

Case Report

A case of perirenal non-specific lymphadenitis mimicking a solitary renal mass

Shun Umeda, Koji Hatano,  Taigo Kato,  Atsunari Kawashima,  Toyofumi Abe, Shinichiro Fukuhara, Motohide Uemura, Hiroshi Kiuchi, Ryoichi Imamura and Norio Nonomura

Department of Urology, Osaka University Graduate School of Medicine, Suita, Japan

Abbreviations & Acronyms

CMV = cytomegalovirus
CT = computed tomography
EBER-ISH = Epstein-Barr virus-encoded RNA in situ hybridization
HHV = human herpesvirus
HSV = herpes simplex virus
RCC = renal cell carcinoma

Correspondence: Koji Hatano M.D., Ph.D., Department of Urology, Osaka University Graduate School of Medicine, 2-2 Yamadaoka, Suita, Osaka 565-0871, Japan. Email: koj.hatan@gmail.com

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Introduction: Since the diagnosis of small renal masses is often a challenge despite improvements in imaging modalities, renal tumor biopsy provides useful information regarding treatment decisions. However, there is no established treatment strategy when renal biopsy shows lymphoid tissue.

Case presentation: A 63-year-old woman was referred to our department for the investigation of a small renal mass. Contrast-enhanced computed tomography showed a weakly enhancing mass 39 × 17 mm in diameter in the left kidney. A renal tumor biopsy was performed, and histopathological examination showed lymphoid tissue, but the diagnosis was not confirmed. The tumor was bluntly dissected from the renal capsule via robotic-assisted laparoscopic surgery without renal artery clamping. The pathological diagnosis was non-specific lymphadenitis.

Conclusion: We report a rare case of perirenal non-specific lymphadenitis mimicking a solitary renal mass. Non-specific lymphadenitis is a possible differential diagnosis of renal masses.

Key words: biopsy, kidney, laparoscopic surgery, lymphadenitis, lymphadenopathy.

Keynote message

Confirmation of the pathological diagnosis is challenging when renal mass biopsy shows lymphoid tissue. Surgical resection could be a therapeutic option for a solitary perirenal lymphoid mass and lead to a definitive pathological diagnosis.

Introduction

Small renal masses represent a heterogeneous group of tumors, including RCC, benign renal lesions, and rarely, lymphoid tissue. Renal mass biopsy provides useful information to guide treatment selection in patients with small renal masses.¹ To date, the clinical management of a solitary lymphoid renal mass has not yet been established.

Case presentation

A 63-year-old woman presented to her family doctor with a complaint of asymptomatic gross hematuria. Cystoscopy showed hematuria originating from the left ureteral orifice, and CT showed a left renal mass. The patient was referred to our hospital for further investigation. At the time of the initial examination, the patient had no clinical symptoms. All laboratory analyses were normal, and urine occult blood test results were negative. Contrast-enhanced CT revealed a slowly and weakly enhancing mass 39 × 17 mm in diameter in the left kidney (Fig. 1). Based on the imaging findings, we suspected papillary RCC or metanephric adenoma.

We performed percutaneous renal tumor biopsy because the imaging findings were not typical for clear cell RCC. On hematoxylin-eosin staining, small-to-medium-sized lymphocytes were densely congregated, but cellular atypia was not observed (Fig. 2).

