

Case Report

Successful Medical Management of a Retroperitoneal Abscess: A Difficult Diagnosis in Pyrexia of Unknown Origin

U. G. H. Ishan ¹, M. C. K. Thilakasiri ¹, P. N. Weeratunga ^{1,2} and R. D. Lanerolle^{1,2}

¹University Medical Unit, National Hospital of Sri Lanka, Colombo, Sri Lanka

²Department of Clinical Medicine, Faculty of Medicine, University of Colombo, Colombo, Sri Lanka

Correspondence should be addressed to U. G. H. Ishan; ishanpro@gmail.com

Received 5 May 2019; Accepted 11 March 2020; Published 27 March 2020

Academic Editor: Raul Colodner

Copyright © 2020 U. G. H. Ishan et al. This is an open access article distributed under the Creative Commons Attribution License, which permits unrestricted use, distribution, and reproduction in any medium, provided the original work is properly cited.

Retroperitoneal abscesses are uncommon conditions with occult and insidious presentations. There is often a lack of abdominal signs and ultrasound findings, causing a delay in diagnosis and definitive treatment, leading to poor patient outcomes. We report a case of right-sided retroperitoneal abscess of a 28-year-old female patient with diabetes mellitus. Prior to admission, the patient reported a vague 2 weeks history of right-sided back and abdominal pain and dysuria. She presented to our medical ward with suspected pyelonephritis with right-sided renal abscess. A retroperitoneal abscess involving the right renal fossa was revealed on an urgent CT scan. The patient underwent percutaneous ultrasound-guided pigtail catheter drainage. Patient clinically and biochemically improved with medical management gradually over 2 weeks. This case report highlights the importance of investigating for recurrent urinary tract infections of diabetics which are often overlooked in general practice.

1. Introduction

The insidious nature of presentation and absence of symptoms which may appear towards the later part of the disease makes retroperitoneal abscess diagnostically challenging. Pyrexia of unknown origin is a common presentation of this rare disease entity. Therefore, they are associated with significant morbidity and mortality, about 50% suffering major complications [1]. Retroperitoneal abscesses can be classified according to 5 possible anatomical locations, which are perinephric abscesses, upper retroperitoneal abscesses, pelvic abscesses, combined retroperitoneal and pelvic abscesses, and localized musculoskeletal abscesses. Bacterial spread from the urinary tract is the most common cause for retroperitoneal abscesses. Spread from gastrointestinal tract being the 2nd commonest such as perforated appendix, colonic cancer, diverticular disease, and Crohn's disease. Bone infections such as Pott's disease and osteomyelitis and haematogenous spread from distant septic loci may cause retroperitoneal abscesses. Iatrogenic infections due to abdominal and pelvic surgeries are other possible rare causes. The majority of cases reported with

retroperitoneal abscesses are seen among patients with immunocompromised states such as diabetes mellitus, cirrhosis, malignancy, remote infection, steroid therapy, and chronic renal failure. A clinician should have a high level of suspicion in an insidiously unwell patient with fever and no localizing signs of infections, to identify a retroperitoneal abscess as in this case.

2. Case Presentation

A 28-year-old previously well woman presented to our medical ward with a history of fever for 2 weeks and 3 months of recurrent urinary tract infections, which were treated by a general practitioner based on clinical symptoms and pus cells in urine full report. Initially she has had low-grade fever which was intermittent and resolved with treatment. She had one high fever spike per day over the last 2 weeks prior to admission which was associated with chills and rigors, and fever resolved with excessive sweating. During the day time, she was mostly afebrile and was able to do her daily chores. She has had upper back pain for 3 months with intermittent dysuria. Nausea and right-sided

flank pain commenced over last 3 days prior to admission. There was no history of cough, recent weight loss, altered bowel habits, haematuria, tea coloured urine, steatorrhea, or jaundice. She had no history of trauma or abdominal surgery.

On physical examination, she was averagely built, pale, and febrile with a temperature of 101°F. On abdominal examination, right-sided flank fullness and warmth was noted. There was severe right-sided flank tenderness, and no ballotable mass was felt. There was no evidence of abdominal signs suggestive of acute cholecystitis or appendicitis. No pelvic or thigh mass was detected. The patient was haemodynamically stable, and respiratory, cardiovascular, and neurological system examinations were unremarkable.

