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Research Letter

Intense fluorodeoxyglucose uptake by a benign sclerosing stromal tumor of the ovary

Takuji Tomimatsu [a,*], Yayoi Fukuda [a], Kazuya Mimura [a], Kiyoshi Yoshino [a], Hiroki Kato [b], Takahiro Tsuboyama [c], Yumiko Hori [d], Tadashi Kimura [a]

[a] Department of Obstetrics and Gynecology, Osaka University Graduate School of Medicine, Suita, Osaka, Japan
[b] Department of Nuclear Medicine and Tracer Kinetics, Osaka University Graduate School of Medicine, Suita, Osaka, Japan
[c] Department of Radiology, Osaka University Graduate School of Medicine, Suita, Osaka, Japan
[d] Department of Pathology, Osaka University Graduate School of Medicine, Suita, Osaka, Japan

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Dear Editor,

We present the case of a benign sclerosing stromal tumor (SST) of the ovary, which showed intense fluorodeoxyglucose (FDG) uptake in a solid component of the tumor on positron emission tomography–computed tomography (PET–CT). A solid component of this tumor also showed strong enhancement and high intensity on contrast-enhanced and diffusion-weighted magnetic resonance imaging, respectively. To our knowledge, there have been no reports describing PET–CT findings for SST in the English-language literature.

A 22-year-old gravida 0 woman was referred to our hospital with a large abdominal solid mass. Magnetic resonance imaging showed a well-circumscribed multilobular solid mass in the pelvic cavity with a degenerative change at the center of the mass. The solid component displayed intermediate intensity on T2-weighted imaging (Figure 1A), high intensity on diffusion-weighted imaging (Figure 1B), and strong enhancement on contrast-enhanced T1-weighted imaging (Figure 1C). PET–CT showed intense FDG uptake in a solid component of the tumor (maximum standardized uptake value: 7.0), which also corresponded to a well-enhanced area on magnetic resonance images (Figure 1D). At laparotomy, we found a hard and well-vascularized mass originating from the right ovary. The patient underwent right salpingo-oophorectomy because she wanted fertility-sparing treatment. The tumor weighed 577 g, and the cut sections revealed a solid and firm mass with focal hemorrhage and cystic degeneration inside the tumor. (Figure 1E). On histopathological examination, the tumor showed a pseudolobular pattern comprising diffuse spindle-shaped cells with a capillary network, giving a hemangiopericytomatous pattern (Figure 1F). Inflammatory cell infiltration was found only in the central area of the tumor. Based on the above findings, a pathological diagnosis of SST of the right ovary was made.

SST of the ovary is a rare and benign tumor originating from the stroma of the ovary and predominantly affects women of child-bearing age [1]. An accurate differential diagnosis between benign and malignant ovarian tumors is important for a young patient who wants fertility-sparing treatment, especially for those who undergo laparoscopic surgery. Magnetic resonance imaging findings of SST include a heterogeneous solid mass of intermediate to high intensity on T2-weighted images and early peripheral enhancement on contrast-enhanced T1-weighted images [2,3]. There have been no reports describing the diffusion-weighted images of SST. Recently, FDG-PET has increasingly been incorporated into clinical practice, especially when the possibility of a malignant ovarian tumor cannot be excluded by other diagnostic modalities. It has been reported that FDG-PET has high sensitivity for detecting ovarian malignancy [4,5], and only a few cases of false positive results on PET-CT have been reported in benign ovarian tumors, which were mainly mature cystic teratomas, often containing central nervous tissue [6].

The possible reason for a false positive result in PET–CT in our case remains unknown. In leiomyoma, the most prominent feature of PET positivity was reported to be increased vascularity, but not a degree of cellular proliferation estimated by Ki67 immunohistochemistry [7]. It is possible that the nature of increased vascularity found in SST indicates a certain connection with PET positivity in our case. Further case series are needed for the precise preoperative discrimination of SST from malignant ovarian tumors.

* Corresponding author. Department of Obstetrics and Gynecology, Osaka University Graduate School of Medicine, 2-2, Yamada-oka, Suita, Osaka 565-0871, Japan.
E-mail address: tomimatsu@gyne.med.osaka-u.ac.jp (T. Tomimatsu).

