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Late recurrence of late-onset large cell calcifying Sertoli tumor successfully managed by early surgical intervention

Riko Ikeda [a,*], Yoh Matsuoka [a], Naotaka Fukui [a], Masaharu Inoue [a], Ayataka Ishikawa [b], Yukio Kageyama [a]

[a] Department of Urology, Saitama Cancer Center, Saitama, Japan
[b] Department of Pathology, Saitama Cancer Center, Saitama, Japan

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ABSTRACT

Large cell calcifying Sertoli tumor is an uncommon testicular neoplasm. We present a case of a 36-year-old man with a late-onset large cell calcifying Sertoli tumor that resulted in a solitary lung metastasis 5 years after radical orchiectomy. Pulmonary wedge resection was performed, and there was no recurrence at the 18-month follow-up after resection of the lung metastasis. Because of its malignant potential, late-onset large cell calcifying Sertoli tumor requires long-term follow-up.

1. Introduction

Large cell calcifying Sertoli tumors (LCCSTs) are rare histological variants of Sertoli cell tumors that are identified and diagnosed based on the presence of massive calcification or tumor cells with abundant eosinophilic cytoplasm and intratubular growth.[1] Kratzer et al. reported the following pathological features of LCCSTs associated with malignant behavior: size >4 cm, extratesticular growth, gross or microscopic necrosis, high-grade cytologic atypia, vascular space invasion, and a mitotic rate greater than three mitotic figures per 10 high-power fields.[1] However, distinguishing between malignant and benign tumors based only on pathological features is difficult. Hence, malignancy is ultimately determined by the eventual development of metastasis. Most of the metastatic LCCSTs show resistance to chemotherapy or radiotherapy, which is associated with poor progression.[2]

Here, we present a rare case of malignant LCCST that resulted in a solitary lung metastasis five years following radical orchiectomy. This case was successfully treated via metastasectomy.

2. Case presentation

A 36-year-old man was admitted to Saitama Cancer Center (Saitama, Japan) with painless enlargement of the right testis, which had been gradually increasing in size for one year. His medical and family history was unremarkable. All laboratory data, including α-fetoprotein (AFP), human chorionic gonadotropin (hCG), and lactic dehydrogenase levels, were within normal limits. Ultrasonography showed a calcified mass measuring 37 × 28 mm in the right testis. No distant metastasis was detected on computed tomography (CT). Right radical orchiectomy was performed following a preliminary diagnosis of testicular cancer. Gross examination revealed a multinodular tumor with extensive calcification (Fig. 1). Microscopically, tumor cells with abundant eosinophilic cytoplasm were arranged in cords and sheets (Fig. 2A and B). Although the tumor did not present with extratesticular growth, necrosis, or lymphatic invasion, venous invasion was identified (Fig. 2C). The tumor cells showed mild nuclear pleomorphism, with three mitotic figures per 10 high-power fields (Fig. 2D). On immunohistochemical staining, the tumor cells were positive for calretinin, inhibin, and vimentin expression; partially positive for S-100 and cytokeratin AE1/AE3 expression; and negative for α-smooth muscle actin, AFP, CD30, c-kit, desmin, hCG, placental alkaline phosphatase, myogenin, myogenic differentiation 1, HHF35, and Melan-A expression (Fig. 2E and F). The tumor was also negative for β-catenin expression on nuclear staining. The Ki-67 index was 5%. Based on the appearance of the tumor cells, the existence of calcification, and positive immunostaining for Sertoli cell tumor markers, the mass was pathologically diagnosed as LCCST. Although venous invasion was present, whether the tumor was malignant or benign was not determinable on pathologic evaluation.

Abbreviations: AFP, α-fetoprotein; CT, computed tomography; FDG, 18F-2-fluoro-2-deoxy-D-glucose; hCG, human chorionic gonadotropin; LCCST, large cell calcifying Sertoli tumor.

* Corresponding author. 780 Komuro, Inamachi, Kitaadachi-gun, Saitama, 362-0806, Japan.
E-mail address: maruro@saitama-pho.jp (R. Ikeda).

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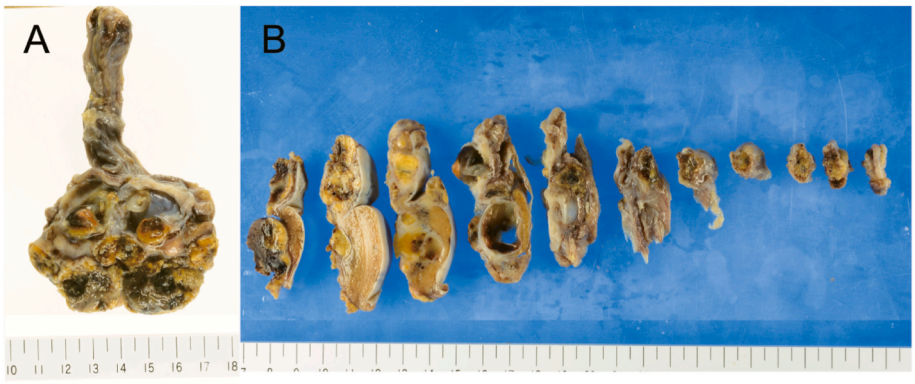

Fig. 1. The specimen resected by right orchiectomy. The right testicular tumor measuring 37 mm showed a multinodular appearance with calcification.

