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## Pseudolymphoma with atrophic parenchyma of the liver: Report of a case

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## ABSTRACT

**INTRODUCTION:** Pseudolymphoma of the liver is a very rare disease. It is usually resected and pathologically diagnosed because of the difficulty of discrimination from the malignant neoplasm. For this reason, few cases which were observed for several years have been reported. We present a case of this disease observed and slightly enlarged for two years.

**PRESENTATION OF CASES:** The patient was a 46-year-old woman who underwent laparoscopic partial nephrectomy for right renal cell carcinoma two years ago. The preoperative computed tomography (CT) showed the mass 7 mm in diameter with localized parenchymal atrophy of the liver (segment VI). Two years later, CT showed enlarged mass from 7 to 11 mm in diameter. We performed laparoscopic partial hepatectomy because the patient desired definite diagnosis by surgery. The resected specimen showed white and solid mass. The lymphocyte and plasma cells are histologically observed. Immunohistological staining showed CD10 positive, Bcl-2 negative, and cyclin D1 negative. The pathological diagnosis was pseudolymphoma of the liver.

**DISCUSSION:** Pseudolymphoma is rarely observed in the liver. It is reported that chronic hepatitis, collagen diseases, and malignant diseases were often accompanied, but detail pathogenesis has been unknown. She had the history of renal carcinoma, but the lesion was not vanished regardless of clearance of renal neoplasm. Surgical resection is usually performed because discrimination with malignant neoplasm is difficult. The present case is probably the first one, which is followed for long term duration.

**CONCLUSION:** The present case may contribute to clarify the pathophysiology of this entity.

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## 1. Introduction

Pseudolymphoma is usually observed in the orbit, gastrointestinal tract, skin, and rarely in the liver [1–4]. According to reported cases, surgical resection is usually performed because discrimination from malignant neoplasm is often difficult [4–6]. For this reason, few cases for which long term observation was taken have been reported. In cases diagnosed by biopsy and observed without surgery, their size was gradually decreased [7,8].

In contrast, we experienced a case of pseudolymphoma of the liver, which was slightly enlarged for two years, resected by laparoscopic surgery, and diagnosed pathologically. This report describes interesting clinical course and consideration for the pathogenesis of this rare entity. This report has been reported in line with the SCARE criteria [9] Our institutional review board waved the requirement of ethical approval for this case report.

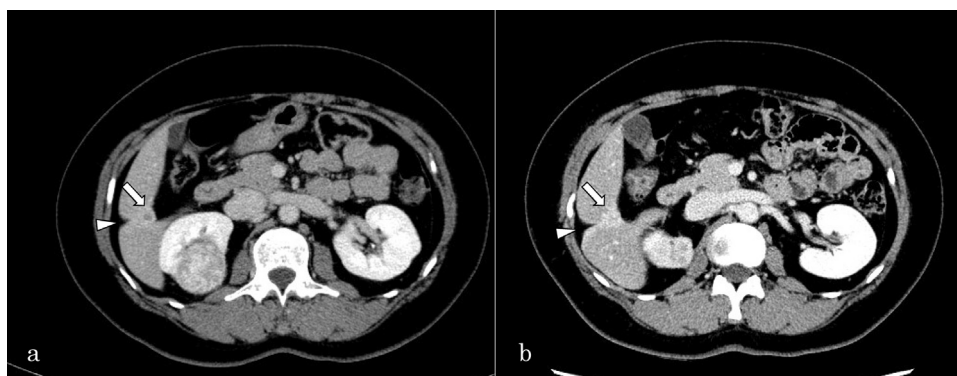
## 2. Presentation of cases

A 46-year-old woman was found to have asymptomatic liver nodule in the segment VI on computed tomography (CT). She had the past history of post-surgery of right renal cell carcinoma (RCC) two years ago. The preoperative enhanced CT image for renal cell carcinoma showed 7 mm sized low-density mass accompanied with localized parenchymal atrophy in the segment VI of the liver, which was not identified by anyone (Fig. 1a). Followed-up CT for post-surgery of RCC was periodically undergone. Two years later from RCC surgery, the low-density mass of the liver had been slightly enlarged to be 11 mm in diameter on enhanced CT (Fig. 1b). Trans-abdominal echogram showed low-echoic and border-clear mass in 18 mm diameter (Fig. 2a). On gadolinium-ethoxybenzyl-diethylenetriamine pentaacetic acid-enhanced magnetic resonance imaging (Gd-EOB-DTPA MRI), the mass showed low intensity and perinodular early enhancement in T1-weighted image, and Gd-EOB-DTPA uptake in the mass was not observed in the hepatobiliary phase (Fig. 2b).

