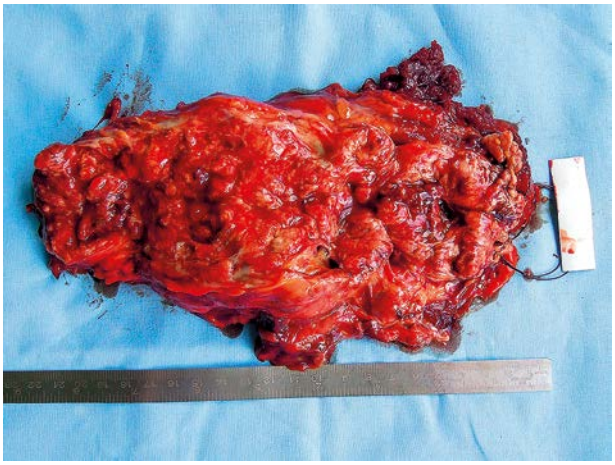

Fig. 3. Size (20 × 10 × 10 × cm) of the giant retroperitoneal tumor in a 24-year-old woman

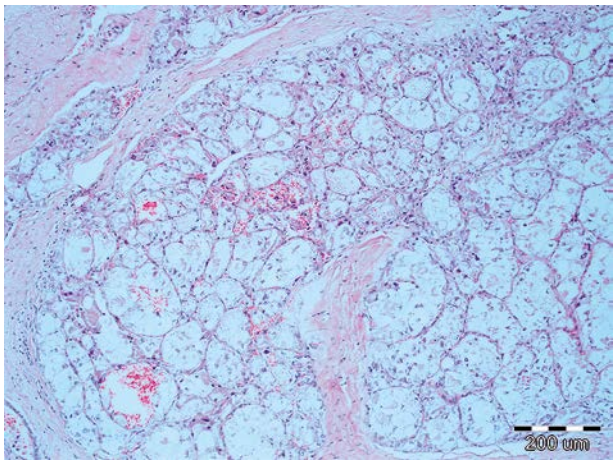

Fig. 4. The immunohistochemical examination (IHC) showing a typical feature of alveolar soft part sarcoma with the expression of vimentin (magnification 200×)

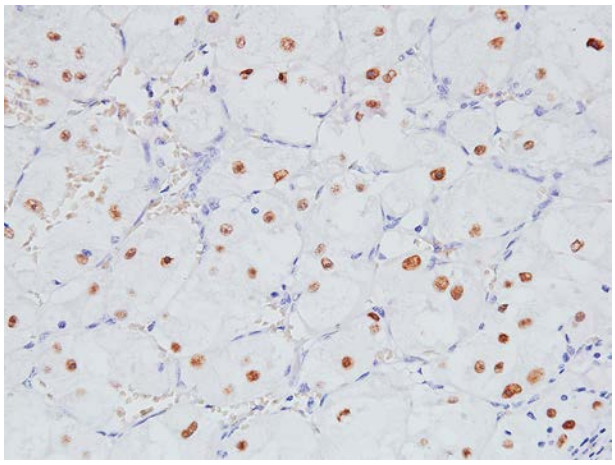

Fig. 5. The result of immunohistochemical reaction with monoclonal antibody against TFE3 antigen. Diffuse strong nuclear staining in all neoplastic cells (magnification 400×)

covered to be a metastasis of ASPS and was removed via a craniotomy in the Department of Neurosurgery. After one month the patient underwent resection of the remaining satellite tumors from the pelvis in our department.

At this point (24 months after her initial diagnosis) she is free of any symptoms of disease and with constant regression of the pulmonary metastases. Sunitinib malate (37.5 mg daily) has been administered to the patient as the only medical treatment, with no significant side effects (apart from transient leucopenia) for 22 months now, with an interruption of 2 months caused by the metastasectomies.

Discussion

Alveolar soft part sarcoma is an unusual and rare soft tissue malignancy. Since it was first described by Christopherson *et al.* in 1952, it has rarely been presented in the literature [1, 6-8].

The histological appearance of the tumor is a pseudo-alveolar pattern that resembles the respiratory alveoli. There is no histopathological element that may indicate progress of the disease [4].

It usually occurs in children and young adults, typically found in the head and neck region in children and in the deep soft tissues of the lower extremities in adults. Most patients diagnosed with ASPS are in their third decade of life [3]. Alveolar soft part sarcoma was found to be caused by a specific unbalanced translocation, der(17)t(X:17)(p11;p25), which results in the formation of an *ASPL–TFE3* fusion gene [9]. ASPS has a slight female predilection in younger patients, which is hypothesized to be caused by an extra X chromosome that may be susceptible to mutation [10]. However, there is a male preponderance in older patients [5, 11]. Despite all the latest findings, the origin of ASPS is still unknown.

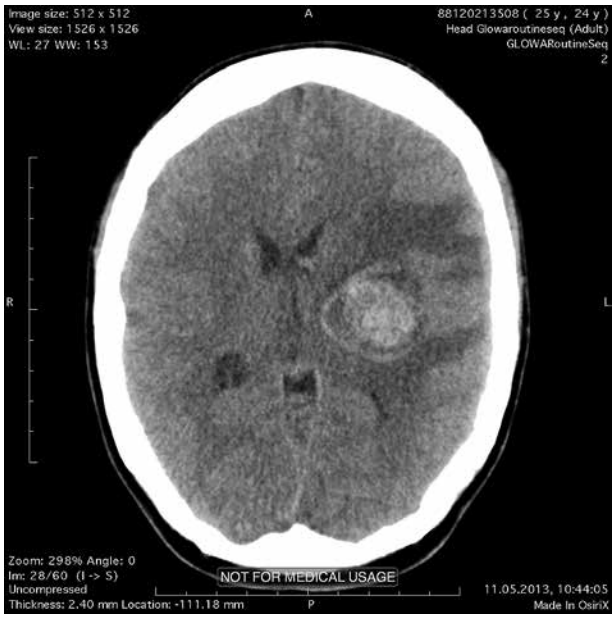

Fig. 6. CT scan of the brain showing a mass 3.5 cm × 3.5 cm × 3.4 cm in size

In radiological findings, ASPS is a highly vascularized neoplasm. It may therefore be misdiagnosed as a hemangioma or arteriovenous malformation. It shows up strongly on a contrast-enhanced CT scan.

