

**Case Report – Laparoscopic and Robotic Surgery****Isolated Renal Involvement Requiring Surgical Treatment in Systemic Cat Scratch Disease**
(Sistemik Kedi Tırmığı Hastalığında Cerrahi Tedavi Gerektiren İzole Böbrek Tutulumu)**¹Bakytbek Kozubaev, ¹Şaban Oğuz Demirdöğen, ²Tugay Aksakallı, ¹Abdulcelil Budak, ³Yakup Hilal, ³Ebru Şener, ¹Turgut Yapanoğlu**¹Department of Urology, Atatürk University Faculty of Medicine, Erzurum, Türkiye²Department of Urology, Erzurum Regional Training and Research Hospital, Erzurum, Türkiye³Department of Pathology, Atatürk University Faculty of Medicine, Erzurum, Türkiye**Cite as:** Kozubaev B, Demirdöğen ŞO, Aksakallı T, Budak A, Hilal Y, Şener E, Yapanoğlu T. Isolated renal involvement requiring surgical treatment in systemic cat scratch disease. Grand J Urol 2024, DOI: 10.5505/GJU.2024.63835 [Epub Ahead of Print]**Submission date:** 18 December 2023 **Acceptance date:** 08 March 2024 **Online first:** 11 March 2024**Publication date:****Corresponding Author:** Bakytbek Kozubaev / Atatürk University Faculty of Medicine, Department of Urology, Erzurum, Türkiye / usenbekovi4@gmail.com / ORCID ID: 0000-0002-6857-9085

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Abstract

Cat scratch disease (CSD) is a self-limiting infectious disease that develops after a cat bite or scratch, caused by the Gram-negative bacillus *Bartonella henselae*. The disease is generally characterized by fever and regional granulomatous lymphadenopathy, but in 5-10% of cases it can occur as a systemic disease and lead to various diseases. A 31 year old healthy woman applied to the internal medicine clinic with right side pain. He was referred to the urology clinic after the urinary system USG revealed a 4x3cm cystic mass in the right kidney. There was no finding in the patient's history other than a cat bite 3 months ago. Radiological evaluations showed RCC suspicion in the right kidney with the classification of Bosniak type 3 cyst. Upon being reported as a medical condition, the patient underwent laparoscopic partial nephrectomy. Multiple abscesses in the liver and spleen, and microabscesses in both kidneys, accompanied by systemic inflammatory symptoms, have previously been reported in systemic CSD. However, as far as we know, this is the first case of *Bartonella henselae* in the literature showing isolated single kidney involvement of this size without showing systemic inflammatory symptoms.

Key words: *Bartonella henselae*, cat scratch disease, renal abscess, partial nephrectomy

Özet

Kedi tırnığı hastalığı (KTH), Gram-negatif basil *Bartonella henselae*'nin neden olduğu, bir kedi ısırığı veya tırnığı sonrasında gelişen, kendi kendini sınırlayan bulaşıcı bir hastalıktır. Hastalık genel olarak ateş ve bölgesel granümatöz lenfadenopati ile karakterize olmakla birlikte %5-10 oranında sistemik bir hastalık olarak ortaya çıkıp çeşitli hastalıklara yol açabilmektedir. 31 yaşında sağlıklı kadın hasta, sağ yan ağrısı şikayetiyle dahiliye polikliniğine başvurdu. Üriner sistem USG'sinde sağ böbrekte 4x3 cm'lik kistik kitle saptanması üzerine üroloji kliniğine yönlendirildi. Hastanın özgeçmişinde 3 ay önceki kedi ısırığı dışında bulgu yoktu. Radyolojik değerlendirmelerde sağ böbrekte Bosniak tip 3 kist sınıflaması ile renal hücreli karsinom (RHK) şüphesi olduğu görüldü. Sağlık durumunun bildirilmesi üzerine hastaya laparoskopik parsiyel nefrektomi uygulandı. Sistemik KTH'de sistemik inflamatuvar semptomların eşlik ettiği karaciğer ve dalakta çoklu apseler ve her iki böbrekte mikroabseler daha önce bildirilmişti. Ancak bildiğimiz kadarıyla bu vaka literatürde sistemik inflamatuvar semptomlar göstermeden bu büyüklükte izole böbrek tutulumu gösteren ilk *Bartonella henselae* vakasıdır.

