

Inflammation and infection

## Bilateral nephrectomy as an extreme measure management for methicillin-resistant staphylococcus aureus (MRSA): A case report

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## ABSTRACT

Methicillin-resistant *Staphylococcus aureus* (MRSA) infections are cases of urgent management that often leads to hospitalizations in intensive care and prolonged management of antibiotic therapy. In this occasion, we present the case of a 38-year-old female patient with sepsis secondary to banal dermal infection due MRSA that complicates with infectious thrombus of the left renal vein associated with multiple foci of bilateral renal abscesses. As an extreme and exceptional measure, emergency bilateral radical nephrectomy was performed to save the patient's life.

## Introduction

Methicillin-resistant *Staphylococcus aureus* (MRSA) infections are exceptional to see in tertiary level hospitals, being generally treated by primary care medical centers, resolving in the first instance by antibiotic therapy. Despite these, many cases are diagnosed late or treated incorrectly with antibiotics that are unable to resolve the infection in the first instance. The most serious infections can culminate in cases of sepsis that lead the patient to face complicated situations with multi-organ failure that can even compromise the patient's life if they are not treated efficiently and under intensive care. In this opportunity, we present the case of a 38-year-old patient with primary focus of MRSA infection at the dermal level, which complicates with sepsis, infectious thrombus in the left renal vein and multiple bilateral renal abscesses, requiring radical nephrectomy as a measure of extreme need bilateral plus thrombectomy.

## Case report

We present a 38-year-old female patient who consults for a 48-h history of fever, fatigue and arthralgia. She has a history of a furuncle-like skin lesion located on the inside of her left arm.

She was admitted to our institution with generalized abdominal pain associated with fever, nausea, vomiting and general discomfort.

For generalized abdominal pain and abdominal distension, nasogastric tube placement is indicated. During this procedure, the patient begins with dyspnea grade IV and desaturation.

CT scan is requested and we observe a right perirenal abscess and a thickening of the left renal vein with no known cause. In the thorax, there are bilateral, hyperdense, scattered images with irregular edges and a cottony appearance. Interpreted as bilateral pulmonary septic impacts and bilateral mild pleural effusion (Fig. 1)

The patient entered an intensive care unit with: bilateral hypoventilation, jaundice, oligoanuria, desaturation and low platelet count. Urine and blood cultures were taken and began empirical treatment with vancomycin plus tazobactam and anticoagulation treatment was initiated with Low Molecular Weight Heparin (1 mg/kg q12 h hours) and warfarin.

For severe sepsis and multi-organ failure, she is placed under mechanical respiratory assistance and dialysis. Clindamycin antibiotic is added.

The patient persists with fever and multi-organ failure. Blood culture positive for resistant methicillin staphylococcus, and gram negative bacillus was verified in alveolar fluid wash.

A final antibiotic scheme of vancomycin, daptomycin, and meropenem was in place.

The patient never improved and begins after 12 days with bacteremia and persistent fever that does not remit with antibiotics. She was

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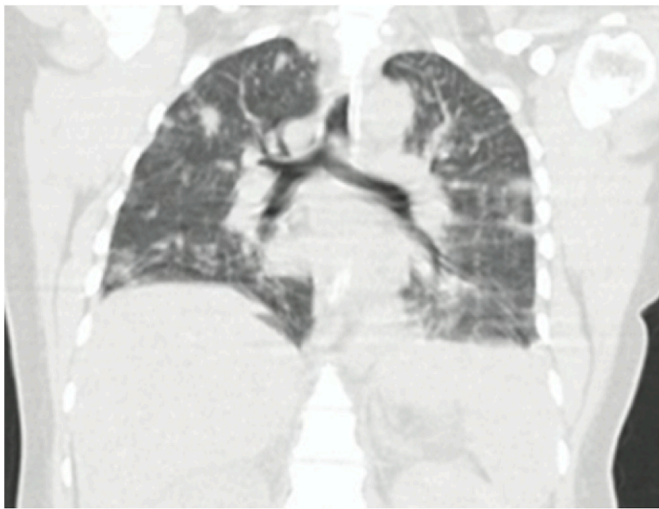


Fig. 1. CT. (Bilateral pulmonary septic impacts, mild pleural effusion).

placed on mechanical respiratory assistance with inotropic drugs and dialysis.

In this context, a new thorax abdomen and pelvis tomography is performed.

We observe phleboectasia and extension of the thrombus that involves the left renal vein and extends to the inferior vena cava (Fig. 2).

The patient's condition was very serious. Surgical exploration was decided as a last resort. The family signed informed consent.

The approach was a median infraumbilical incision and bilateral nephrectomy was performed (Fig. 3).

#### Evolution after surgery

The patient after surgery presented a torpid evolution with some feverish records. Colistin starts and the antibiotic scheme was (vanco-dapto-mero-colistin).

A new broncho alveolar lavage is carried out due to fever and the



Fig. 2. CT. (In a red circle thrombosed left renal vein).

culture shows: *Serratia* + *Kleb* KPC (*Klebsiella* Producer of Carbapenemase).

Culture of intra-surgical samples show: Yeast.

Fluconazole started and the antibiotic scheme used was (vanco-dapto-mero-colistin-fluco). Eleven days after surgery the patient begins to improve and remains (vanco-colistin-fluco).