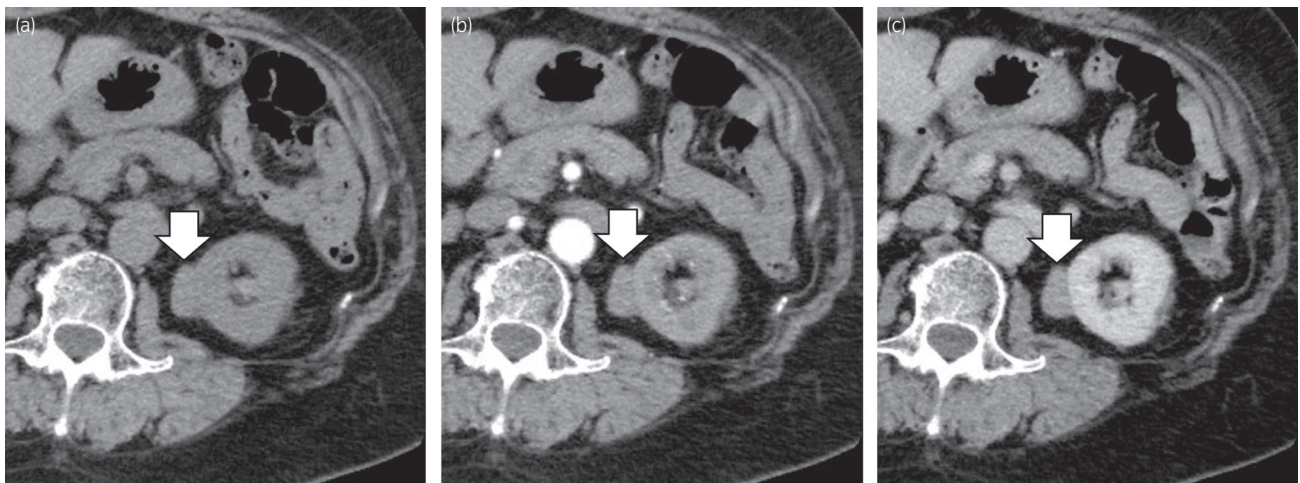


Fig. 1 Enhanced abdominal CT shows a slowly and weakly enhancing mass 39 × 17 mm in diameter in the left kidney; (a) plain, (b) early phase, (c) late phase. Arrows: tumor.

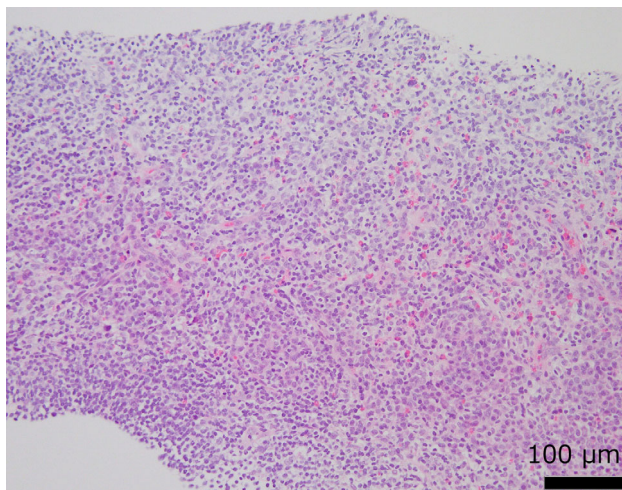


Fig. 2 Histopathological findings of the renal tumor biopsy. Hematoxylin and eosin staining shows dense growth of small-to-medium-sized lymphocytes. Scale bar: 100 μm.

Immunohistochemical staining was partially positive for B-cell lymphoma 6 (BCL-6), octamer-binding transcription factor 2 (OCT-2), and programmed cell death 1 and negative for terminal deoxynucleotidyl transferase, CD10, CD21, and CD30. Clonality analysis revealed no monoclonal rearrangements. EBER-ISH was negative. Since a lymphoid malignancy could not be ruled out and the tumor was thought to be of renal origin on imaging, we decided to perform a robot-assisted partial nephrectomy. soluble interleukin-2 receptor was not measured.

The surgery was performed transperitoneally, with an operative time of 223 min, a console time of 96 min, and a blood loss of 20 mL. The mass was bluntly dissected from the renal capsule without renal artery clamping. There were no perioperative complications. Gross pathology revealed a well-circumscribed and uniform yellowish-white mass 3 cm in diameter (Fig. 3). Microscopically, secondary lymphoid

follicles were conspicuous, and the basic structure of the lymphoid tissue was generally preserved (Fig. 4a). There were no caseating granulomas. A characteristic finding was the presence of large multinucleated cells, suggestive of viral infection (Fig. 4b). However, virus infection markers, including HHV8, HSV, CMV, and EBER-ISH, were negative. Immunohistochemical staining was partially positive for BCL-6 and negative for OCT-2, PAX5, STAT6, multiple myeloma oncogene 1, B cell OCT binding protein 1, CD3,