She has undergone investigations at the family doctor and on admission revealed a leukocytosis of $19.49 \times 10^9/L$ predominantly neutrophils of $17.4 \times 10^9/L$, Hb 9.7 g/dl, and platelet count of $574 \times 10^9/L$. Recent urinary analysis had 10–15 pus cells and 2–4 red cells. Serum creatinine was 66 $\mu\text{mol/l}$. Ultrasound scan of the abdomen reported that there is a 7 cm \times 7 cm \times 6.3 cm mass (volume 165 cm^3) cystic right-sided renal lesion with septation (Figure 1). It contained echogenic thick fluid. It was located at the right kidney upper pole extending beyond the renal capsule. On both sides, the renal echogenicity increased suggestive of bilateral renal parenchymal disease with renal abscess or cystic lesion. Blood picture reported as compatible with bacterial infection. The serum bilirubin level was 10.1 mmol/l and no evidence of haemolysis, AST 26 U/l, ALT 21 U/l, serum amylase 33 U/l, serum Na^+ 132 mmol/l, and K^+ 4.6 mmol/l.

On admission, the following investigations were done at the ward; fasting blood sugar 272 mg/dl, ESR 135 1st hour, CRP 216 mg/L, Mantoux test negative, retroviral test negative, antibody for melioidosis negative, and blood culture and urine for culture negative. Chest X-ray was reported as normal. Ultrasound-guided aspiration was done on day 2 following admission, and abscess fluid analysis indicated a purulent appearance, 2830 mg/dl protein, 500,000/ mm^3 neutrophils, no lymphocytes, or red blood cells with cellular debris. Fluid aspirate culture was positive for *Staphylococcus aureus* with antibiotic sensitivity to meropenem and resistance to penicillin, co-amoxiclav, and ceftriaxone. Urine culture was negative.

On day 3 following admission, contrast-enhanced CT abdomen was done and multiloculated right-sided perinephric retroperitoneal abscess was noted. On day 5 following admission, MRI abdomen and pelvis was done to identify a multiloculated and peripherally enhancing retroperitoneal collection in the right perinephric region. It showed multiple internal septation. The collection was approximately 10 cm \times 6 cm \times 9 cm (axial). The collection was superiorly extending up to the subhepatic region (Figure 2). It was medially extending up to the right psoas muscle with sparing of the psoas muscle and no paravertebral extension. No other abdominal or pelvic pathology was identified.

The patient was treated at the medical ward by a multidisciplinary team. An ultrasound-guided pigtail catheter was inserted to the retroperitoneal collection, and drainage



FIGURE 1: Ultrasound scan obtained 2 days prior to admission.

was done. No further surgical intervention was recommended by the surgical team. She was given intravenous meropenem 1 g eight hourly. Transthoracic echocardiography did not show any evidence of infective endocarditis.

Paracetamol 1 g and tramadol 50 mg was prescribed, but no analgesics were needed after initiating meropenem.

On admission, the patient was newly diagnosed to have type 2 diabetes mellitus. She was initially started on soluble insulin.

The patient clinically improved with fever settling on day 6 following admission, which was the 2nd day of IV meropenem (Figure 3). Percutaneous drainage was reinserted on day 12 following ultrasound, which indicated inadequate drainage due to loculated nature of the abscess. Biochemical and haematological improvement is demonstrated in Table 1.

The patient was discharged after 21 days of IV meropenem and was followed up in the clinic after two weeks from discharge date. She was discharged with oral metformin 750 mg two times daily.

Repeat ultrasound scan after 2 weeks following discharge demonstrated minimum abscess, and CRP level was <6 mg/L. Her fasting glucose was 100 mg/dl, and she had good glycemic control.

Repeat ultrasound done 3 months later showed no residual abscess. She was followed up at the local hospital with good glycemic control.

