

A Classic Case of Panton-Valentine Leucocidin Methicillin-Resistant *Staphylococcus Aureus* (PVL-MRSA)

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Abstract

Strains of *Staphylococcus aureus* capable of producing Panton-Valentine leucocidin (PVL-SA) are increasingly implicated in community acquired infection. The key principles of preventing and controlling the spread of infection in the community setting centre on early suspicion, rapid diagnosis and appropriate treatment.

Introduction

We report the case of a 55 year old man with PVL-MRSA.

Case Report

A 55 year old gentleman with a background of rheumatoid arthritis on methotrexate 10mg once weekly orally presented with a discharging furuncle of the left neck. He was reviewed by the ENT team and administered 24 hours of IV penicillin. He was discharged day 1 on penicillin. There is no record of any microbiological investigation.

He subsequently presented to his general practitioner with three abscess of the right axilla. A swab grew PVL-methicillin-resistant *S. aureus* (PVL-MRSA), resistant to flucloxacillin/methicillin, sensitive to tetracycline. He was commenced on doxycycline orally, under the guidance of microbiology. Of note he had a paronychia managed conservatively previously. He subsequently underwent decolonization with topical chlorhexidine 4% and mupirocin 2%. His otherwise well 17 year old son presented concurrently with a small spontaneously draining pustule of his scrotum, which was managed conservatively.

Close contacts of our primary case, including his son and wife, underwent screening of the anterior nares and groin. They were found to be positive for PVL-MRSA and underwent decolonization and re screening. Rescreening was negative for PVL-MRSA for the household. His wife was a health care worker and occupational-health were notified.

Discussion

Panton-Valentine leucocidin (PVL) is a toxin composed of two components, LukS-PV and LukF-PV. These two

components are secreted before they assemble into a pore-forming heptamer on neutrophil membranes, leading to lysis.¹ It is a virulence factor in some strains of *Staphylococcus aureus*. In the UK the genes encoding PVL are carried by < 2% of clinical isolates of *S. aureus*, whether methicillin sensitive (MSSA) or methicillin-resistant (MRSA).^{3,4}

The escalation in morbidity and mortality associated with PVL-MRSA has caused public health concern worldwide. To date most PVL-SA strains in the UK have been MSSA. A major problem has emerged with community and hospital acquired PVL-MRSA in North America.^{6,7}

Like other *S. aureus* strains, PVL-SA predominantly cause skin and soft tissue infections (SSTI): furunculosis, carbuncles, cellulitis, and finger infection.^{3,4,7,8,9} Invasive infections include: necrotising pneumonia and osteomyelitis.^{3,4} This may affect otherwise healthy young people in the community.^{3,4}

Moderate SSTIs including cellulitis and larger abscesses should be treated with oral antibiotics with or without drainage. In the case of the patient that is immunocompromised or deteriorating clinically antibiotics may also be advised.^{8,9}

Sensitivity testing should be performed on all PVL-SA. Most PVL-SA in the UK are susceptible to flucloxacillin, erythromycin and clindamycin. When PVL-MRSA is suspected, a 5-7 day course of either clindamycin alone or rifampicin combined with either doxycycline or trimethoprim can be used, pending susceptibility results.⁸

In the United States, where PVL-MRSA is commonplace, decolonisation is not considered.¹⁰ In England an aggressive approach is adopted as most cases are rare and/or severe.⁸ Topical decolonization without prior screening should be offered to primary cases. Topical decolonization should be started after the acute infection and continued for five days.⁸ Where close contacts are infected or potentially colonised, they should undergo concurrent decolonization, without screening.⁸ If screening is undertaken, it must include a swab of the nares, throat and skin. If any contacts is positive on screening, the whole household is decolonized concurrently.⁸

Repeated screening is recommended for vulnerable cases, cases at risk to others (eg a healthcare worker) or continuing infection.⁸ An HCW with a proven PVL-SA infection should not work until the acute infection has resolved and 48 hours of a five day decolonization regimen has been completed. Post-decolonization screening is advised. Occupational health departments should be informed. Unlike hospital acquired MRSA, PVL-SA is likely to have been acquired in the community.

This case illustrates the need to be vigilant for the possibility of this strain of *Staphylococcus aureus* in cases of recurrent skin infection and the need for appropriate microbiological investigation and screening.

Declaration of Conflict of Interest:

The authors have no conflicts of interest to declare.

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