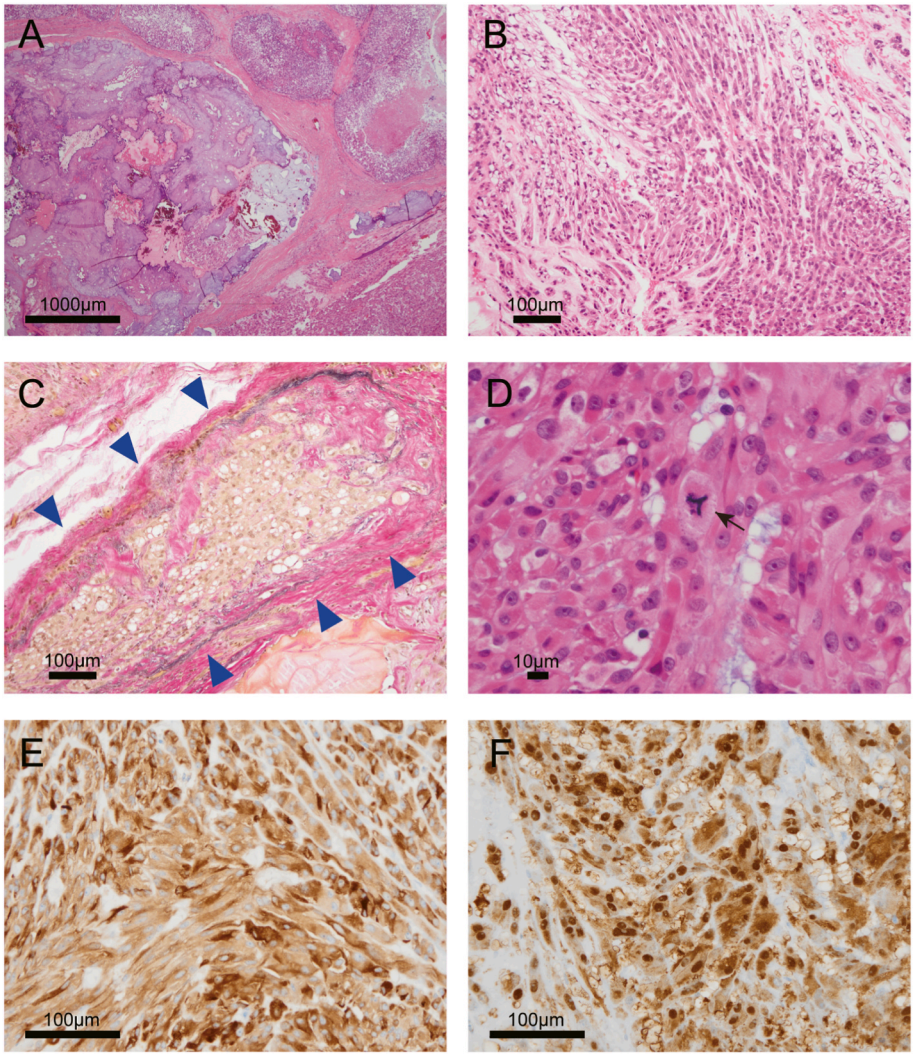

Fig. 2. Microscopic findings of the tumor. (A) The tumor showed abundant calcification (Hematoxylin and eosin staining; × 20). (B) The tumor cells were arranged in cords and sheets (Hematoxylin and eosin staining; × 100). (C) Vascular invasion was identified (in the peripheral region of the tumor?) (arrowheads, Elastica-van Gieson staining; × 100). (D) Tumor cells showed mild nuclear pleomorphism with mitosis (arrow, Hematoxylin and eosin staining; x400). (E) The tumor cells showed diffuse inhibin expression (× 200). (F) The tumor cells were positive for S-100 expression (× 200).

Five years after right radical orchiectomy, periodic CT detected a 13-mm nodule in the left lung. ^{18}F-2-fluoro-2-deoxy-D-glucose (FDG) positron emission tomography/CT showed weak FDG uptake in the pulmonary nodule (Fig. 3A and B). Subsequently, pulmonary wedge resection of the left lower lobe was performed. Microscopically, the lung tumor cells showed abundant eosinophilic cytoplasm and were arranged in cords and sheets (Fig. 3C). Immunohistochemically, the tumor cells were positive for calretinin and inhibin (Fig. 3D). Based on these pathological features that were similar to those of the primary right testicular tumor, the patient was diagnosed with lung metastasis secondary to LCCST. The patient had single lung metastasis which was completely resected. The efficacy of chemotherapy for LCCST is unclear; therefore, adjuvant therapy was not performed. No recurrence was observed at the 18-month follow-up after the pulmonary wedge resection.