3. Discussion

The potential space between the peritoneum and transversalis fascia is the retroperitoneal space. The common origins of retroperitoneal abscesses are kidney or renal tract, retrocecal appendicitis, pancreatitis, biliary tract diseases, peptic ulcer diseases, and osteomyelitis of vertebral bodies [1]. It has been reported through case series that retroperitoneal abscesses are more prevalent among immunocompromised patients [2]. In this case, she was a previously undiagnosed patient with diabetes mellitus and had an HbA_{1c} of 11.4%, which indicated poorly controlled diabetes over a prolonged period of time. Although she had no past history of any abdominal pathologies, she has a significant history of recurrent urinary tract infections which were empirically treated with short-term antibiotic regimes.

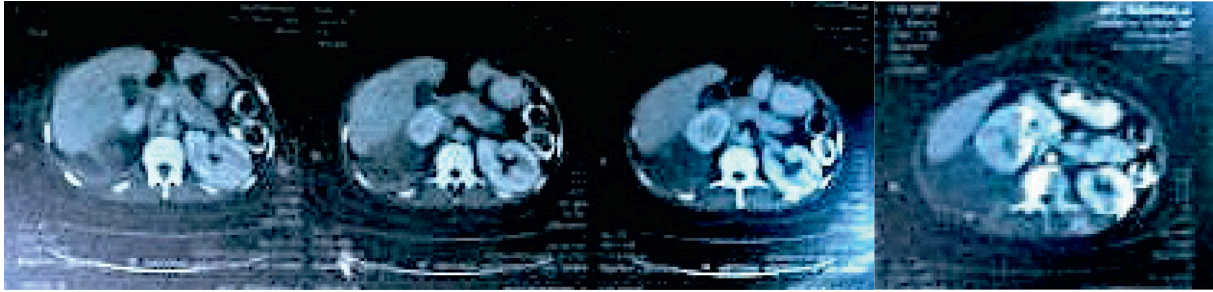


FIGURE 2: MRI obtained on the 5th day following admission.

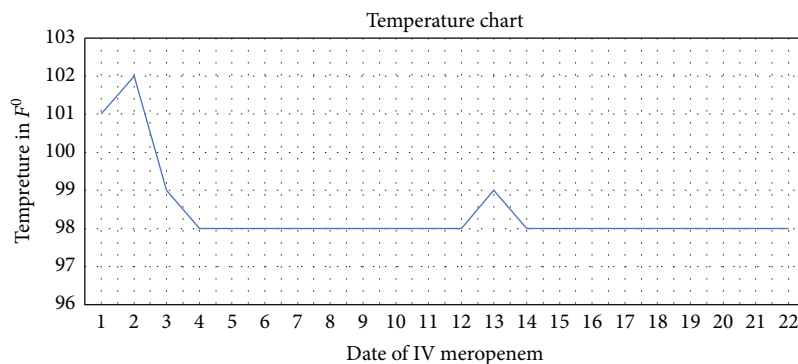


FIGURE 3: Temperature distribution throughout hospital stay.

The extraperitoneal space produces minimum signs, which leads to no specific clinical signs to identify retroperitoneal abscesses. Abdominal pain is a very late sign in retroperitoneal abscesses, and only less than 50% have reported abdominal pain in one case series on retroperitoneal abscesses [3]. These abscesses may extend to the thigh, groin, or scrotum, and such abscesses take an average of 13 days to diagnose from the time of onset of abdominal pain. In this case, the abscess did not extend beyond the abdomen and the patient had persistent right-sided flank pain for 3 days prior to admission and upper back pain for 3 months. Most patients with retroperitoneal abscesses will present with nonspecific symptoms and signs [4].

On presentation, this patient was investigated as a case of pyrexia of unknown origin. The current definition of pyrexia of unknown origin is pyrexia for ≥ 3 weeks with no identified cause after evaluation in hospital for 3 days or ≥ 3 outpatient visits [2]. This patient fulfilled this criterion. Her initial workup was directed towards identifying an infective focus and a pathogen causing the infection. Diagnostic sensitivity of ultrasonography for retroperitoneal abscesses is 67%–87%. CT is the most reliable for diagnosis of retroperitoneal abscesses with a sensitivity ranging from 90% to 100%. MRI has sensitivity of 88.5% and 100%. The sensitivity of CT for abscesses of spinal origin in one case series was lower than that of MRI (67% in comparison with 100%) [3]. In this case, the final diagnosis of retroperitoneal abscess was made using CT and MRI. The pathogen of the retroperitoneal abscess differs according to the organ of origin of infection. In one case