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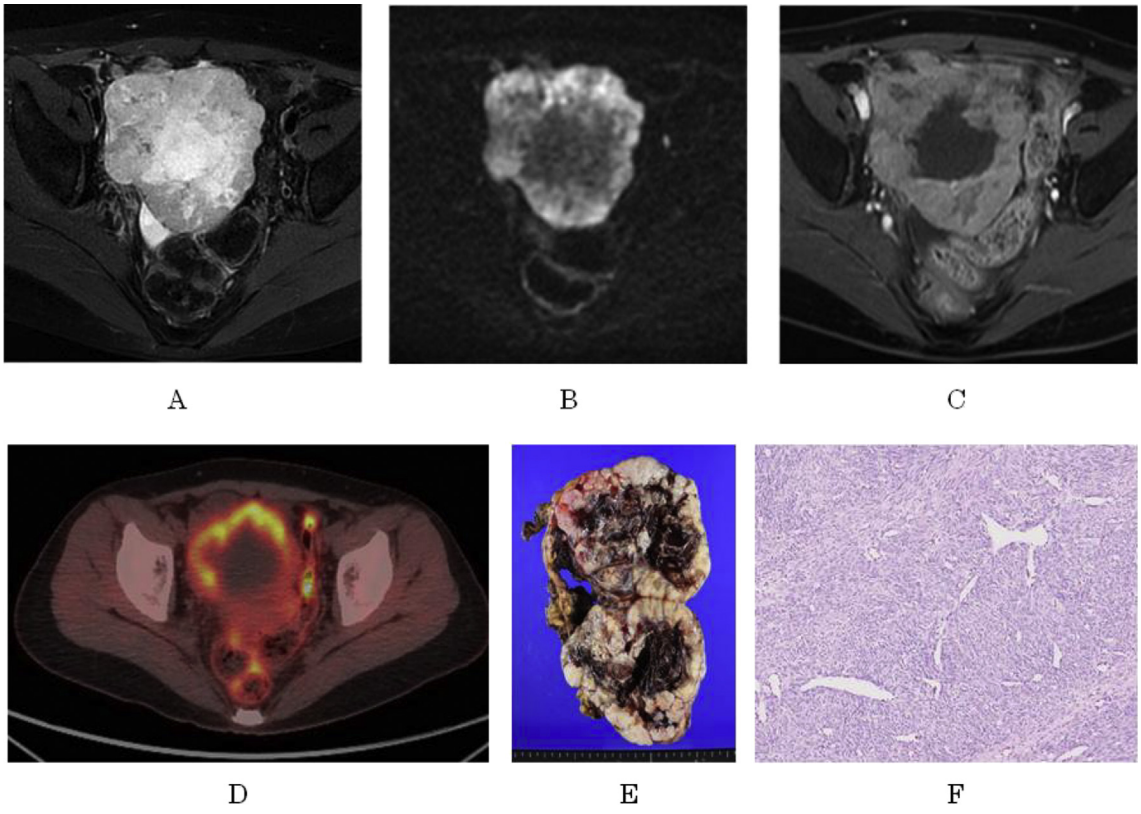

Figure 1. (A) Fat-saturated T2-weighted imaging showed a large and well-circumscribed multilobular mass in the pelvic cavity with an intermediate-intense solid component on the outer part and a high-intense area of degeneration at the center of the tumor. (B) Diffusion-weighted imaging showed a diffuse high-intensity area corresponding to (C) a well-enhanced solid component on fat-saturated contrast-enhanced T1-weighted imaging. (D) PET–CT showed intense FDG uptake in a solid component of the tumor, which also corresponded to a well-enhanced area on an MRI (SUV max: 7.0). (E) Gross photograph of the tumor. (F) Histopathological examination of the tumor showed that tumor cells were spindle shaped with a capillary network giving a hemangiopericytomatous pattern (high-power field). FDG = fluorodeoxyglucose; MRI = magnetic resonance imaging; PET–CT = positron emission tomography–computed tomography; SUV = standardized uptake value.

Conflicts of interest

The authors have no conflicts of interest relevant to this article.

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