She had no risk factors developing hepatocellular carcinoma such as hepatitis B or C virus infection and alcoholic hepatitis. On these image and clinical findings, we suspected of inflammatory

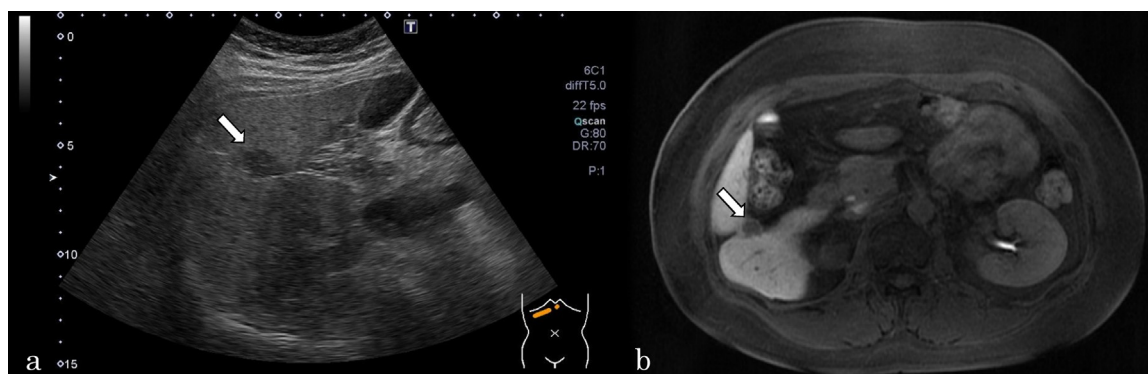
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**Fig. 1.** Enhanced computed tomography.

a) Ring enhanced 7 mm diameter nodule (arrow) accompanied with parenchymal atrophy (arrow head) was observed.  
b) Two years later, the nodule had been enlarged from 7 to 11 mm in diameter.



**Fig. 2.** Preoperative imaging.

a) Abdominal echography showed border-cleared low echoic mass 18 mm in diameter. b) On Gd-EOB-DTPA MRI imaging, Gd-EOB-DTPA uptake in the mass was not observed in the hepatobiliary phase.

pseudotumor because localized parenchymal atrophy was accompanied with the mass. The malignant neoplasm such as primary or metastatic one, however, could not completely denied due to findings of gradual enlargement for two years and no Gd-EOB-DTPA uptake in the mass. She desired definite diagnosis by undergoing surgery, and so we performed laparoscopic partial hepatectomy in the segment VI. She had no surgery-related complication such as bile leak and intraabdominal abscess, and left the hospital on postoperative day 7.

The resected mass showed white and solid nodule. On gross appearance, surgical margin of the mass was kept to the cut surface (Fig. 3a). In the hematoxylin and eosin staining, monoclonal and dense lymphocyte and plasma cells without liver parenchyma were infiltrated in the nodule (Fig. 3b). Steatosis was seen underlying liver parenchyma (Fig. 3c). Beside the nodule, atrophic liver parenchyma with lymphocyte infiltration, pericellular fibrosis, and bridging fibrosis in the periportal vein were observed (Fig. 3d). The germinal center-like lesions including cells with clear cytoplasm were also observed. In immunohistological staining, a number of CD3 and 5 positive cells were infiltrated in the perifollicular lesion (Fig. 4a). CD20 positive cells were also observed moderately. In the follicular lesion, infiltrated cells were positive for CD10 and negative for bcl-2 and cyclin D1 (Fig. 4b–d). Pathological diagnosis was pseudolymphoma of the liver.

