

Renal-Perirenal Abscess Radiology Imaging Assosiation with Diabetes Melitus: A Case Report

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Abstract

The renal-perirenal abscess is a severe and potentially fatal urinary tract infection and requires emergency treatment with considerable mortality and is often difficult to diagnose. Diabetes itself makes the risk for renal-perirenal abscess increase. An abdominal CT scan is a modality of choice for diagnostic renal-perirenal abscess. We present a case 68-years-old woman, who came to the emergency department of Dr. Soetomo General Hospital Surabaya, with a chief complaint of right flank pain, intermittent fever, and palpable flank mass with the redness skin about 21 days before admission. Getting worse at 10 days before admission with symptoms of urinary tract infection. History diabetes mellitus with Novo rapid and Levemir therapy. Ultrasonography and abdominal MSCT with contrast was performed with the result there are right renal-perirenal abscess. The incisional drainage abscess was performed at the right flank regio after antibiotic and insulin therapy. The result of the abscess culture was *Escherichia coli*.

Keywords: Renal-Perirenal Abscess, Diabetes Melitus, Radiology Imaging

Introduction

The renal-perirenal abscess is a severe and potentially fatal urinary tract infection and requires emergency treatment with considerable mortality (21%- 56 %) and is often difficult to diagnose. Patients with renal abscess mostly come with fever and pain at the varied location, flank and costovertebral angle pain were the most common, with duration symptoms between 1 to 4 weeks. Decreased hemoglobin less than 10 g/dL was found at one-four cases with white blood count between 1500 to 45.000 / μ L, urine cultures revealed *E. coli* and *Proteus* to be the predominant organisms. ¹

Diabetes mellitus was an important associated condition with renal abscess (1). Some previous studies reported that diabetes has a greater risk of the increased renal abscess. ^{2,3} Increased growth rates of *Escherichia coli* were observed in the presence of moderate or high amounts of glucose, as is found in the urine of diabetics. ⁴ Ultrasound is an early modality to show the renal abscess, although it has limitations. Abdominal CT Scan is the modality of choice to

diagnose the renal abscess. ⁵ Ultrasound show cystic lesion with internal echoes, septations, and loculations, while the computerised tomography may show complex cystic mass with necrosis and a peripheral enhancing rim. ⁶

Case Description

A woman, 68 years old, came to the emergency department of Dr. Soetomo General Hospital Surabaya, with a chief complaint of right flank pain, intermittent fever, and palpable mass with the redness skin about 21 days before admission. Getting worse at 10 days before admission with the symptom of urinary tract infection. History of lump massage and controlled diabetes mellitus with Novo rapid 3x14 IU and Levemir 1x14 IU.

Physical examination shows temperature is 38,4 °C, with stabil haemodynamic and palpable mass size +/- 10 x 10 cm at right flank regio (Figure 1). Laboratory result shows increased of white blood count : 26.900 / μ L (normal range, 4.000–10.000 / μ L),

decreased of Hemoglobin : 9,4 g/dL (normal range, 13.5–18 g/dL), decreased of albumin serum : 2,75 g/dL (normal range, 3,8-5,1 g/L), Platelets : 285 g/L (normal range, 150–350 g/L), creatinine : 0,5 mg/dL

(normal range, 0.7–1.2 mg/dL), SGOT/SGPT : 33/14 U/L (normal range, 0-35 U/L), dan GDA (164 mg/dL; normal range, mg/dL). Urinalysis: leukocytes 2+ (normal range: negative).



Figure 1. Upside and lateral view; there appears to be a palpable mass at the right upper quadrant of the abdomen with redness skin (red circle).

At the first radiology examination, the plain photo abdomen show an opacity at the right hypochondrium region until the right lumbar region (Figure. 2), continue with ultrasonography abdomen with hypoechoic lesion with internal moving echo suspected as a right renal abscess (Figure. 3). Abdominal MSCT with contrast was performed with result rim contrast enhancement lesion with the necrotic area, lobulated, at right renal parenchymal that suggest an abscess (Figure. 4). Incidental finding in this patient we found also bilateral pleural effusion and calcification at uterine (Figure 5 and 6).



Figure 2. Plain photo abdominal of a woman, 68 years old with the complaint of pain at her right flank area. There is opacity at the right hypochondrium region until the right lumbar region (Arrow). Noted: the calcification at the pelvic cavity is suspected as calcification at the uterine (asterisk)



Figure 3. Ultrasonography shows a hypoechoic lesion with thick walls size approximately 6,6 x 4,7cm with internal moving echo at the right kidney suspected at the renal abscess (Arrow).

