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Multiple Soft Tissue Abscesses in Peritoneal Dialysis Patient

Periton Diyaliz Hastalarında Yumuşak Doku Abse Formasyonu

ABSTRACT

A 55-year-old had been undergoing continuous ambulatory peritoneal dialysis. He was admitted to our hospital for nausea-vomiting and back pain that was located at the interscapular area. Urine culture was positive for methicillin-resistant Staphylococcus aureus (MRSA) and purulent secretion from the diabetic foot grew MRSA. Also, the interscapular area abscess and peripheral blood cultures were positive MRSA. We report a case of multiple abscesses of methicillin-resistant Staphylococcus aureus (MRSA) at atypical locations in a immunsupressed patient on peritoneal dialysis.

KEY WORDS: Methicillin-resistant Staphylococcus aureus, Soft tissue abscess, Atypical location, Immundeficiency, End-stage renal disease

ÖZ

55 yaşında, kronik böbrek yetmezliği nedeniyle periton diyalizi yapmakta olan hastanın bulantı-kusma ve sırt ağrısı şikayetlerinin başlaması üzerine nefroloji bölümüne yatışı yapıldı.Hastanın gönderilen kan idrar kültüründe metisilin dirençli Stafilococcus aureus (MRSA) üremesi oldu. Beraberinde interskapular alanda da MRSA abse formasyonu izlendi. İmmün yetmezliği bulunan periton diyalizi hastasında atipik yerleşimli mültipl abse formasyonu açısından farkındalık oluşturmak amacıyla olgu sunumu olarak takdim edilmiştir.

ANAHTAR SÖZCÜKLER: Metisilin dirençli Stafilococcus aureus, Yumuşak doku abseleri, Atipik lokalizasyon, İmmün yetmezlik, Son dönem böbrek yetmezliği

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INTRODUCTION

Central venous catheters and peritoneal catheters are usually used for hemodialysis and peritoneal dialysis in patients with end-stage renal disease (ESRD). However, the main risk in the use of catheters is catheter-related infections. It has been shown that 44% of catheter-related bacteremia develop as serious systemic complications, such as osteomyelitis, infective endocarditis and death following bacteremia. Metastatic abscesses are less common than other complications and soft tissue abscess is only seen in less than 1% of serious systemic complications in hemodialysis patients (1). However, to best of our knowledge, multiple abscesses in peritoneal dialysis patients have not been reported in current medical literature. We report a case with multiple abscesses of methicillin-resistant Staphylococcus aureus (MRSA) in atypical locations in peritoneal dialysis patient.

CASE REPORT

A 55-year-old male patient, who had been undergoing continuous ambulatory peritoneal dialysis (CAPD) for approximately 2 months because of end-stage renal disease of diabetes mellitus, presented with nausea, vomiting, and pain located in the interscapular area. On admission, physical examination revealed a body temperature of 36.7°C, blood pressure 130/80 mmHg, and heart rate 76 beats/min. There was abscess formation in the interscapular area. His other systems and

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the tunnel and exit site of the CAPD catheter were found to be normal. Laboratory tests showed a white blood cell count (WBC) of 11,600/mm^3 and hemoglobin of 12.0 g/dL. Electrolytes and liver function tests were within normal limits. Peritoneal white blood cell count (WBC) was 60/mm^3 and neutrophil count 20/mm^3. Both urine culture and purulent secretion from the diabetic foot grew MRSA. The soft tissue abscess at the interscapular area was drained and the culture of drainage material was positive for MRSA. The patient was transferred from CAPD to hemodialysis due to both ultrafiltration failure and inadequate dialysis. Therefore, a double-lumen catheter was inserted for the hemodialysis vascular access route. After one week of catheter insertion, an abscess developed at the exit site of the catheter. The culture of drainage material grew also MRSA. In addition, concurrent peripheral blood cultures were positive for MRSA. Therefore, the patient was consulted by Department of Infectious Diseases and Clinical Microbiology. The bacterium was methicillin-resistant but was susceptible to TMP/SMX rifampin vancomycin, and ciprofloxacin on culture. Rifampin 1x600mg and Cubicin 1x350 mg were started. Additionally, transthoracic and esophagus echocardiography were negative for valvular vegetation. Abdomen computed tomography (CT) and Thorax CT were used to diagnose malignancy, which is an important risk factor for metastatic abscess. It showed a soft tissue density approximately 3.5 cm size suspicious for abscess. This appearance was confirmed on ultrasonography. A suspicious mass was not detected and malignancy was therefore excluded (Figure 1).

