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RETROPERITONEAL ABSCESS PROFILES IN A TERTIARY HOSPITAL IN BANDUNG, INDONESIA: LONG-TERM RETROSPECTIVE STUDY

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ABSTRACT

A retroperitoneal abscess is a rare and difficult-to-diagnose condition. The delay in diagnosis is the primary cause of mortality. We did a case series investigation to describe the profiles of retroperitoneal abscesses. We obtained retrospective data from medical records. We reviewed thirty patients admitted to our hospital with retroperitoneal abscesses from January 2013 to December 2019. Thirty patients were reviewed; 56.67% were male, with 50.14 years-old mean age. Approximately 46.67% presented with a chief complaint of back pain, and about 63.33% of cases had a fever. The most prevalent source was genitourinary, which accounted for 60% of the cases. The most common type of abscess was the perirenal abscess. Diabetes mellitus, malignancy, and an immunocompromised condition were all prevalent comorbidities. *Escherichia coli* was the most prevalent pathogen (46.66%), followed by *Klebsiella pneumoniae* (26.67%). Percutaneous drainage was typically used for genitourinary abscesses, whereas surgical drainage was recommended for gastrointestinal abscesses. The mortality rate of those conditions was 13.33%. Retroperitoneal abscesses have a wide range of clinical manifestations and causes. The treatment for retroperitoneal abscesses differed depending on the etiology and severity of the infection.

Keywords: Abscess, Characteristics, Retroperitoneal

INTRODUCTION

A buildup of purulent materials in the retroperitoneal cavity may cause a condition called a retroperitoneal abscess. Intraoperatively, a retroperitoneal abscess is less noticeable compared to the infections that appear on the intraperitoneal. As a result, infection on the retroperitoneum is usually not clear and difficult to be diagnosed. Patients with a retroperitoneal abscess will remain sick for a long time and are susceptible to different consequences, such as sepsis, which can lead to mortality.[1]

To confirm the clinical analysis of a retroperitoneal abscess, the classification for retroperitoneal abscess has been simplified to five components: (1) perinephric, (2) upper retroperitoneum (above the pelvis), (3) pelvis, (4) combination of upper retroperitoneum and pelvis, and (5) localized musculoskeletal (for example, on the iliac, psoas, or the gluteus muscle).[2-6] Source of infection on retroperitoneal abscess can be primary or secondary infection, where the primary infection is usually hematogenous localized on the muscle or vertebrae. Meanwhile, secondary infection is generally caused by an infection of the organs in the retroperitoneal cavity.[5]

The most prevalent cause of a retroperitoneal abscess is urinary tract infection, such as pyelonephritis and digestive tract infection (diverticulitis, appendicitis, and colon tumor perforation). The buildup of purulent materials may occur in various places, such as the perirenal,

pararenal, or the psoas muscle and the pelvic cavity.[1-4] Retroperitoneal abscess is often misdiagnosed or diagnosed in its final stage. This condition causes a high mortality rate. Early diagnosis, as well as proper drainage management, is predicted to be able to reduce morbidity and mortality significantly.[2-4]

Although a retroperitoneal abscess rarely occurs, it causes a high mortality rate. Additionally, not much data is available regarding patients with retroperitoneal abscess characteristics. Therefore, the researcher would like to discover the profiles of patients with a retroperitoneal abscess at Hasan Sadikin General Hospital Bandung from January 2013 to December 2019.

RESEARCH METHOD

This research was an observational descriptive retrospective study. The data was obtained from the Hasan Sadikin General Hospital Bandung medical record system. All patients with a retroperitoneal abscess, which may be a perirenal, pararenal, psoas, or a pelvic abscess, that were admitted to the Surgery Department at Hasan Sadikin General Hospital Bandung from January 2013 to December 2019; the availability of medical record data, such as bacterial culture test results; the availability of complete demographic data in medical records, such as medical record number, patient's name, age, gender, and medical history; were the inclusion criteria of this study. We excluded patients with a retroperitoneal abscess with more than one comorbidity to prevent bias in our study. The ethical clearance for a medical record-only study was not required as our hospital ethical committee regulated as all patients already signed consent during admission.

There was no further procedure or follow-up. The recorded data included age, gender, duration of complaint, duration of hospitalization, chief complaint, the affected side, diagnosis, comorbidities, primary management, as well as the final result of the management. We serve all data in a descriptive table as percentages and mean with standard deviation.

RESULTS

From January 2013 to December 2019, there were 30 patients diagnosed with a retroperitoneal abscess treated in the surgical department of Hasan Sadikin General Hospital Bandung. With a mean age of 50.1 years, 13 patients (43.3 percent) were female, and 17 patients (56.7 percent) were male. The adult age group accounted for 24 patients (80%), while the senior age group accounted for six patients (20%). There were no pediatric patients in this study.