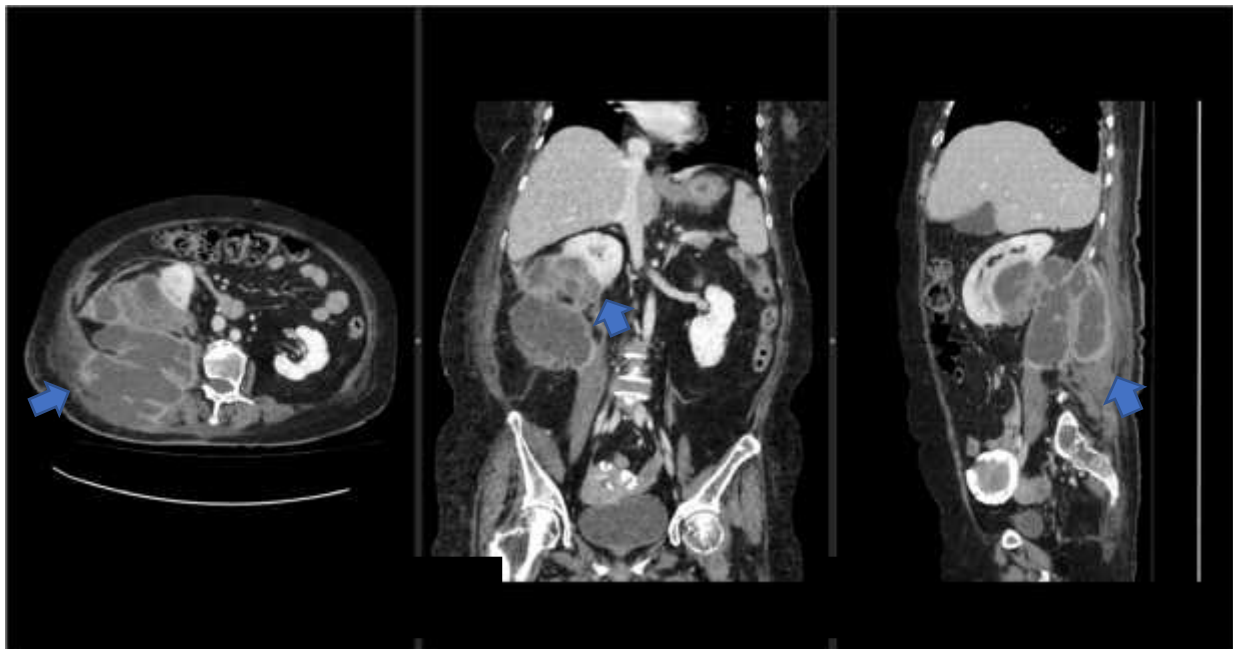


Figure 4. MSCT Abdomen axial (a), coronal (b), and sagittal (c) view with contrast injection at the venous phase shows a hypodense lesion with the necrotic area, lobulated margin, septated, size approximately 12,8x7,3x9,9 cm with rim contrast enhancement at the right kidney parenchyma to perinephric space that pushes the right kidney to anteromedial side, extended to medial side infiltrating right psoas major muscle, fascia gerota, right quadratus lumborum dan erector spine muscle, suggesting a right renal abscess (Arrow).

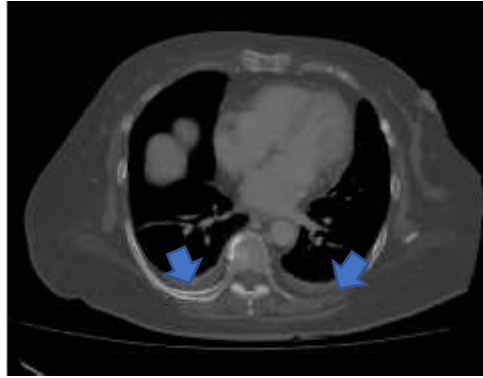


Figure 5. Axial view with mediastinal window showed bilateral pleural effusion (arrow)

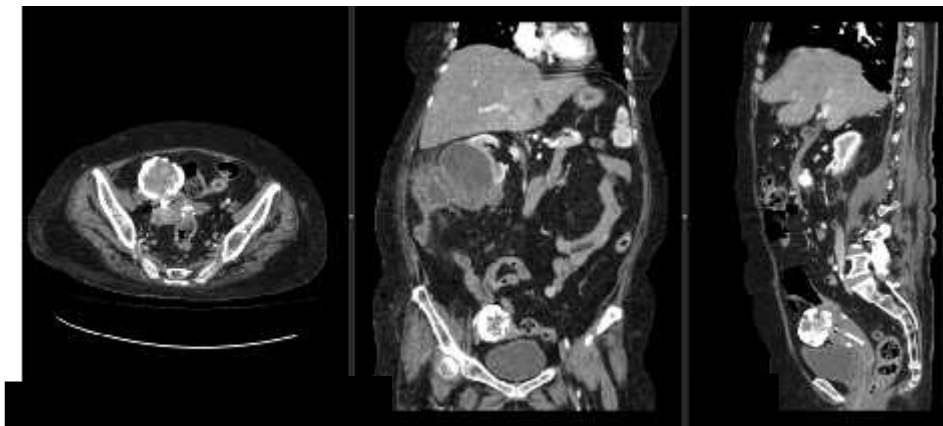


Figure 6. Abdominal CT axial (a), coronal (b), and sagittal (c) with contrast injection arterial phase shows calcification at the uterine (Arrow).