This case was also consulted to the Department of Chest Disease as a tuberculosis-malignancy with complications seen as metastatic abscess formation was suspected in this case. However, bronchoscopy was performed and biopsy was negative for malignancy and tuberculosis. Immunosuppressed patients also have a higher risk of abscess formation. Blood samples were taken to investigate immunodeficiency. In this patient, B cells were depleted on flow-cytometry (Figure 2A,B). Common variable immune-deficiency (CVID) was diagnosed due to these results according to Department of Immunolog (Table 1,2). Rifampin 1x600mg and Cubicin 1x350 mg treatment was completed and the multiple abscesses were treated successfully. He was discharged from hospital and followed at the outpatient clinic.

DISCUSSION

We report a peritoneal dialysis patient with multiple abscesses in atypical locations due to methicillin-resistant Staphylococcus aureus (MRSA). The important risk factors for abscess includes history of previous catheter-related bacteremia, recent surgery, diabetes mellitus, iron overload, immunosuppression and hypoalbuminemia in patients with ESRD (2,3).

Bacteremia is less common in peritoneal dialysis-associated peritonitis. In the majority of patients with peritoneal dialysis-associated peritonitis, infection is localized to the peritoneum. Metastatic infections are therefore unexpected in the peritoneal dialysis patient. Peritonitis was not diagnosed but multiple abscesses with MRSA were seen in our patient.

Dialysis catheter-related bacteremia is also a risk factor for metastatic complications, such as endocarditis, osteomyelitis, septic arthritis or epidural abscess. Metastatic infections have been observed in 5 to 10 percent of catheter-dependent hemodialysis patients (2).

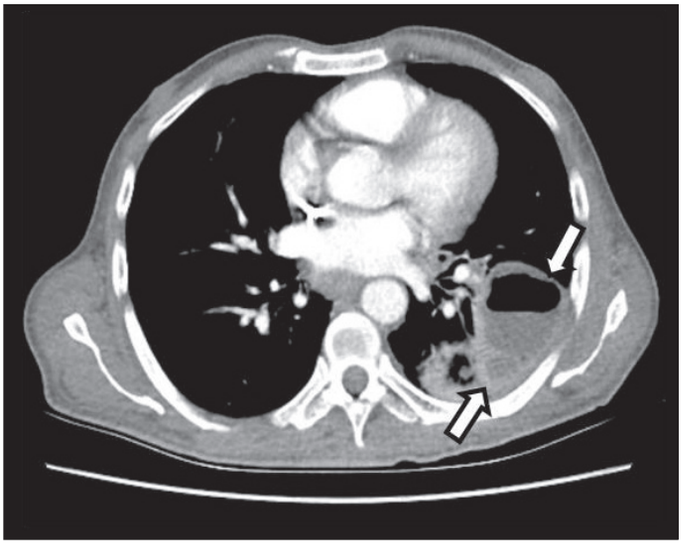

Figure 1: *Axial thoracal computed tomograph image shows abscess cavity containing air-fluid level 65 mm in diameter in the left hemithorax (arrows).*

Table I: Adult population reference range of lymphocytes is demonstrated in Table I.

Reference range (%) Adult	
Lymphocyte 100%	
B	7.7-22%
T	56-82%
NK	6-33%

Table II: B cells were depleted as shown in Table II.