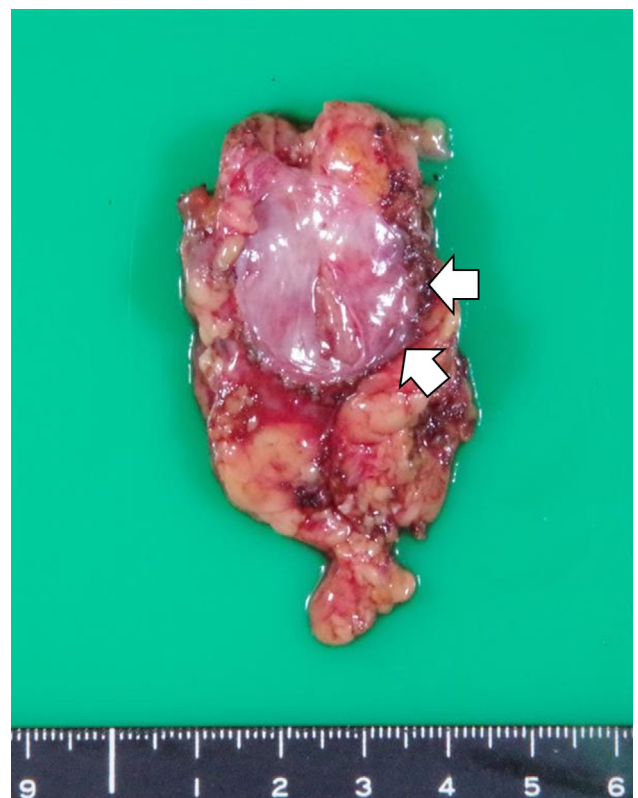


Fig. 3 Macroscopic finding shows a well-circumscribed and uniform yellowish-white mass 3 cm in diameter. Arrows: tumor.

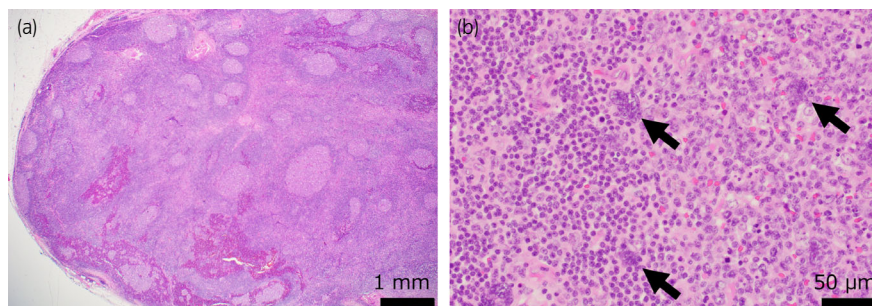


Fig. 4 Histopathological findings of the specimen. (a) In low power field, secondary lymphoid follicles are conspicuous, and the basic structure of the lymphoid tissue is generally preserved. Scale bar: 1 mm. (b) In high power field, large, multinucleated cells are observed (arrows). Scale bar: 50 µm.

CD15, CD20, CD30, CD56, CD79a, TCRβF1, TCRδ, programmed-death ligand 1 (PD-L1), and leukocyte common antigen. Clonality analysis did not reveal any monoclonal rearrangements. Based on these results, we diagnosed the patient with non-specific lymphadenitis. Seven months after surgery, no recurrence has been observed.

Discussion

Lymphoid masses such as Castleman's disease, inflammatory pseudotumor, and malignant lymphoma are known to occur in the kidney.^{2–4} Kikuchi-Fujimoto disease, which causes subacute necrotizing lymphadenopathy around the kidney, is observed in young adults of Asian descent.⁵ Non-specific lymphadenitis is common in the superficial lymph nodes and accounts for 22% of cervical lesions.⁶ To the best of our knowledge, there are only two reports of perirenal non-specific lymphadenitis mimicking a renal mass, including the present case. Kubota *et al.* reported a case of non-specific lymphadenitis presenting as a 30-mm renal mass resected via laparoscopic partial nephrectomy.⁷ Perirenal non-specific lymphadenitis is characterized by benign tumors that can be easily dissected, pathologically preserved basic structure of lymphoid tissue, the presence of large multinucleated cells, and no evidence of specific viral infection.

The diagnosis of small renal masses is often challenging despite improvements in imaging modalities such as CT and magnetic resonance imaging. Recent studies reported that 6.9–31.0% of patients who underwent laparoscopic partial nephrectomy had benign tumors.^{8–12} Snyder *et al.* reported that 16.4% of 815 renal tumors resected by nephrectomy were benign, with 10.7% being oncocytoma, 2.0% angiomyolipoma, 1.2% simple cysts, 1% metanephric adenoma, and 0.6% cystic nephroma.¹³ Nishikawa *et al.* reported that 30.1% of cases were benign in the group with atypical imaging pattern for clear cell RCC on enhanced CT, although 6.9% of cases were benign in the group with typical imaging patterns for clear cell RCC.¹² Therefore, the accuracy of imaging diagnosis is limited for small renal tumors, especially when contrast-enhanced CT does not show typical clear cell RCC findings. In such cases, renal tumor biopsy provides useful information for treatment decisions.