series, the gastrointestinal origin pathogens were a mixed growth of aerobic and an aerobic bacterium. *E. coli* was the most common organism found in GI origin infections followed by *Klebsiella*. Gram-negative bacterial abscesses commonly develop due to rupture of corticomedullary abscess while staphylococcal infection develops due to the rupture of renal cortical abscess [5]. Haematogenous spread causes 30% of retroperitoneal staphylococcal infections of which the focus is wound infection, furuncles, or pulmonary infections. Approximately 70% of cases have no obvious source as in the present case [6]. *Mycobacteria* was the most common pathogen in abscesses originating from the spine [6].

In many case series analysis, interventional radiological treatment with antibiotic was the recommended treatment modality. However, no randomized clinical trials were reported on treatment for retroperitoneal abscesses. Ultrasound- or CT-guided drainage is the commonest interventional treatment. Surgery was the mainstream treatment method along with antibiotics treatment in Huang et al. case series which had many GI origin infections. Multiple loculated abscesses can be treated with multiple drainage tubes or septal perforation with catheter placement. In this case, this method was used to drain the multiloculated abscess and drainage was very successful. Small and uncomplicated abscesses can be treated with antibiotics alone [7, 8]. The choice of the antibiotic depends on the suspected origin of infection. When considering an empirical antibiotic, antibiotic resistance in patients treated with broad-spectrum antibiotics as outpatients must be considered.

4. Conclusion

Accurate and early diagnosis is an important factor in the outcome of perinephric abscesses. It is essential to have high degree of suspicion of retroperitoneal abscesses in diabetic patients. Our experience in this case demonstrates that perinephric abscesses even in immunocompromised patients such as diabetes can be successfully treated with interventional drainage and culture-guided antibiotics therapy.

Consent

Informed written consent was obtained from the patient for publication purposes.

Conflicts of Interest

The authors declare that they have no conflicts of interest.

Authors' Contributions

All authors contributed equally to the care of the patient. HI and KT wrote the first draft of the manuscript. All authors critically appraised and revised the manuscript.

References

- [1] J. T. Crepps, J. P. Welch, and R. Orlando III, "Management and outcome of retroperitoneal abscesses," *Annals of Surgery*, vol. 205, no. 3, pp. 276–281, 1987.
- [2] J. Hong and S. B. Park, "A case of retroperitoneal abscess: a rare complication of Meckel's diverticulum," *International Journal of Surgery Case Reports*, vol. 41, pp. 150–153, 2017.
- [3] G. M. Varghese, P. Trowbridge, and T. Doherty, "Investigating and managing pyrexia of unknown origin in adults," *BMJ*, vol. 341, no. 7778, pp. 878–881, 2010.
- [4] S.-H. Huang, W.-O. Lo, C.-M. Lin et al., "Retroperitoneal abscess: 7-year experience of 29 cases in a tertiary care center in Taiwan," *Urological Science*, vol. 26, no. 3, pp. 218–221, 2015.
- [5] A. J. Mallia, N. Ashwood, G. Arealis, and I. Galanopoulos, "Retroperitoneal abscess: an extra-abdominal manifestation," *BMJ Case Reports*, vol. 2015, 2015.
- [6] W. A. Altemeier and J. W. Alexander, "Retroperitoneal abscess," *Archives of Surgery*, vol. 83, no. 4, pp. 512–524, 1961.
- [7] R. F. Coelho, E. D. Schneider-Monteiro, J. L. B. Mesquita, E. Mazzucchi, A. Marmo Lucon, and M. Srougi, "Renal and perinephric abscesses: analysis of 65 consecutive cases," *World Journal of Surgery*, vol. 31, no. 2, pp. 431–436, 2007.
- [8] A. R. EL-Nahas, R. Faisal, T. Mohsen, M. S. AL-Marhoon, and H. Abol-Enein, "What is the best drainage method for a perinephric abscess?" *International Brazilian Journal of Urology*, vol. 36, no. 1, pp. 29–37, 2010.