Cell	**All Cell Sites**	**Lymphocyte Site**
Lymphocyte	13%	100%
NK (CD 56)	2.9%	19.2%
T (CD3)	10%	80%
B (CD19)	0.1%	0.8%

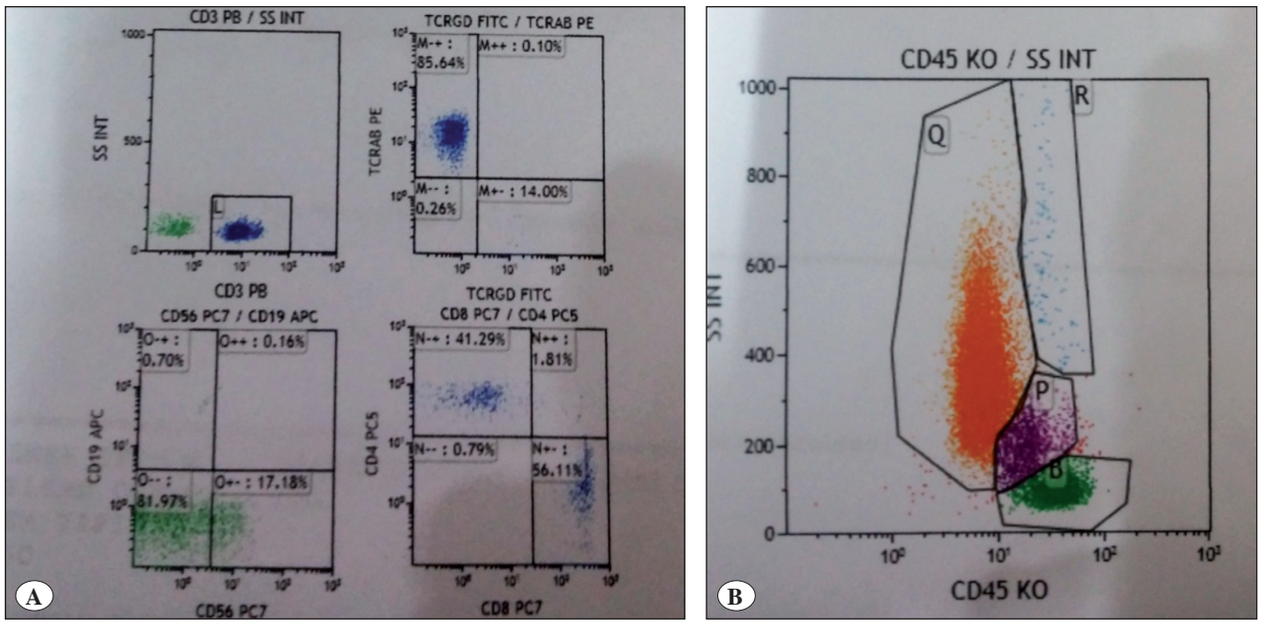

Figure 2: A,B) *B cells were depleted as shown on Flow-cytometry.*

Serious metastatic infections occur more frequently in patients with infections due to Staphylococcus aureus. The reported incidence with *S. Aureus* ranges from 10 to 45 percent (4,5). Soft tissue abscesses are seen rarely when compared with other complications. Metastatic infections are less common in peritoneal dialysis patients as the peritoneal catheter is not associated with systemic circulation (6).

Diabetes mellitus, malignancy, immunodeficiency, and tuberculosis are risk factors for metastatic complications of MRSA with an atypical location. Therefore, we investigated the patient with multiple MRSA abscesses regarding the differential diagnosis and CVID was diagnosed by using flow-cytometry.

CONCLUSIONS

In conclusion, we should be aware that multiple abscesses with an atypical location can be the result of an immunosuppressed state, especially in ESRD patients, for early diagnosis and treatment.

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