The management of the patient was drainage abscess incision with pus production approximately 1000 mL at right peri dan para renal with necrotic component (Figure 7). The results of culture from the incision and drainage was *Escherichia Coli* ESBL. The patient then had treatment with antibiotic (Ceftriaxone injection 2 x 500 mg) and management of her diabetes with Novorapid 3x20 IU SC and Lantus 0-0-20 IU. Sadness, she passed away after a few days of treatment.

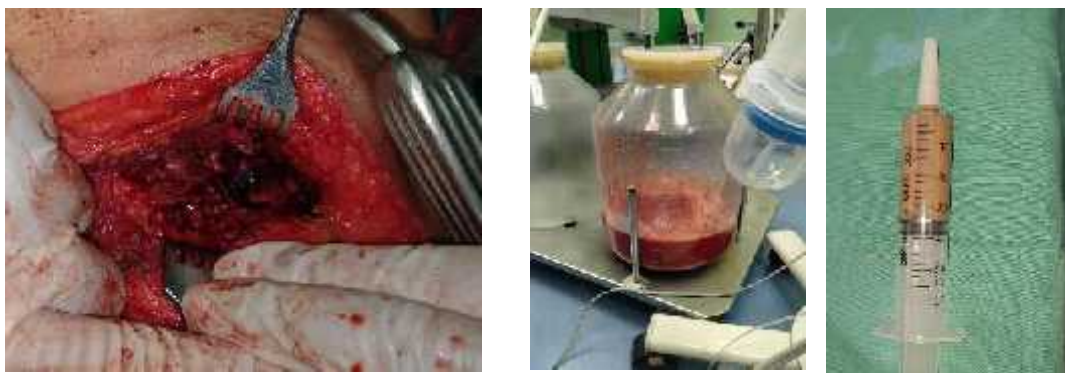


Figure 7. Drainage abscess incision from the right renal with pus produces approximately 1000 mL that had been culture with result *Escherichia Coli* ESBL

Discussion

Renal and perinephric abscesses are severe urinary tract infections and require emergency treatment.⁵ The main symptoms that can be found are right flank pain, fever, and chills.⁵ The patient a woman 68-years-old complained of right flank pain, intermittent fever, and palpable flank mass with redness skin about 21 days before admission. This is in accordance with the literature, that patients with renal abscess mostly come with fever and pain at varied in location, flank and costovertebral angle pain were the most common, with symptoms between 1 to 4 weeks.¹

The patient also has diabetes that can increase the renal-perirenal abscess which can present 30-40% of cases with often nonspecific symptoms.⁷ Renal and perinephric abscesses develop as a complication of focal pyelonephritis or hematogenous infection.⁶ Perinephric abscesses are usually due to gram-negative enteric bacilli or a polymicrobial infection. *Escherichia coli* accounts for 51.4% of perinephric abscesses.⁸ This patient show leucocytosis, anemia, and sign of urinary tract infection.¹

Renal and perirenal abscesses were an unclear diagnosis and are a major challenge, requiring radiological examination to confirm them.⁹ The radiology finding at ultrasound was hypoechoic lesion with internal moving echo and Abdominal MSCT with contrast shows rim contrast enhancement lesion, lobulated, at right renal parenchyma t extend into adjacent structures suggest as renal-perirenal abscess.⁶ The patient also has diabetes that can increase the of renal-perirenal abscess which can present 30-40% of the case with often nonspecific symptoms.⁷ Renal and perinephric abscesses develop as a complication of focal pyelonephritis or hematogenous infection.⁶ Perinephric abscesses are usually due to gram-negative enteric bacilli or a polymicrobial infection. *Escherichia coli* accounts for 51.4% of perinephric abscesses.⁸ This patient show leucocytosis, anemia, and a sign of urinary tract infection.¹ Pus produces approximately 1000 mL that had been culture with result *Escherichia Coli* ESBL which confirms that *Escherichia coli* bacteria are a contributor to infection.¹⁰

Renal and perirenal abscesses were an unclear diagnosis and a major challenge, requiring radiological examination to confirm them.⁹ The radiology finding at ultrasound was hypoechoic lesion with internal moving echo and abdominal CT with contrast showing rim contrast-enhancing lesion. Lobulated, at the right parenchyma extended to adjacent structures, suggest as renal-perirenal abscess.⁶

Conclusion

The renal-perirenal abscess is a severe and potentially fatal urinary tract infection and requires emergency treatment with considerable mortality and is often difficult to diagnose. An abdominal CT scan is the gold standard to see renal-perirenal abscess with imaging of rim enhancing lesion with the necrotic component inside it and can show extended to the adjacent structure. Early diagnosis, appropriate diagnostic modalities, adequate drainage abscess incision, and optimal antibiotic regimen can reduce mortality of renal-perirenal abscess.

Conflict of Interest

The author declares there is no conflict of interest in this paper.

Patient Consent Statement

Written consent was obtained from the patient and the authors did not include patient identity data in this case report

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