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Oncology

Retroperitoneal lipogranuloma mimicking recurrence of renal cell carcinoma after laparoscopic partial nephrectomy

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ABSTRACT

Lipogranuloma is a rare inflammatory reactive process often reported to occur in the dermis and subcutis in the cosmetic surgery field.[1] It very rarely occurs in the retroperitoneum. We present a case of retroperitoneal lipogranuloma mimicking metastases of renal cell carcinoma (RCC) after laparoscopic partial nephrectomy. A 63-year-old man who underwent laparoscopic left partial nephrectomy for RCC one year earlier had developed a left retroperitoneal tumor during postoperative surveillance. The tumor looked identical to an implant or recurrence of RCC on contrast-enhanced computed tomography (CT) and 18F-fluorodeoxyglucose positron emission tomography/CT. We resected the tumor, and pathology showed a lipogranuloma.

Introduction

Lipogranuloma is a rare inflammatory reactive process that usually occurs in the dermis and subcutis. Subcutaneous injection for therapeutic purposes may result in granuloma formation.[1] Some cases have been reported of a granuloma arising from non-absorbable suture or a surgical sponge that mimics a malignant lesion.[2] Most common descriptions mention a contrast-enhanced nodule on computed tomography (CT) images and 18F-fluorodeoxyglucose (18F-FDG) uptake on positron emission tomography (PET)/CT scans.[3] We present a very rare case of lipogranuloma occurring in the retroperitoneum after laparoscopic partial nephrectomy.

Case presentation

A 63-year-old man had undergone left laparoscopic partial nephrectomy for renal cell carcinoma (RCC) one-year ago and was being followed after surgery. The operation was performed via the retroperitoneal laparoscopic approach. Resection of the renal tumor was performed under warm ischemia, and the suturing of the renal parenchyma after tumor resection was performed with an absorbable thread supported with a fibrin sealant patch. There were no postoperative complications such as urinary or arteriovenous fistula. The pathological findings of the renal tumor revealed clear cell RCC, pT1a (15 mm in size), v0, ly0, Fuhrman grade 2, and the margin of resection was clear. One year after surgery, a routine contrast-enhanced CT scan obtained during follow-up revealed a tumor with irregular outline located below the left kidney in the retroperitoneum. In a dynamic study, the solid component showed significant enhancement after intravenous contrast administration (Fig. 1). On 18F-FDG-PET/CT examination, the tumor showed increased uptake of 18F-FDG, and the maximum standardized uptake value of the tumor was 4.19 (Fig. 2). Laboratory test results at that time were as follows: BUN 16.5 mg/dL, CRE 0.98 mg/dL, ALP 246 U/L, LDH 203 U/L, Na 140 mEq/L, K 3.6 mEq/L, Ca 9.3 mEq/L, CRP 0.20 mg/dL, WBC 4250/μL, Hb 14.1 g/dL, and platelets 26×10^4/μL. We diagnosed the tumor as a recurrent lesion of RCC. There were no other findings suggesting cancer metastasis. We then performed tumor resection surgery. The tumor was resected en bloc with surrounding adipose tissue via a lumbar oblique incision and retroperitoneal approach. To the touch, the tumor felt like a hard nodule, and the boundary with the surrounding adipose tissue was unclear. The major axis of the tumor was about 25 mm in length, and the cross-sectional surface was yellowish brown and solid (Fig. 3A). Pathological examination revealed small nodular granuloma lesions. The tumor was composed of adipose tissue with degenerative necrosis, and vitrified fibrotic interstitial tissue was identified. Infiltration of lymphocytes and plasma cells was also confirmed (Fig. 3B). No specific pattern of immunostaining was found, and thus the tumor was diagnosed as a lipogranuloma. There were no postoperative complications, and the patient has continued with regular follow-up after discharge

Abbreviations: CT, computed tomography; RCC, renal cell carcinoma; 18F-FDG-PET/CT, 18F-fluorodeoxyglucose positron emission tomography/computed tomography

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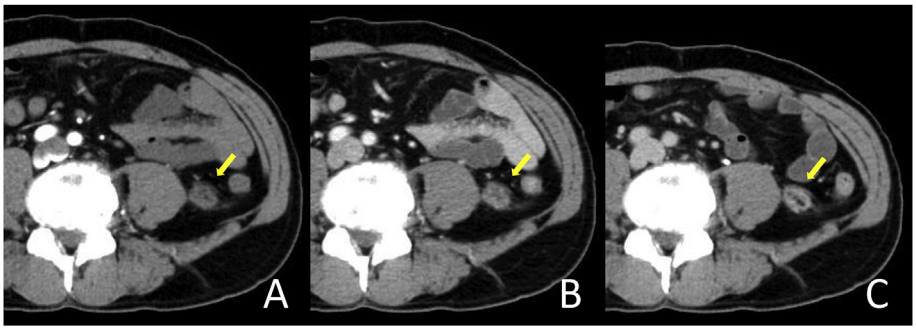

Fig. 1. Contrast-enhanced computed tomography images. (A) arterial phase, (B) venous phase, and (C) excretory phase. Yellow arrow indicates the tumor. (For interpretation of the references to colour in this figure legend, the reader is referred to the Web version of this article.)