Surveillance can be an option when renal biopsy shows a benign renal tumor in order to avoid unnecessary surgical procedures. However, when biopsy results show lymphoid tissue, it is difficult to distinguish malignant diseases, such as lymphoma, from benign lymphadenopathy.¹⁴ Groneck

et al. reported that the positive predictive value of core needle biopsy of lymph nodes is 89% for non-Hodgkin's lymphoma and 44% for Hodgkin's lymphoma for the diagnosis of lymphadenopathy in the cervical, axillary, inguinal, or other subcutaneous regions.¹⁵ Consequently, 54 of 121 patients underwent secondary biopsy for confirmation of the diagnosis, and 26 patients underwent surgical resection for confirmation of the pathological diagnosis.¹⁵ Therefore, it is difficult to confirm the pathological diagnosis of lymphoid tumors based on the initial biopsy, necessitating secondary biopsy, surgical resection, or careful follow-up.¹⁵ In addition, it is possible that lymphadenitis coexists with malignant lymphoma in the same lymph node.¹⁶ Focal therapy for perirenal lymphatic tumors has not been currently established.

In our case, the lymphadenopathy was solitary and located adjacent to the renal capsule, so it could be resected safely with minimal invasiveness without renal artery clamping. Therefore, the preoperative tumor biopsy would be useful for selecting between lymphadenectomy and partial nephrectomy.

Conclusion

We report a case of a solitary perirenal mass with a histopathological diagnosis of non-specific lymphadenitis after laparoscopic resection. Non-specific lymphadenitis is a possible differential diagnosis of lymphoid renal masses.

Conflict of interest

The authors declare no conflict of interest.

Approval of the research protocol by an Institutional Reviewer Board

Not applicable.

Informed consent

All human subjects provided written informed consent with guarantees of confidentiality.

Registry and the Registration No. of the study/trial

Not applicable.

References

- Sanchez A, Feldman AS, Hakimi AA. Current management of small renal masses, including patient selection, renal tumor biopsy, active surveillance, and thermal ablation. *J. Clin. Oncol.* 2018; **36**: 3591–600.
- Hatano K, Fujita S, Tsujimoto Y *et al.* Rare case of the hyaline vascular type of Castleman's disease of the kidney. *Int. J. Urol.* 2007; **14**: 1098–100.
- Ishikawa T, Fujisawa M, Tamada H, Inoue T, Shimatani N. Inflammatory pseudotumor of the kidney. *Int. J. Urol.* 2004; **11**: 337–9.
- Kato Y, Hasegawa M, Numasato S, Monma N, Fujioka T. Primary mucosa-associated lymphoid tissue-type lymphoma arising in the kidney. *Int. J. Urol.* 2008; **15**: 90–2.
- Perry AM, Choi SM. Kikuchi-Fujimoto disease: a review. *Arch. Pathol. Lab. Med.* 2018; **142**: 1341–6.
- Song JY, Cheong HJ, Kee SY *et al.* Disease spectrum of cervical lymphadenitis: analysis based on ultrasound-guided core-needle gun biopsy. *J. Infect.* 2007; **55**: 310–6.
- Kubota M, Kanno T, Nishiyama R *et al.* A case of perirenal non-specific lymphadenitis resected by laparoscopic operation for the possibility of malignancy. *Hinyokika. Kiyo.* 2016; **62**: 57–61.
- McKiernan J, Yossepowitch O, Kattan MW *et al.* Partial nephrectomy for renal cortical tumors: pathologic findings and impact on outcome. *Urology* 2002; **60**: 1003–9.
- Pahernik S, Roos F, Hampel C, Gillitzer R, Melchior SW, Thüroff JW. Nephron sparing surgery for renal cell carcinoma with normal contralateral kidney: 25 years of experience. *J. Urol.* 2006; **175**: 2027–31.
- Kutikov A, Fossett LK, Ramchandani P *et al.* Incidence of benign pathologic findings at partial nephrectomy for solitary renal mass presumed to be renal cell carcinoma on preoperative imaging. *Urology* 2006; **68**: 737–40.
- Jeon HG, Lee SR, Kim KH *et al.* Benign lesions after partial nephrectomy for presumed renal cell carcinoma in masses 4 cm or less: prevalence and predictors in Korean patients. *Urology* 2010; **76**: 574–9.
- Nishikawa M, Miyake H, Kitajima K, Takahashi S, Sugimura K, Fujisawa M. Preoperative differentiation between benign and malignant renal masses smaller than 4 cm treated with partial nephrectomy. *Int. J. Clin. Oncol.* 2015; **20**: 150–5.
- Snyder ME, Bach A, Kattan MW, Raj GV, Reuter VE, Russo P. Incidence of benign lesions for clinically localized renal masses smaller than 7 cm in radiological diameter: influence of sex. *J. Urol.* 2006; **176**: 2391–5; discussion 2395–6.
- Weiss LM, O'Malley D. Benign lymphadenopathies. *Mod. Pathol.* 2013; **26**: S88–96.
- Gronckel L, Quaas A, Hallek M, Zander T, Weihrauch MR. Ultrasound-guided core needle biopsies for workup of lymphadenopathy and lymphoma. *Eur. J. Haematol.* 2016; **97**: 379–86.
- Klaimont MM, Gradowski JF. Hiding in the mantle: mantle cell lymphoma with a mantle zone growth pattern co-occurring with CMV lymphadenitis. *Blood* 2019; **134**: 1683.