Two months later from partial hepatectomy, enhanced CT examining from neck to pelvis showed no abnormal lymph node suspecting of malignant lymphoma or the other lymphoproliferative disorders and no recurrence findings of both hepatic pseudolymphoma and RCC. Abdominal echography underwent five months

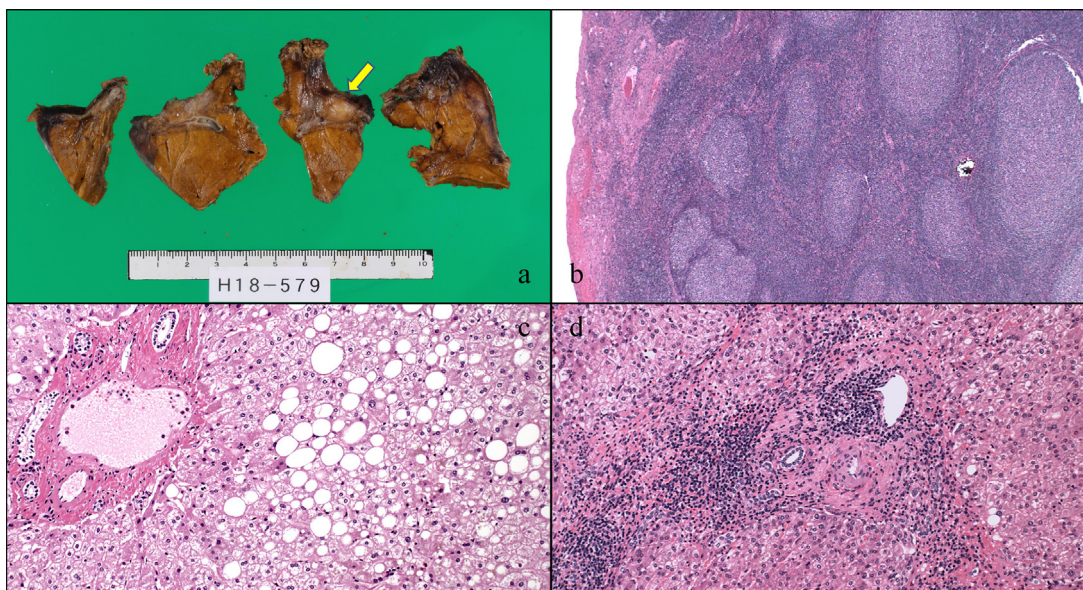
later from hepatectomy also showed no recurrence in the remnant liver.

### 3. Discussion

This is, to our knowledge, the first case report which was observed for long term (two years) and slightly enlarged during observation. Pseudolymphoma of the liver is very rare disease and usually developed in middle aged-women [4–6]. Detail pathophysiology of this entity has been unknown and often named as reactive lymphoid hyperplasia. Additionally, chronic hepatitis, malignant diseases, and collagen diseases are reported to be often accompanied, although detail relation has been unknown [8,10,11]. In the present case, she was 46 years old, and had right renal cell carcinoma. These findings are compatible with reported cases.

