

TOPICAL OR SYSTEMIC TREATMENT OF METHICILLIN-RESISTANT STAPHYLOCOCCUS AUREUS (MRSA) USA 300 IN A MURINE SKIN INFECTION MODEL



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BACKGROUND

Community-associated MRSA (CA-MRSA) has emerged as a pathogen in the community with skin and soft tissue infections (SSTIs) as the most common clinical manifestations. Murine infection models are useful tools for evaluation of antibiotic treatments. This study compares systemic and topical antibiotic treatment with relevant antibiotics in a murine superficial skin infection model.

MATERIALS AND METHODS

Balb/C mice were anesthetized, shaved and minor skin lesions were induced and inoculated with

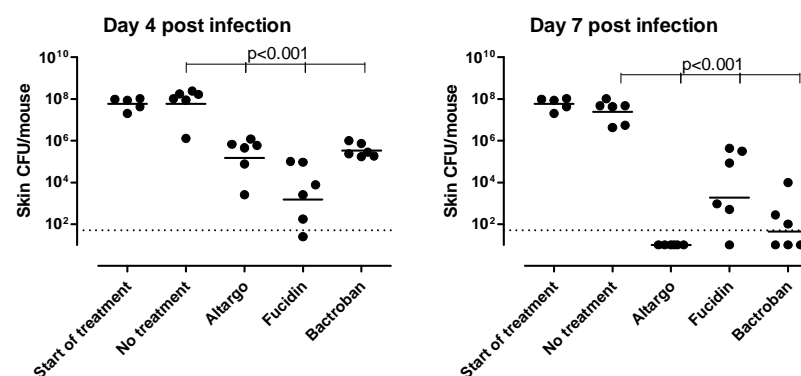


8 log₁₀ CFU (CA-MRSA clinical isolate, USA300 from SSTI abscess). Starting day 1 post infection, mice were treated twice daily for 3 or 6 days.

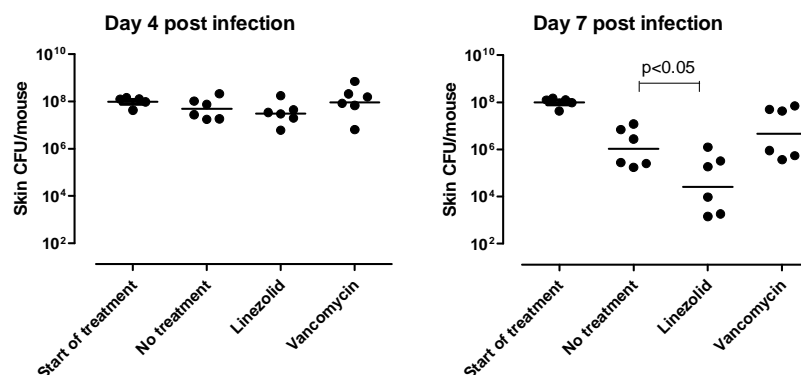
Mice were treated either subcutaneously either with Zyvoxid® 20 mg/kg (Linezolid Pfizer) or Vancomycin 20 mg/kg (Alpharma) or topically with either Altargo® (retapamulin 1%, GSK), Fucidin® (fucidic acid 2% LEO Pharma) or Bactroban® (mupirocin 2%, GSK).

Skin samples were collected the day after completed treatment for CFU determination (6 mice per group).

TOPICAL TREATMENT



SYSTEMIC TREATMENT



RESULTS

Significant reduction ($p < 0.001$) of skin CFU levels were observed after topical treatment with Altargo®, Fucidin® or Bactroban® after 3 and 6 days of topical treatment. The most potent reduction was observed after 6 days of Altargo treatment where no bacteria were detectable compared to 7.4 log₁₀ CFU in non-treated and 3.8 and 1.9 log₁₀ CFU in Fucidin® and Bactroban® treated mice, respectively. Subcutaneous treatment with Linezolid resulted in significant reduction ($p < 0.05$) of skin CFU levels only after 6 days of treatment but not after only 3 days of treatment. Subcutaneous treatment with vancomycin did not result in any reduction of skin CFU levels.

CONCLUSION

Topical treatment with Altargo® or Bactroban® for 6 days had a superior effect on reducing the bacterial loads in a mouse model of superficial skin infection with CA-MRSA compared to Fucidin® and compared to subcutaneous treatment with Zyvoxid® or Vancomycin.