An Observational Study using Daptomycin to treat Osteomyelitis. A Pilot Study.

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Citation

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Abstract

INTRODUCTION

Daptomycin is a novel new antibiotic that has been approved for the use of skin and soft

tissue infections, right sided endocarditis, and gram positive bacteremia (1,2,3). There

has been some data published on the use of this drug in prosthetic joint infections and on

bone infections like osteomyelitis (4,5,6), but there has been no prospective published

data on the treatment of osteomyelitis as yet.

MATERIAL AND METHODS

We summarize our observational data over a 2 year period wherein daptomycin was used

as a primary drug in the treatment of osteomyelitis in a variety of sites. There were 36

patients in the study. The sites of osteomyelitis included knee (3), femur (2), foot (13),

sternum (9), vertebral (3), skull (1), ankle/joint (1), elbow (1). Cure was defined as no

evidence of active infection after treatment as evidenced by imaging studies and lab

studies and follow up in 6 months and 12 months.

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The diagnosis was based on the clinical presentation and or bone/deep cultures. The

pathogens isolated included 28 patients with gram positive infections, MRSA (21),

MSSA (5), polymicrobial infections (MRSA and gram negative organisms) (2), and

enterococcus (1)) and culture negative (8).Twenty two of the 32 patients (61%) had been

treated with previous antibiotics for standard periods of time and had failed therapy.

Previous drugs included vancomycin (9), quinolones (6), trimethoprim-

sulphamethaxazole (2), nafcillan (1), cephalexin (1), aminogylcosides (1), carbapenem

(1), and linezolid (1).

No obvious risk factors were noted in the patients who failed antibiotic therapy.

MIC's were < 0.5ug/ml in 12 patients in whom MIC's were obtained. Eighteen patients

had no surgical debridement with the remaining undergoing debridement (92%) had

removal of hardware (11%) if needed. Mean duration of treatment with daptomycin was

37 days, with a range between 17 and 42 days. Dosage of

daptomycin used was 4- 6

mg/kg/24h. All these patients were followed for an average of 6 months to 12 months.

Two patients (6%) expired of non-drug related causes; four patients (11%) failed

daptomycin therapy and had to be retreated with daptomycin- with clinical success.

MRSA patients comprised 21 (58%) of the study; which despite being treated with

daptomycin only 5% failed. Two patients were lost to follow up, and 28 patients (78%)

were presumed cured/improved. Among the 22 patients (61%) who received antibiotics

prior to the study, nine patients (25%) were treated with vancomycin, of which two of

these patients failed daptomycin the first time. No patients were terminated in this study

due to side effects of the drug. The overall failure rate of this study was 11% (4 patients).

DISCUSSION

The cure/improvement rate (78%) seen in this study is encouraging and seems to be in

keeping with other studies published (3) but will need to be substantiated in larger

multicentered prospective studies. This study also adds to the data available regarding the

safety of the drug. It appears that the 4 to 6 weeks of therapy at dosages ranging between

4- 6 mg/kg are safe and well tolerated. Repeat use of the drug was also well tolerated. In

addition, use of a higher dose (>6 mg/kg) may be necessary to see higher rates of clinical

success as suggested by other studies (3,5,6). Further study is needed to study patients

who fail therapy with daptomycin in osteomyelitis. Failure in this group of patients may

be due to a variety of reasons such as the site of infection, organism causing the

infections (MRSA), presence of hardware, underlying host factors, and other factors that

have not been well delineated (7-10). This data is additive to the data published

previously and suggest that daptomycin is a useful drug to treat osteomyelitis but

additional study is warranted to define whether surgical intervention in addition to

daptomycin plays a role in the outcome.

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