Anahtar kelimeler: *Bartonella henselae*, kedi tırnığı hastalığı, böbrek apsesi, parsiyel nefrektomi

Introduction

Cat scratch disease (CSD) is a self-limiting infectious disease that develops after a cat bite or scratch, caused by the Gram-negative bacillus *Bartonella henselae* [1]. It is seen in children, young adults, patients with compromised immune systems, and rarely in the elderly [2]. The disease is generally characterized by fever and regional granulomatous lymphadenopathy, but it can occur as a systemic disease in 5-10% of cases and lead to various diseases [3]. In systemic CSD, all systemic organs, especially the liver and spleen, can be affected along with long-term fever [4].

There is no gold standard method for the diagnosis of the disease. However, diagnostic criteria have been proposed by Margileth as follows: history of contact with cats; negative Mantoux, interferon gamma releasing assay tests, or serologies for other agents that may cause abscesses; *B. henselae* observed by positive polymerase chain reaction (PCR) test and imaging in spleen and liver lesions; enzyme immunoassay (EIA) or immunofluorescence (IFA) positive with a 4-fold increase in titer between the acute phase and convalescence or a single titer $\geq 1:64$; Histopathological examination showing granulomatous inflammation suggestive of systemic CSD. The presence of at least 3 of these 5 criteria confirms systemic CSD [5].

Because cat scratch disease is often a self-limiting disease, initiation of antibiotic therapy is controversial. However, in prolonged cases of the disease and systemic cat scratch disease, single or combination antibiotic agents such as gentamicin, trimethoprim/sulfamethoxazole, rifampicin, ciprofloxacin, azithromycin tetracycline are used [3]. It has also been reported that surgical treatment is required for abscesses of internal organs [6].

In this case report, we aimed to emphasize the importance of detailed patient history and a multidisciplinary approach in the diagnosis and treatment of patients despite advanced imaging methods in patients with suspected renal cancer.

Case

A previously healthy 31-year-old Turkish woman applied to the internal medicine clinic with right side pain. The patient was referred to the urology clinic after a urinary system USG revealed a 4x3cm cystic mass in the right kidney. The patient was admitted to the urology service and laboratory tests and radiological imaging methods were requested. The patient had

no active complaints other than nonspecific, dull, intermittent, and not very severe right side pain that had been present for approximately 2 months. The physical examination was normal. No abnormalities were observed in hemogram and blood biochemistry. The patient had a history of being bitten by a cat approximately 3 months ago. Apart from this, there was no history of trauma, chronic disease or regular use of medication in his family history. Urinalysis revealed leukocyte count as 118 and erythrocyte count as 20.

The mass was evaluated using contrast-enhanced cross-sectional imaging methods. In the magnetic resonance imaging (MRI) sections taken, a mass lesion image of 47x37 mm in size, exophytic extension, with a cystic component in the center, restricting diffusion, containing heterogeneous contrast in the postcontrast series, and extending towards the lower pole of the kidney was observed in the middle zone of the right kidney (Bosniak type 3) (**Figure 1**). Several lymph nodes, the largest of which was 15x10 mm in size, were observed in the paracaval distance in the medial neighborhood of the right kidney. No pathology was detected in any other intra-abdominal organs on MRI.

According to the results of the evaluations, we planned a laparoscopic partial nephrectomy for the patient. Under general anesthesia, in the right lumbar position, the mass was incised and excised all around, including some intact kidney tissue. The removed pathology material was sent to histology (**Figure 2**). In the postoperative period, blood values and vital signs remained normal and no surgery-related complications developed. The transurethral catheter was removed on postoperative day 1, and the drain in the lodge was removed on day 2.