Because of the indolent and often symptom-free character of this sarcoma, metastatic disease is commonly found on a first examination. The frequency of brain metastases is almost three times higher than in other sarcomas. In most cases they are associated with other extracranial metastases, such as lungs and bones [5, 11]. The frequency of local recurrence varies among large studies between 10% and 31% [11-13]. Negative prognostic factors are the presence of metastatic disease, large tumors and patients of a more advanced age. However, the impact of larger tumors on patient survival was different in the findings of Daigeler *et al*. [14].

Conventional chemotherapy failed to have any significant efficacy in the treatment of ASPS. Adjuvant radiotherapy may be beneficial in cases of R1 resection, but this is not certain. Most authors consider R0 resection as the best treatment for primary and recurrent tumors. Recent studies on sunitinib malate have yielded promising results in controlling the disease, with a satisfactory level of side-effects and a high number of patients responding to treatment [15, 16].

Conclusion

Alveolar soft part sarcoma is a very rare type of sarcoma. The rarity of this neoplasm makes choosing the right method of treatment a challenge. Complete resection of the primary tumor is still the most effective treatment for this tumor. The use of new types of chemotherapy based on tyrosine kinase inhibitors have yielded promising results, but further investigation is needed to discover the long-term efficacy and any side effects. Because of frequent metastases in the lungs, brain and liver, radiological imaging of these structures is mandatory for monitoring patients with ASPS. Further multi-center, large patient cohort studies are needed for the comparison of available medications and establishing the best treatment solution.

The authors declare no conflict of interest.

References

1. Christopherson WM, Foote FW, Stewart FW. Alveolar soft-part sarcomas; structurally characteristic tumors of uncertain histogenesis. Cancer 1952; 5: 100-111.
2. Goldblum JR, Folpe AL, Weiss SW. Enzinger and Weiss's Soft Tissue Tumors. 6th edition. Elsevier, Philadelphia 2013.
3. Orbach D, Brennan B, Casanova M, et al. Paediatric and adolescent alveolar soft part sarcoma: a joint series from European cooperative groups. Pediatr Blood Cancer 2013; 60: 1826-1832.
4. Folpe AL, Deyrup AT. Alveolar soft-part sarcoma: a review and update. J Clin Pathol 2006; 59: 1127-1132.
5. Ogura K, Beppu Y, Chuman H, et al. Alveolar soft part sarcoma: a single-center 26-patient case series and review of the literature. Sarcoma 2012; 2012: ID907179.
6. Xin FY, Rana N, Ming Z, Lang YB. Alveloar soft part sarcoma of the retroperitoneum. J Can Res Ther 2010; 6: 117-119.
7. Ishikawa M, Ishizuka O, Nakayama T, et al. Alveolar soft-part sarcoma of the retroperitoneum. Int J Urol 2006; 13: 1355-1357.
8. Smith B, McQueeney AJ, Dickson DR. Alveolar soft-part sarcoma of the retroperitoneum. Calif Med 1958; 89: 38-39.
9. Ladanyi M, Lui MY, Antonescu CR, et al. The der(17)t(X;17)(p11;q25) of human alveolar soft part sarcoma fuses the TFE3 transcription factor gene to ASPL, a novel gene at 17q25. Oncogene 2001; 20: 48-57.
10. Bu X, Bernstein L. A proposed explanation for female predominance in alveolar soft part sarcoma. Noninactivation of X; autosome translocation fusion gene? Cancer 2005; 103: 1245-1253.
11. Portera CA, Ho V, Patel SR, et al. Alveolar soft part sarcoma: clinical course and patterns of metastasis in 70 patients treated at a single institution. Cancer 2001; 91: 585-591.
12. Lieberman PH, Brennan MF, Kimmel M, et al. Alveolar soft-part sarcoma: a clinicopathologic study of half a century. Cancer 1989; 63: 1-13.
13. Evans HL. Alveolar soft-part sarcoma. A study of 13 typical examples and one with a histologically atypical component. Cancer 1985; 55: 912-917.
14. Daigeler A, Kuhnen C, Hauser J, et al. Alveolar soft part sarcoma: clinicopathological findings in a series of 11 cases. World J Surg Oncol 2008; 6: 71
15. Stacchiotti S, Negri T, Zaffaroni N,et al. Sunitinib in advanced alveolar soft part sarcoma: evidence of a direct antitumor effect. Ann Oncol 2011; 22: 1682-1690.
16. Stacchiotti S, Tamborini E, Marrari A, et al. Response to sunitinib malate in advanced alveolar soft part sarcoma. Clin Cancer Res 2009; 15: 1096-1104.

Address for correspondence

Mariusz Chabowski
Department of Surgery
4th Military Teaching Hospital
Weigla 5
50-981 Wroclaw, Poland
tel. + 48 71 766 02 47
fax + 48 71 766 02 45
e-mail: mariusz.chabowski@gmail.com