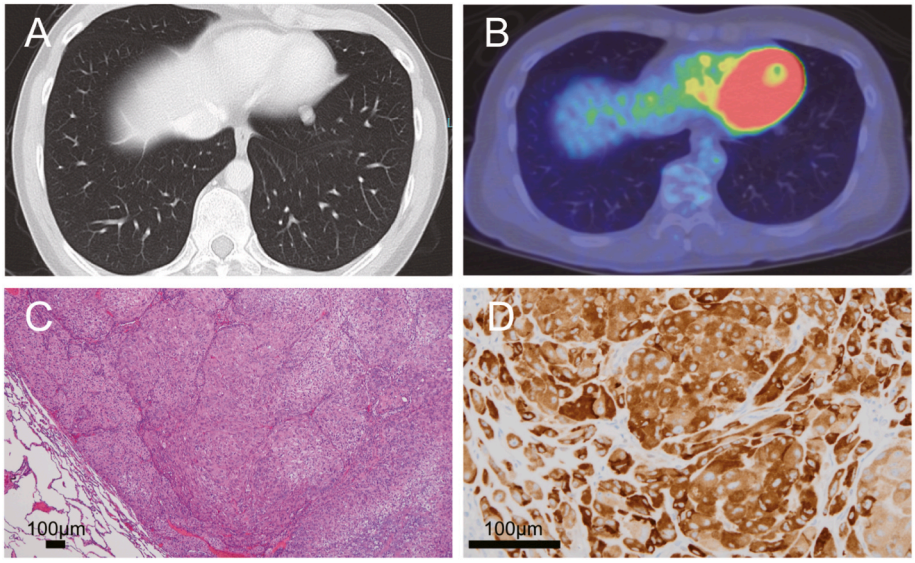

Fig. 3. Imaging of lung metastasis. (A) Computed tomography detected a 13-mm nodule in the left lung five years after right orchiectomy. (B) A weak uptake of ^{18}F-2-fluoro-2-deoxy-D-glucose was identified solely in the left lung nodule on positron emission tomography/computed tomography. (C) The tumor cells were arranged in cords and sheets and showed abundant eosinophilic cytoplasm (Hematoxylin and eosin staining; × 20). (D) The tumor cells showed diffuse inhibin expression (× 200).

3. Discussion

LCCST is divided into two clinical subgroups: early-onset and late-onset LCCST.[3,4] Early-onset LCCSTs appear in the first two decades of life and are frequently related to genetic syndromes such as the Carney complex and Peutz-Jeghers syndrome.[5] Most cases with early-onset LCCST have benign clinical courses. Conversely, late-onset LCCSTs, occurring in young and middle adulthood (mean age, 39 years), are not associated with genetic disorders, and occasionally exhibit malignant behavior.

Herein, we reported a case of late-onset LCCST. The patient later presented with metachronous lung metastasis that was treated successfully by metastasectomy. To our knowledge, this is only the 18th case of malignant LCCST reported in the literature to date.

In the present case, the tumor showed vascular invasion, thereby indicating malignant potential. Because no standard treatment for metastatic LCCSTs has been established to date, the patient was annually followed up and lung metastasis was detected five years after radical orchiectomy.

Kratzer et al. previously described six of the 18 cases of malignant LCCST reported to date.[1] Five of these patients had retroperitoneal lymph node metastasis at initial presentation and were treated with retroperitoneal lymph node resection, metastasectomy, chemotherapy, or radiotherapy according to the judgment of the attending physician. Although one of the five patients showed a substantial response to chemotherapy and another achieved local regression through radiation, most cases with malignant LCCST showed poor response to chemotherapy or radiotherapy. Moreover, the prognosis for metastatic LCCST, especially for LCCST presenting with visceral metastasis, was extremely poor. Few patients lived longer than five years after the diagnosis of metastatic LCCST.

Previous reports have consistently suggested the difficulty in disease treatment once the patient develops multiple or massive metastatic lesions. In our case, we detected a solitary metachronous lung metastasis on regular monitoring for possible recurrence, and the metastatic tumor could be resected in its entirety. Additional follow-up is necessary and will be continued for this patient.

4. Conclusion

We experienced a rare case of late-onset malignant LCCST with a metachronous solitary lung metastasis that developed after five years. Although close follow-up appears to be important for establishing a favorable prognostic course, additional accumulation of case reports is needed to establish appropriate and definitive guidelines for the management of this disease.

Consent

The patient provided written informed consent for his medical data and relevant images to be published in this case report.

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Declaration of competing interest

The authors have no conflicts of interest to declare.

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