Use of Daptomycin in the Treatment of Spinal Infections

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Citation

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Abstract

Daptomycin is a lipopeptide antibiotic that is active against most Gram-positive bacteriaincluding methicillin-resistant Staphylococcus aureus (MRSA) (1). This is anobservational study using daptomycin in the treatment of spinal/laminectomy infectionswith and without instrument removal. The objective of this study was to evaluate the use of daptomycin against gram-positive bacteria, including resistant isolates in spinalinfections.

INTRODUCTION

Daptomycin is a lipopeptide antibiotic that is active against most Gram-positive bacteria including methicillin-resistant Staphylococcus aureus (MRSA) (1). This is an observational study using daptomycin in the treatment of spinal/laminectomy infections with and without instrument removal. The objective of this study was to evaluate the use of daptomycin against gram-positive bacteria, including resistant isolates in spinal infections.

METHODS

A prospective observational study was conducted for all patients (N=16) treated by the authors with daptomycin as either primary choice of treatment, or after failed previous antimicrobial agents for spinal infections. Data collected included demographic patient information, duration of therapy, surgical procedures, pathogen, side effects if any, and clinical outcomes.

RESULTS

Pathogens included methicillin-resistant Staphylococcus aureus (N=7); methicillin-sensitive Staphylococcus aureus (N=5); vancomycin-resistant Enterococcus/methicillin-sensitive Staphylococcus aureus (N=1); alpha Streptococcus (N=1), and negative culture (N=2). After a follow-up of 6-12 months, 14 patients (87%) had no clinical, laboratory, or radiographic signs of recurrence. Of these, 4 did not require surgical intervention. Two patients (12%) failed therapy with daptomycin. These two patients grew MRSA. Ten (62%) patients had received previous antimicrobial therapy and two of these failed therapy when treated with daptomycin. Previously used antimicrobials included vancomycin (N=5), cephalosporin (N=4), ampicillin (N=1).

Thirteen patients had lumbar infections with a 81% cure rate; 2 patients had cervical infections with a 100% cure rate; one pt died of other co- morbidities, and the other patient with thoracic infection failed daptomycin therapy. Relatively immunosuppressed patients (N=8) had a failure rate of 50%. No side effects were noted to daptomycin therapy regimen during this study. Twelve patients received daptomycin at dosages of 6 mg/kg/day; mean therapy duration was 41 days (range 14-48). Daptomycin therapy was successful in 87% (14/16) of patients, as determined by clinical, laboratory, or radiographic signs of recurrence.

Treatment of spinal/orthopedic infections including prosthethic joint infections are limited with the number of antibiotics available (2) Vancomycin has been the mainstay for several years but there has never been any good data available to assess the outcome of these infections treated with vancomycin. (3,4) In addition, vancomycin is slowly bactericidal and its penetration into the bone is debatable. This study looked at patients with osteomyelitis of the vertebrae as well as epidural infections with MRSA/MRSE with and without hardware.

CONCLUSIONS

Preliminary evidence suggests that daptomycin appears to be a good alternative to vancomycin in the treatment of infected spinal procedures although removal of the infected hardware in addition to antimicrobial therapy will remain the cornerstone for permanent cure especially for MRSA/MRSE and VRE. Further large scale studies assessing the efficacy of this drug with and without retained hardware would be

useful.

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