In the histopathological evaluation of the lesion, star-shaped necrotizing granuloma structures containing neutrophils in the center and causing microabscess formation were observed. However, no signs of neoplastic formation were detected. No positive result was obtained on Ehrlich-Ziehl-Neelsen staining, so systemic CSD was first considered.

Based on the pathology results, the patient was evaluated for Cat Scratch disease. It was determined that his cat had bitten him 3 months before he was admitted to the hospital. Considering that the patient might have cat-scratch disease, an infectious diseases clinic consultation was requested to exclude other diseases that could cause granulomatous abscess in the kidney. In the laboratory tests of the evaluations made by the infectious diseases clinic, CRP-13.25 mg/l and sedim-40 mm/h were observed, and other laboratory tests were within

normal reference ranges. The purified protein derivative test (PPD) and PCR test were evaluated as negative and no additional treatment recommendations were made.

A diagnosis of systemic CSD was made based on the fact that other causes of abscess were negative, the pathology result including the features of CSD, and the cat contact history met 3 of the criteria recommended by Margileth.

Discussion

With the widespread use of imaging methods, the frequency of detection of renal masses has increased. Kidney masses can be seen as malignant or benign. Approximately 85-90% of malignant renal masses are renal cell carcinoma (RCC) [7]. RCC accounts for 2-3% of all malignant diseases in adults [8]. Surgery is the only curative treatment option for localized RCC [9]. There are some studies in the literature reporting that cystic renal mass pathology results are associated with infective pathologies. There are studies reporting that renal involvement of parasitic infections such as hydatid cyst may be confused with RCC and that treatment is planned with a preliminary diagnosis of RCC [10]. Again, some authors have reported that laparoscopic surgery can be applied in rare infectious cystic masses [11].

Radiological imaging of our patient was reported as Bosniak type 3 cyst. Bosniak type 3 renal cysts have a 50% malignant potential and are recommended to be managed just like RCC [9]. In this study, we performed laparoscopic partial nephrectomy in accordance with the European Association of Urology (EAU) guidelines on the patient who we thought had malignant potential and was reported as Bosniak type 3 cyst in imaging methods. No neoplastic formation was observed in the histological evaluation of the partial nephrectomy material sent. Systemic cat scratch disease was primarily considered due to necrosis and suppuration observed in the granuloma structures observed. Diagnosis was confirmed according to Margileth criteria. When performing the etiological evaluation of masses detected in the kidney, it should be kept in mind that even if there is radiological suspicion of malignancy, infectious factors may be confused with the picture, as seen in our case. While taking the patient's anamnesis, it is necessary to include the history that may create an infectious predisposition within the scope of evaluation. In case of a positive infectious history, a multidisciplinary approach and joint evaluation with the infectious disease clinic will be important in clarifying the case.

Conclusions

According to our literature knowledge, our case is the first case of cat scratch disease in which a mass was presented in the kidney and a partial nephrectomy was performed. While evaluating renal masses, considering infectious etiologies, although rare, in the differential diagnosis will contribute to the management process of the patient.

