

Daptomycin Efficacy against Clinical Micro Organisms of MRSE: A Tertiary Care Hospital Study

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ABSTRSCT

Aim: To see the daptomycin efficacy against clinical micro organisms of methicillin resistant staphylococcus epidermidis (MRSE) from a tertiary care hospital.

Study design: Descriptive study.

Place of study: Microbiology section, Armed Forces Institute of Pathology, Rawalpindi.

Study duration: November 2013 to October 2014.

Methodology: A total of 42 cases were included. MRSE micro organisms from different clinical samples were included in the study. API-staph was used for confirmation of MRSE. Methicillin resistant staphylococcus epidermidis (MRSE) susceptibility was performed against daptomycin by E-strip method. The results were finalized as recommendation of clinical Laboratory Standard Institute (CLSI) guidelines.

Results: Maximum number of MRSE was isolated from Catheter tips and pus swabs.

Key words: Daptomycin, MRSE, Staph epidermidis

INTRODUCTION

In the past, staphylococcus epidermidis was seen an innocent organism and very few of these organisms were seen as methicillin resistant. However, recently they seemed resistant against many drugs used in this war. Staphylococcus epidermidis, has been seen to be 100% methicillin resistance in many zones of the world¹. In another study, the resistant strains amongst Staphylococcus epidermidis (MRSE) were found out to be 70% i.e. 48 cases out of 69 strains².

In a study performed in Spain, daptomycin was used successfully for the treatment of infected post pneumonectomy cavity which is caused by staphylococcus epidermidis in subjects which are very difficult to treat this type of infection otherwise³. Daptomycin also showed better response when using with bone cement for preventing infections postoperatively combined with fosfomicin⁴.

METHODOLOGY

A total of 42 cases were included in the study. This research was approved by the departmental "Ethical Committee. Different types of samples of catheters tip, blood, urine and pus from different wards were cultured on blood agar and Mac Conkey's agar. Staphylococcal colonies were identified and growth was confirmed. By disk diffusion method, antimicrobial sensitivity was done as recommended by CLSI 2017.

After 24 hours, sizes of different zones were measured. Gram positive organisms were isolated under the microscope which were catalase positive and DNase negative.

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Fig 1: Colonies of *Staphylococcus* species



RESULTS

A total of 42 cases of MRSE were taken. The detail of results is given in tables 1-3

Table 1: Efficacy of Daptomycin against Multi drug Resistant strain (MDR) and Non-MDR

	Sensitive	Resistant
Multi drug resistant strain (MDR)	0	0
Non-MDR	42(100%)	0
Total	42(100%)	0

Table 2: Efficacy of Daptomycin on different types of specimen

	Sensitive	Resistant	Total
Catheter tip	28 (66.6%)	Zero	28(66.6%)
Pus	7(16.7%)	Zero	7(16.7%)
Blood	7 (16.7%)	Zero	7 (16.7%)
Total	42 (100%)	Zero	42 (100%)

Table 3: Efficacy of Daptomycin on previous treatment with Vancomycin

	Sensitive	Resistant	Total
Previously treated with vancomycin	5(11.9%)	0	5(11.9%)
Without treatment	37(88.1%)	0	37 (88.1%)
Total	42 (100%)	0	42 (100%)

DISCUSSION

In one study, in the treatment of infected post pneumonectomy cavity, daptomycin was used successfully which is caused by staphylococcus epidermidis³. A research performed in 2015, daptomycin is seen to be more effective treatment against the most resistant strains of MRSE⁵. In our study, there is 100% sensitivity of daptomycin in growth of 42 cases of methicillin resistant staph epidermidis.

In another study, daptomycin was used in endocarditis patient against MRSE which was resistant to Vancomycin even by using three courses of this medicine⁶. In our study, It is shown that previous treatment with Vancomycin did not have any effect on the efficacy of daptomycin against MRSE isolates.

Another study showed that in a disease of endocardial vegetation, MDR cases of MRSE are being treated safely with daptomycin⁷. In our study, none of the MRSE isolates were detected to be MDR.

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