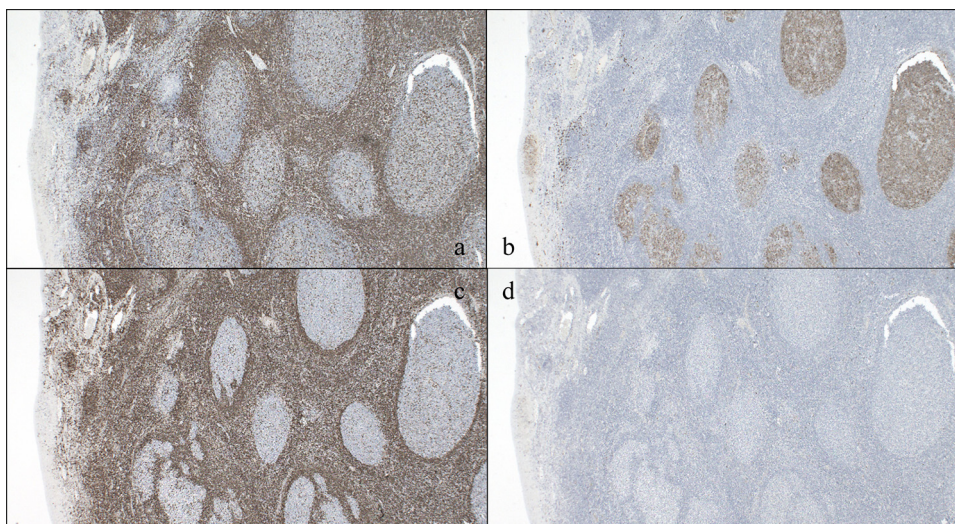
Only in clinical images such as CT, MRI, and echography, preoperative definite diagnosis is often difficult, especially discrimination from primary or metastatic malignant neoplasm. Liver biopsy is useful for definite diagnosis of hepatic pseudolymphoma, but cancer dissemination is risk if the lesion is malignant neoplasm [8]. Also, in reported cases, this entity is usually detected in small size, and so surgical resection is performed, and course observation is rarely done [4,8]. In rare cases observed without surgery, pseudolymphoma of the liver had been decreased during course observation [7,8]. In contrast, the lesion of our case was enlarged for two years regardless of post-surgery of right renal cell carcinoma. In this case, the reason for laparoscopic partial hepatectomy was performed as follows; difficulty from malignant neoplasm due to nodule enlargement for two years and the patient's wish of definite





**Fig. 3.** Pathological findings.

- a) Cut surface of the resected specimen showed white and solid nodule with 10 mm in size (arrow).
- b) Dense lymphocyte and plasma cells were observed in the nodule (Hematoxylin Eosin staining  $\times 2$ ).
- c) Steatosis was seen in underlying liver parenchyma apart from the nodule (Hematoxylin Eosin staining  $\times 10$ ).
- d) In the liver nearby the nodule, lymphocyte infiltration and pericellular fibrosis were observed and the parenchyma was atrophic (Hematoxylin Eosin staining  $\times 10$ ).



**Fig. 4.** Immunobiological findings.

- a) CD3 positive cells were seen in the other than lymphoid follicle ( $\times 2$ ).
- b), c) In the lymphoid follicle, CD10 was positive and bcl-2 negative ( $\times 2$ ).
- d) Cyclin D1 was negative in the lesion ( $\times 2$ ).

diagnosis by surgical resection. Laparoscopic surgery is considered to be good adaptation because this entity is inherently benign disease.

It is pathologically important to discriminate this entity from malignant lymphoma [4–8]. Immunohistological staining using CD3, 5, 10, and 20, cyclin D1, and bcl-2 was examined. From these immunohistological staining findings, follicular and Mantle lymphoma were interpreted as negative, and final diagnosis was pseudolymphoma of the liver. Parenchymal atrophy beside pseudolymphoma is interesting finding and has not been reported. Lymphocyte infiltration and pericellular fibrosis was observed in this atrophic area. In other liver parenchyma, steatosis without any inflammatory cells indicating fatty liver were observed. This interesting finding only seen in the atrophic parenchyma may be

related in the pathogenesis or growth of the hepatic pseudolymphoma, although the essential reason for this occurrence has been unknown. Detail observation of the liver parenchyma beside the pseudolymphoma may be important to understand the pathophysiology of this entity.

#### 4. Conclusion

We reported a case of hepatic pseudolymphoma with parenchymal atrophy which was enlarged for two years. This parenchymal atrophy may lead to formation of pseudolymphoma.

**Conflicts of interest**

There are no conflicts of interest.

**Funding**

This research did not receive any specific grant from funding agencies in the public, commercial, or not-for-profit sectors.

**Ethical approval**

Our institutional review board waved the requirement of ethical approval for this case report.

**Consent**

Written informed consent was obtained from the patients for publication of this case report and accompanying figures. A copy of the written consent is available for review by the Editor-in-Chief of this journal on request.

**Author contribution**

Study concept, design, and writing of this case report were performed by Yusuke Takahashi. Hitoshi Seki and Yasushi Sekino participated in the treatment of the patient and drafted the manuscript. Hitoshi Seki and Yasushi Seki critically revised the manuscript. All authors read and approved the final manuscript.

**Registration of research studies**

This case report was not registered in a publicly accessible database.

**Guarantor**

Yusuke Takahashi.

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