General surgery performed left thoracentesis, looking for an infectious focus.

The antibiotic scheme was (Vanco + Fluco + Colistin + Mero + Metronidazole). Three days later the patient persists in regular evolution.

She presented episodes of intermittently altered hemodynamic status.

It remains only with vancomycin. All other antibiotic are suspended. It is re-cultivated with blood cultures x2.

Adrenal profile is requested and suprarenal insufficiency is diagnosed.

Hydrocortisone started and improved its general condition. After sixty-three days in the intensive care unit, she was transferred to the intermediate care unit.

Ten days later she went to the urology division, continued with three-weekly dialysis. She was discharged from hospital with good general condition.

Received mental health follow-up awaiting a new evaluation for kidney transplantation.

Due to the family history of furunculoid skin lesions, it is suggested and indicated to the family to carry out decolonization treatment, on a delayed basis. Body cleaning per seven days with chlorhexidine and daily application of mupirocin in the nostrils and do not share personal items.

#### Discussion

Renal vein thrombosis (RVT) is most frequently seen in the pediatric population but has been reported in adults<sup>1</sup>

Acute RVT, presents as fever, flank pain, hematuria and proteinuria.<sup>2</sup>

RVT are almost all due to systemic hypercoagulable states. The most common cause of RVT is nephrotic syndrome notably membranous nephropathy secondary to urinary losses of anticoagulant proteins.<sup>3,4</sup>

Diagnosis of RVT can be made by ultrasonography, CT scan or magnetic resonance imaging (MRI). Yildiz et al.<sup>5</sup> shows only 6 cases are described in the literature and report a 68-year-old woman with right renal pyelonephritis with renal and perirenal abscess plus thrombosis of the right renal vein.

We know that thrombectomy and surgery as a treatment option is rarely required today because supportive therapy, systemic anticoagulation, percutaneous manual aspiration embolectomy (PMAE), and thrombolytic therapy are very effective.

PMAE should be reserved for patient with contraindication to fibrinolytic therapy.

Unfortunately for our patient, the urology division is called after 12 days of antibiotic treatment, when the patient was in septic shock. We decided to perform bilateral salvage nephrectomy as a last resort.

#### Conclusion

Renal Vein Thrombosis (RVT) is a rare condition. It has a bimodal way of presentation, affecting mainly adults and neonates. According to Virchow triad, endothelial injury, hypercoagulability and stasis are the principal pathological factors responsible.

It mimics as acute pyelonephritis (APN), renal colic, ureteric colic, cholecystitis and appendicitis. RVT cases may go unrecognised due to lack of typical clinical manifestations.

Radiological interventions including thrombolysis with or without thrombectomy and ablative surgical measures like nephrectomy are only required in highly selected cases. In our case, we performed

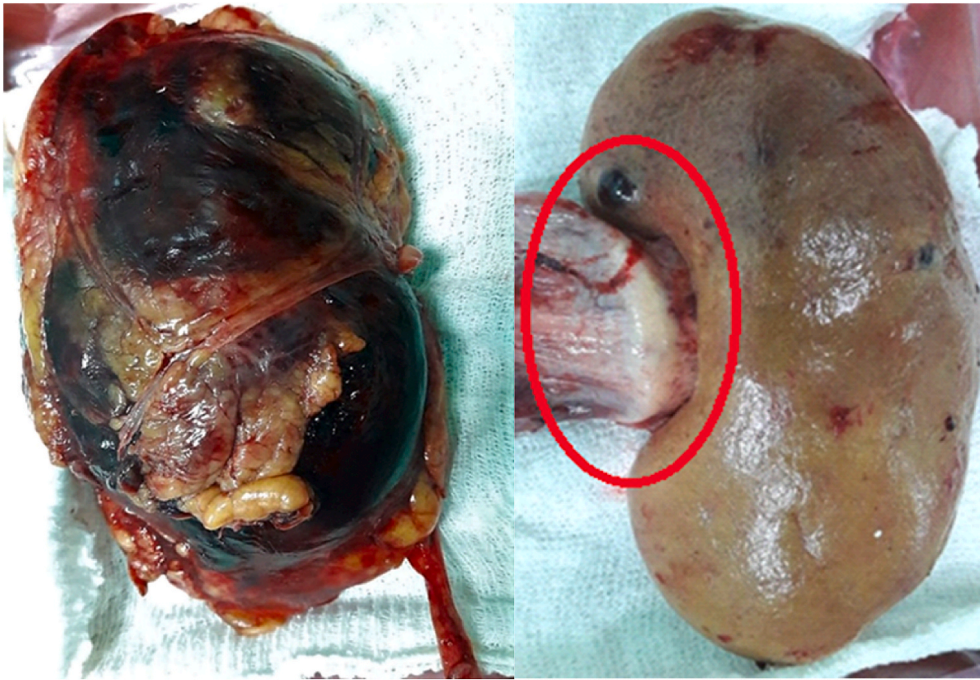


Fig. 3. Bilateral Nephrectomy. Right Kidney and Left Kidney (In a red circle thrombosed left renal vein).

bilateral salvage bilateral nephrectomy as the last step.

#### Declaration of competing interest

No conflicts of interest.

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