Editorial Comment

Editorial Comment to A case of perirenal non-specific lymphadenitis mimicking a solitary renal mass

The preoperative diagnosis of small renal masses remains a challenge due to the complexity of differential diagnosis of malignant and benign diseases. To arrive at a definitive diagnosis of the rare condition of perirenal nonspecific lymphadenitis (PNSL),^{1,2} it is necessary to exclude all the various benign diseases mimicking renal malignancy, such as tuberculosis, malacoplakia, and mycosis. Therefore, tumor specimens from biopsies or surgery should be appropriately prepared to investigate the clinical findings of all of these mimicking diseases. Whereas the only previous case² of PNSL underwent immediate tumor resection, Umeda *et al.*¹ demonstrated an excellent clinical approach as they regarded lymphoid malignancy as a preoperative differential diagnosis made by needle biopsy of the tumor. The detection of lymphatic tissue in preoperative needle biopsy specimens of the perirenal masses plays an important role in the planning of tumor resection surgery.

PNSL generally has a favorable prognosis^{1,2}; radical nephrectomy should not be performed immediately even if the computed tomography reveals the tumor to be located in a difficult location. Primary renal lymphoma (PRL) has the poorest prognosis among the differential diagnosis of the lymphoid diseases. Therefore, minimally invasive lymph node

resection needs to be planned in order to rule out lymphoma completely in cases where lymphatic tissue is detected in the preoperative needle biopsy of perirenal tumor. According to a recent study from the Surveillance, Epidemiology, and End Results (SEER) database,³ the 5-year overall survival and cancer-specific survival rates of limited PRL (Stage I or II) are 61.6% and 72.9%, respectively. The efficacy of surgery such as radical nephrectomy has not been fully established, and systemic chemotherapy is the first choice for treatment. PNSL and PRL generally originate from the lymphatics surrounding the renal capsule.^{1–3} Associated with these origins, they are described as an exophytic small renal mass or renal capsule tumor in enhanced computed tomography. 18F-FDG PET/CT can be used to differentiate between renal cell carcinoma and PRL, as the latter shows higher standardized uptake values (SUVs) than the former.⁴

During endoscopic surgery, the tumor is detected as budding on the renal capsule surface. Since PNSL does not involve invasion of the renal capsule, it can be easily dissected using an off-cramp procedure without injury to the renal parenchyma unless inflammatory adhesion is severe. Although PRL can invade the renal parenchyma, the surgeon need not convert a planned lymph node resection to a partial- or total nephrectomy intraoperatively, because systemic chemotherapies are administered after malignant diagnosis. Histopathological investigation can rule out not only lymphoma, but also other benign lymphoid diseases that cannot be diagnosed preoperatively such as Castleman disease and inflammatory pseudotumor. Although histopathological

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