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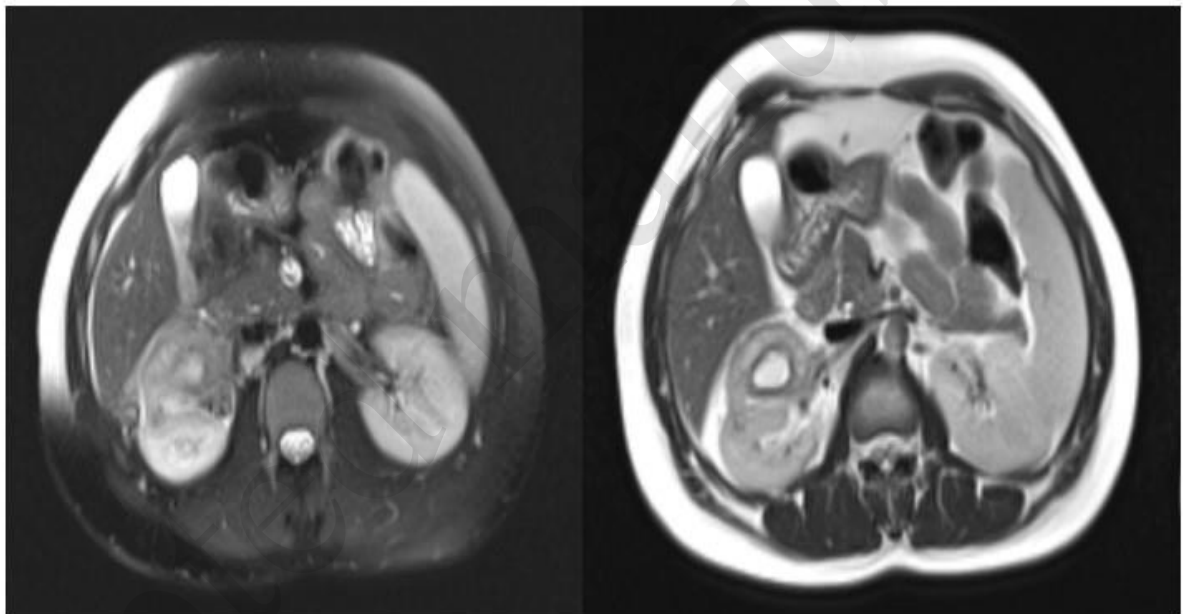


Figure 1. Abdominal MRI shows a 47x37 mm mass in the middle pole of the left kidney and several lymphadenopathies in the paracaval region, the largest of which is 15x10 mm in size.

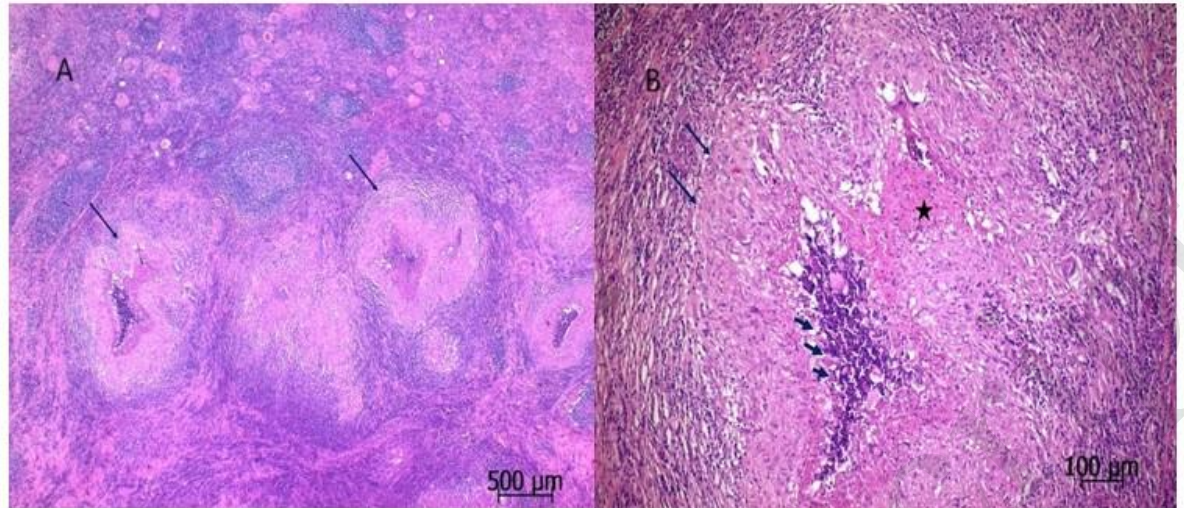


Figure 2. In the histopathological evaluation of the lesion, there were star-shaped necrotizing granuloma structures with neutrophils in the middle (forming microabscess formation), but no neoplastic formation was observed. No staining was observed with Ehrlich-Ziehl-Neelsen applied histochemically. **A:** Star-shaped granuloma structures are observed (arrows) (H&E x40); **B:** Granuloma structures surrounded by epithelioid histiocytes (long arrows) with necrosis (asterisk) and neutrophils (short arrows) in the middle are observed at higher magnification (H&E x400).