As many as 21 patients (70.00%) had complaints on the right side, while the rest (30.00%) had complaints on the left side. Six patients (20.00%) had stomach pain, and ten patients (33.33%) complained of a mass on the flank without back pain. As many as 14 patients (46.67%) had complained of back pain. In the 30 patients that were included in the study, as many as 19 patients (63.33%) had a fever. The average duration of the patient's complaints was 27 days (7 - 50 days). The duration of hospitalization among the patients was 23 days (7 - 40 days).

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Table 1. Retroperitoneal Abscess Profiles

Characteristics	n	% or Mean ± SD
Gender		
Male	17	43.33
Female	13	56.67
Age Distribution		50.10 ± 9.60 years
15-55	24	80.00
>55	6	20.00
Symptoms		
Abdominal Pain	6	20.00
Flank mass	10	33.33
Back Pain	14	46.67
Fever	19	63.33
Duration of symptoms		27.24 ± 9.82 days
Length of hospital stay		23.12 ± 8.31 days
Abscess Location		
Perirenal	11	36.67
Pararenal	9	30.00
Psoas	6	20.00
Kidney subcapsular	2	6.67
Superior Retroperitoneum	2	6.67
Abscess Etiology		
Colorectal abnormalities	10	33.33
Appendicitis perforation	5	16.67
Colon malignant perforation	3	10.00
Colon diverticula	2	6.67
Urinary tract abnormalities	18	60.00
Nephrolithiasis	11	36.67
Ureterolithiasis	5	16.67
Kidney Tumor	2	6.67
Tuberculosis	2	6.67
Comorbidities		
Type II Diabetes Mellitus	12	40.00
Hypertension	11	36.67
Malignancy	5	16.67
Tuberculosis	2	6.67
Management		
Percutaneous abscess drainage	18	60.00
Explorative Laparotomy	3	10.00
Nephrectomy	2	6.67
Appendectomy perlaparotomy	3	10.00
Diverticulectomy	2	6.67
Hemicolectomy	2	6.67

In this study, it was found that the most common abscess location in the retroperitoneal cavity was the perirenal abscess with 11 patients (36.66%), followed

by the pararenal region of 9 patients (30%), along with the psoas muscle of 6 patients (20.00%), kidney subcapsular of 2 patients (6.67%), and on the superior retroperitoneal part with two patients (6.67%).

For the causative factor in a retroperitoneal abscess in this study, we found that 10 cases (33.3%) were from a colorectal disease, with five patients (16.67%) due to colorectal malignant perforation, three patients (10%) due to appendicitis perforation, and two patients (6.67%) due to colon diverticula. There were 18 patients (60%) who had a causative factor due to genitourinary tract, in which 11 patients (36.67%) had nephrolithiasis, five patients (16.67%) had ureterolithiasis, and two patients (6.67%) had kidney tumor. There were two patients (6.67%) who had an abscess that was caused by tuberculosis.

In this study, 12 patients (40%) had a history of type 2 diabetes mellitus (DM). As many as 11 patients (36.67%) had a history of uncontrolled hypertension, five patients (16.67%) had a history of malignancy, and two patients (6.67%) had a history of tuberculosis.

The management of a retroperitoneal abscess depends on the size, location, and complications of the abscess. In this study, there were 18 patients (60.00%) who underwent abscess drainage procedures percutaneously, with three patients (10%) undergoing explorative laparotomy and two patients undergoing nephrectomy (6.67%) due to kidney parenchyma damage. As many as three patients (10.00%) underwent appendectomy perlaparatomy, two patients (6.67%) underwent diverticulectomy, while the remaining two patients (6.67%) went through a hemicolectomy procedure. All patients were given antibiotic therapy before and after the procedure.

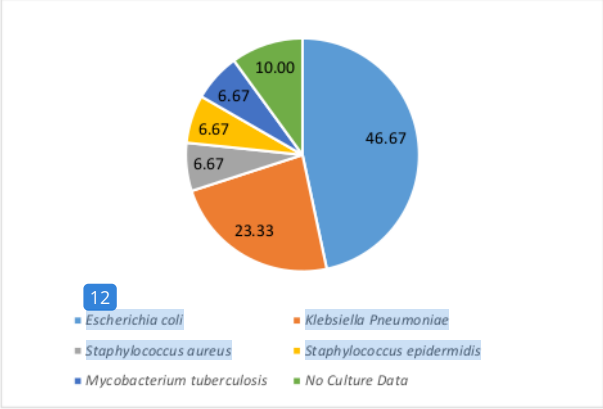

Figure 1. Pus Culture

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Table 2. Complications of Retroperitoneal Abscess

Complications	n	%
Sepsis	14	46.67
HAP	8	26.67
Peritonitis	4	13.33
Death	4	13.33

The pus culture result showed that most of the bacteria were gram-negative and enteric. *Escherichia coli* culture was presented in 14 patients (46.67%), *Klebsiella pneumonia* in 7 patients (23.33%), *Mycobacterium tuberculosis* in 2 patients (6.67%), *Staphylococcus aureus* in 2 patients (6.67%), and *Staphylococcus epidermidis* in 2 patients (6.67%). (Shown in Figure 1).

