CASE REPORT

Clinical Features and Management of Methicillin-Resistant Staphylococcus Aureus Cystitis

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INTRODUCTION

Since its initial detection in Europe in 1960, methicillin-resistant staphylococcus aureus (MRSA) has become a leading cause of hospital-acquired infections worldwide. Methicillin-resistance acquisition and spread are major health care concern.

Although originally confined to the hospital environment, MRSA infection gradually emerged in the community setting as well.[1,2] Clinical and molecular epidemiology indicate that we are actually facing two separate evolutions of this organism. Hospital isolates are multi-resistant and clonal, and are usually associated with some risk factors. On the other hand, community-acquired MRSA organisms are pauci-resistant and more polyclonal, and can produce skin disease and severe pneumonia in otherwise healthy people.

The two types of organisms are not alike and are found to have different genomic constitutions.[3,4] Methicillin-resistant staphylococcus aureus in patients at risk are likely to be of the multi-resistant hospital type, whereas those in patients without risks are likely to be more susceptible, but more invasive.[5]

CASE REPORT

Case 1

The first case was a 78-year-old woman who had anterior vaginal repair for a cystocoele. She was referred to our hospital for further investigations following recurrent urinary tract infections. She complained of suprapubic discomfort, increased frequency of micturition, and dysuria.

Flexible cystoscopy was abandoned due to poor visibility as the urine was cloudy, though the blad-

der looked generally inflamed. She was treated with a course of ciprofloxacin. Rigid cystoscopy performed 3 weeks later showed a small capacity bladder and generally inflamed mucosa with an ulcerated necrotic area seen at the dome. Biopsies from that area showed severely inflamed mucosa without any viable urothelium. Mixed inflammatory cell infiltrate and mast cells were also seen to extend to the detrusor muscle.

A diagnosis of interstitial cystitis was suspected. Urine culture grew MRSA. Microbiologist's advice was to start intravenous vancomycin along with chlorhexidine bladder washouts. This cleared up her MRSA from the bladder, but she was left with a small bladder of no functional capacity as was seen on repeat cystoscopy. Repeat biopsies showed the epithelium to be of stratified squamous type with acute and chronic inflammatory cell infiltrate.

Due to the patient's age and frailty, urinary diversion with creation of vesicovaginal fistula was seen to be the best modality. She has now recovered from surgery and is currently asymptomatic at 2-year follow-up.

Case 2

The second case was a 70-year-old man who underwent photoselective vaporization of his prostate for symptomatic benign prostatic hyperplasia. He was seen previously to have a large trabeculated bladder and a large occlusive prostate on flexible cystoscopy. The patient continued to complain of increased frequency of micturition and dysuria when his catheter was removed 2 weeks post surgery as he had failed his trial without catheter the day after the surgery.

Despite treatment with antibiotics and anticholinergics, his symptoms deteriorated and flexible cystoscopy showed a good prostatic cavity, but very poor views in the bladder due to debris. Another course of ciprofloxacin was given. Repeat cystoscopy under general anesthesia 3 weeks later showed a very small bladder capacity with generally inflamed looking mucosa and an ulcerated necrotic area seen at the bladder dome. Urine culture grew MRSA and linezolid was given for two weeks, as per microbiologist's advice.

A repeat cystoscopy 5 months later revealed a tight scarred urethra, which had to be dilated before introduction of the scope. The scarring was seen to extend to and involve the external sphincter. A permanent suprapubic catheter was inserted at later date to treat his incontinence.

DISCUSSION

Staphylococcus aureus is responsible for a variety of infections in which they are directly responsible for tissue inflammation and destruction. These range from relatively benign superficial skin and soft tissue infections to severe and life-threatening conditions that can affect almost every organ system in the body, including the urinary tract.[6] This bacterium can produce more than 20 different toxins, including cytotoxins that can lyse eukaryotic cells.[7]

The combined cystoscopic and microscopic findings from the above-mentioned cases clearly show that MRSA can cause severe pancystitis with tissue necrosis and destruction, which rapidly spreads and involve the whole of the urethra and sphincter. Both patients ended up with small contracted bladders and incontinence that necessitated urinary diversion. It is not certain whether treating cystitis earlier with the proper antibiotics against MRSA could have prevented this result as it is a rapidly spreading infection. It is very likely that both patients acquired the infection from hospital as both patients were previously hospitalized for surgical procedures and were both catheterized after their surgery, but MRSA in the urine was not detected until late.

Certain populations of patients, including renal dialysis patients followed by patients with human immunodeficiency virus infection, alcohol abusers, and diabetic patients, have a significantly greater risk of invasive staphylococcal infection than the normal population.[8] Less frequent predisposing factors encompass chemotactic defects and defects in phagocytosis.

However, one of the most important factors that independently adds to these predisposing conditions is chronic staphylococcus aureus carriage.[9,10] Recent hospitalization or surgery, living in a nursing home, and having an indwelling catheter or device are well known predisposing factors for acquiring urinary tract infections. Therefore, prevention of this infection in hospitalized patients by changing and improving current practice should remain the first priority.

Methicillin-resistant staphylococcus aureus cystitis is rare, but should be considered in hospitalized patients with recurrent urinary tract symptoms. Early intervention with intrave-

nous vancomycin or linezolid should be initiated to treat the infection and prevent further complications.

CONFLICT OF INTEREST

None declared.

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