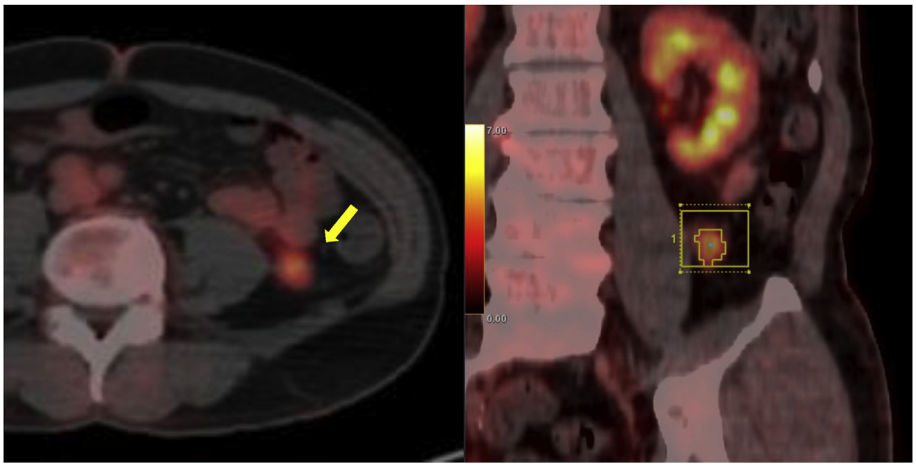

Fig. 2. Coronal and axial views of 18F-FDG-PET/CT imaging. Yellow arrow indicates the area of tumor enhancement. (For interpretation of the references to colour in this figure legend, the reader is referred to the Web version of this article.)

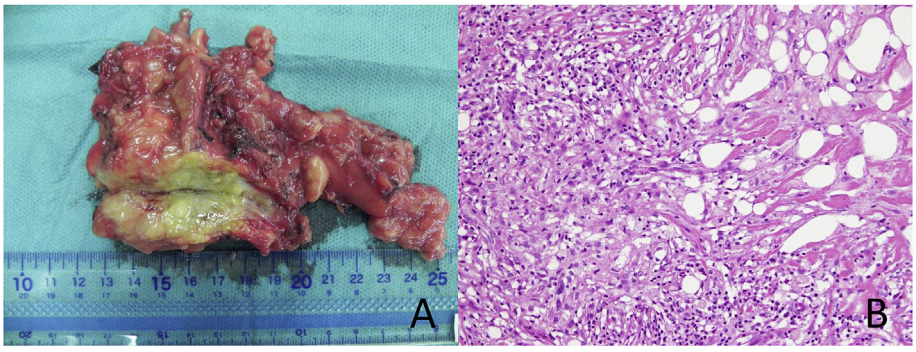

Fig. 3. (A) The gross specimen of the tumor with surrounding adipose tissue. (B) The pathological findings (hematoxylin and eosin staining, × 200).

from hospital.

Discussion

A granuloma is a structure formed during inflammation that is found in such conditions as sarcoidosis and mycobacterial infection, fungal infection, and rheumatoid arthritis.[4] When a foreign substance enters the living body, inflammation occurs as a protective reaction against it. The responsible etiologic agents are generally identified in granulomas as being due to fungi, bacteria, or foreign bodies.[4] Subcutaneous injection for therapeutic purposes may also result in granuloma formation.[1] Postoperatively, there have been some reports of granulomas arising from non-absorbable suture or surgical sponges.[2,3] In such cases, it could be difficult to distinguish a granuloma from tumor recurrence in patients undergoing postoperative surveillance. One of the reasons for this difficulty is the imaging features presented. In our patient, the CT scan showed a well-enhanced mass, and 18F-FDG PET/CT images showed a mass with intense 18F-FDG uptake. 18F-FDG PET/CT is extremely useful in the detection of malignancy. However, false-positive 18F-FDG PET/CT scans can be a problem when inflammatory and reactive processes occur.[3] In our case, we did not use non-absorbable suture during the previous surgery. Because various imaging tests showed findings suggestive of malignancy, it was difficult to diagnose the tumor as a granuloma before surgery. After tumor resection surgery, however, pathological examination revealed the tumor to be a benign lesion. No foreign bodies were left behind in our patient, and no findings of infection or systemic inflammatory disease were noted. It is possible that the fibrin sealant patch had moved and caused a granulomatous reaction, but this was not confirmed during the operation and the tumor location was different from the site where the

patch was used. As the position of tumor formation matched the position of the port used by the assistant during the laparoscopic surgery, it is possible that stimulation by the port had caused the granulomatous reaction. However, it is difficult to prove these assumptions, and no reaction was seen at the other port sites. Although the specific cause is unknown, it was thought that surgical invasion had caused the granulomatous reaction postoperatively. As for treatment, although spontaneous resolution of granulomas has been reported,[5] complete excision is the most effective therapy. As long as there is a possibility of cancer recurrence, the option to follow the lesion would not be appropriate.

Conclusion

We reported a case of retroperitoneal lipogranuloma mimicking the recurrence of RCC after partial nephrectomy. This condition is difficult to distinguish from malignant disease from its imaging features alone; thus, confirmation by pathological examination is necessary.

Conflicts of interest

All authors declare no conflicts of interest.

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