During the disease, as many as 14 patients (46.67%) had sepsis, eight patients (26.67%) had hospital-acquired pneumonia (HAP), four patients (13.33%) had peritonitis, and four patients (13.33%) died (shown in table 2). After the correct management according to the procedure with adequate antibiotic therapy after susceptibility test, effective abscess drainage, and good protein intake, especially albumin, 26 patients (86.67%) survived, whereas four patients (13.33%) died.

DISCUSSION

The retroperitoneal cavity is the cavity that separates the peritoneum and posterior transverse fascia of the abdominal cavity, spanning from the superior diaphragm and inferior pelvis to the border of the quadratus lumborum muscle in the lateral region. This cavity is divided into three different compartments, namely: perirenal, posterior pararenal, and anterior pararenal. The ascending colon, descending pancreas, and retroperitoneal section of the duodenum are all found in the anterior pararenal cavity. The perirenal cavity is formed by the kidneys, adrenal glands, aorta, and inferior vena cava. Fats, vertebra, and the posterior quadratus lumborum muscles are all found in the posterior pararenal gland. The retroperitoneum is covered in the upper part of the diaphragm but open in the pelvic and hip area, which is why the abscesses are spread bilaterally in an inferior direction.[3-7]

A retroperitoneal abscess is a rare infective state that mostly affects an age group of 30 to 50 years old, with a larger percentage in males.[8] It was consistent with our case that the average patient age was 50.14 years old, ranging from 15 to 55 years old. Males population is dominated by females (56.67%). Clinical complaints about retroperitoneal abscesses, such as fever and pain, were not specific. This is why delayed diagnosis or inaccurate initial diagnosis often occurs. Fever, back pain, flank mass, and abdominal pain were common symptoms in our study. Patients with a urinary tract abscess, on the other hand, are far more likely to experience back pain.

In our case, the most common abscess was perirenal (36.67%), mainly due to urinary tract infection. Diabetes mellitus, malignancy, immunocompromised condition, hypertension, and urologic and digestive tract operation have been known to be predisposing factors. In our case, diabetes mellitus was the main comorbidity contributing to the retroperitoneal abscess. Pathogenic bacteria from the abscess varies due to the infection source. Polyinfections by aerobic and anaerobic bacteria were mainly recorded in abscesses originating from the digestive tract, with *Escherichia coli* being

the most common pathogenic agent in general, followed by *Klebsiella pneumonia* in a study done by Huang et al. In abscesses of vertebral origin, mycobacteria were shown to be the most prevalent pathogen.[1,2,4,6,9,10,11] *Klebsiella pneumonia* prevalence was higher than *Proteus mirabilis* in abscesses originating from the urinary tract in Taiwan compared to other countries.[1] Our case found a similar result compared to the aforementioned finding from Taiwan. Pus culture resulted in most gram-negative bacteria of enteric origin, with the largest distribution being *Escherichia coli* (46.67%), followed by *Klebsiella pneumonia* (26.67%).

According to Huang et al., interventions such as drainage assisted with ultrasound or operation are the main treatment choices accompanied by an antibiotic prescription. This also applies to multiple abscesses where treatment involves using multiple drainage tubes or catheters in septal perforation. Percutaneous drainage with antibiotic prescription upon finishing drainage operation can be performed in perirenal abscess and some psoas abscess[1] Based on a case series by Tunuguntla et al., a quarter of total patients with perirenal abscess were solely treated with antibiotics, and only a half received percutaneous aspiration. Another quarter received drainage operation due to abscess originating from the gestive tract that had been perforated, and only one patient with primary psoas abscess was treated with drainage due to comorbidity and an early percentage of septic shock.[12] Our case found that more than 50% of patients received percutaneous drainage and antibiotics in all cases due to the existing comorbidities and severe infection caused by late diagnosis.

The mortality rate of retroperitoneal abscess depends on the patients' comorbidities. The mortality rate was reported to be 26% in a 1987 case series study and 15% in a 2003 case series study.[1-5] The mortality rate in our case was found to be 13.33% or four patients.

CONCLUSION

Males were the predominant gender in this study, with a peak incidence in the 3rd until 5th decade. The perirenal cavity was the most common abscess location, in which most patients complained of fever as the main symptom. In our study, urinary tract abnormalities were the most common risk factors for retroperitoneal abscess. Type 2 diabetes mellitus is the most common comorbid that contributes to *Escherichia coli* as a predominant microorganism. Almost half of the patients experienced sepsis, and all recovered due to correct treatment with adequate antibiotic therapy after the susceptibility test, adequate abscess drainage, and good protein intake.

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