**Management of early-stage uterine adenosarcoma**

**Discussion**

Our retrospective review of 9 patients with uterine adenosarcoma found similar patient characteristics, such as age and initial symptoms, as previous reports.2 Adenosarcoma occurs mostly in postmenopausal women, but it can occur in all age groups. Symptoms include abnormal vaginal bleeding, abdominal pain, and abdominal swelling. In our study, adenosarcoma was observed in all age groups, and 7 of the 9 patients presented with vaginal bleeding.
Adenosarcoma is an uncommon gynecologic malignancy whose clinicopathological features are not yet sufficiently described. Similarly, the optimal primary therapeutic approach has not yet been determined. However, most patients undergo hysterectomy, with or without BSO. Seagle et al reported that 985 of 1338 patients with uterine adenosarcoma were treated with hysterectomy and BSO.2 However, they demonstrated that the type of surgical procedure was not associated with overall survival. Furthermore, Arend et al reported that lymphadenectomy was performed in 48% of patients (262/544), with lymph node metastases present in only 3%.3 In our study, 4 patients with preoperative stage I disease underwent therapeutic pelvic lymphadenectomy. Two of these patients experienced non-lymph node recurrence. Seagle et al emphasized that complete surgical resection is associated with increased survival and early detection and contributes to improved prognosis in patients with uterine adenosarcoma.2 These findings indicate a limited role of lymphadenectomy for treating early-stage uterine adenosarcoma and the importance of complete surgical removal of the primary neoplasm.

Three of our 9 patients died of adenosarcoma. Although our patients had stage I disease, some of the adenosarcomas showed aggressive behavior. Arend et al analyzed 544 patients with uterine adenosarcoma and reported a 5-year survival rate of 84% for patients with stage IA disease and 51% for those with stage III disease.3 The prognostic factors are reportedly the presence of SO7, tumor size, surgical stage (mainly based on myometrial invasion and extrauterine spread), residual tumor, and older patient age. 2 Previous reports indicate the prognostic impact of SO. Kaku et al found that 55% of patients with SO had recurrent tumors, and 31% of them died of the recurrence.4 Tanner et al evaluated survival outcomes in 19 patients with adenosarcoma, with and without SO. Five patients with SO showed aggressive tumor behavior with a higher recurrence rate (2-year overall survival, 20%) compared with those without SO (2-year overall survival, 100%).8 Both of our patients with SO experienced a recurrence after 10 to 17 months and died 24 to 27 months after initial treatment. As even early-stage adenosarcoma with SO can be recurrent and fatal, careful postoperative follow-up is necessary. The efficacy of chemotherapy for adenosarcoma with SO remains uncertain.8

Patients with suspected adenosarcoma undergo endometrial sampling to obtain a preoperative cytologic and histopathologic diagnosis. However, the diagnosis is sometimes difficult to reach preoperatively because the neoplasm arises from uterine muscle or mesenchymal tissue and is thus not always sampled with an endometrial biopsy. The difficulty in making a correct diagnosis may also be linked to the rarity of adenosarcoma and its histological features that somewhat resemble benign stromal proliferation and show intratumoral heterogeneity.9 Our study revealed that preoperative pathological diagnoses are occasionally incorrect and seem to be difficult for pathologists.

The use of MRI is an appropriate tool for the diagnosis of uterine malignancy; however, differentiation of uterine sarcoma from leiomyoma is sometimes difficult with this modality. Combining MRI with other diagnostic imaging modalities may be useful. The typical findings of adenosarcoma on MRI are a large polypoid mass with small cystic areas occupying the endometrial cavity. Reports of the use of PET-CT as a preoperative procedure for adenosarcoma are scarce. Choi et al described adenosarcoma with SO in a uterus where disease staging and the diagnosis of progression were achieved using PET-CT.10 However, they did not report detailed information about FDG uptake values. Other uterine sarcomas, such as leiomyosarcoma, demonstrate mild FDG uptake. Tsujikawa et al reported that the mean SUV of uterine leiomyosarcoma in 4 patients was 6.4 (range, 2.4-10.2).11 Kusunoki et al evaluated the efficacy of PET-CT to differentiate uterine sarcoma from leiomyoma and calculated the optimal cutoff value for diagnosing sarcoma. In their report, 1 patient with stage I adenosarcoma had a SUVmax of 7.4. The median SUVmax of uterine leiomyosarcoma in 6 patients was 15.5 (range, 7-24), which is higher than that reported by Tsujikawa et al, who set an optimal cutoff SUVmax of 7.5 to exclude leiomyoma with 80.8% sensitivity and 100% specificity (area under the curve, 95.3%). We used PET-CT in 5 patients. Their SUV values were relatively low, with a median value of 6.3 (range, 3.51-7.4), which did not predict prognosis. Though it might be difficult to differentiate adenosarcoma from benign tumors even using PET-CT, further investigation is needed to clarify the efficacy of PET-CT as a preoperative diagnostic tool or as a detection tool for recurrence.

Of the 3 fatalities in our study, 1 patient without prognostic risk factors had a late recurrence, 8 years after the initial surgery. Clement reported a median relapse-free survival of 3.4 years (range, 0.5-9.5 years), with 38% (8/21) of recurrences occurring more than 5 years after surgery.12 This suggests that patients with adenosarcoma may require long-term follow-up for late recurrence.

In our study, 1 patient of reproductive age was desirous of preserving fertility. In previous studies, most authors recommended hysterectomy, usually with BSO, for adenosarcoma. However, Lee reported 7 patients with adenosarcoma treated by uterine preservation therapy; 1 of these patients later achieved a vaginal delivery.13 They concluded that uterine preservation is a possible treatment option for women of reproductive age. However, 2 of their patients experienced a recurrence, 1 of which demonstrated SO. Our patient was able to achieve a vaginal delivery and did not have SO. She did experience recurrence 6 years after her initial surgery and underwent hysterectomy at that time. She is now 7 months out from her second surgery with no evidence of recurrence. We conclude that uterine preservation can be a treatment option for young patients with early-stage adenosarcoma without SO who wish to maintain fertility.

The major limitation of our study is the small number of patients, given the rarity of the disease. Further investigation is needed to clarify the management of adenosarcoma.

In summary, early-stage adenosarcoma without SO has a favorable prognosis; however, long-term follow-up may be required for late recurrence. Along with adequate counseling, fertility-preservation surgery may be an acceptable option for patients with early-stage adenosarcoma without SO.