Poster No. 2185

Impact of Antibiotic Treatment on the Burden of Nasal *Staphylococcus aureus* (SA) Among Hospitalized Veterans

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Abstract

Background: Systemic antibiotic treatment plays a major role in determining the burden of carriage of many healthcare-associated pathogens. However, relatively little information is available on the impact of systemic antibiotic treatment on the burden of nasal carriage of methicillin-susceptible and -resistant *Staphylococcus aureus* (MSSA and MRSA). Methods: From October to December 2016, 2552 nasal swabs from 1482 patients at a Veterans Affairs Medical Center were cultured for MSSA and MRSA upon admission, ward transfer, and discharge. We measured the concentrations of MSSA and MRSA using quantitative cultures and assessed the impact of antibiotics with or without anti-MSSA or anti-MRSA activity on the burden of carriage in comparison to colonized patients not receiving antibiotic treatment. Results: Of the 1482 patients, 237 (15.9%) had nasal carriage of MSSA and 92 (6.2%) had nasal carriage of MRSA at the time of admission; paired samples were available in 128 patients carrying MSSA and 57 patients carrying MRSA. As shown in the figure, treatment with antibiotics with anti-MRSA (e.g., vancomycin, trimethoprim-sulfamethoxazole, doxycycline) or anti-MSSA activity resulted in a reduction in the burden of nasal carriage (P<0.01), whereas treatment with antibiotics lacking anti-MRSA activity did not reduce the burden of MRSA (P>0.05). Fluoroquinolone treatment resulted in a reduction in the burden of nasal carriage of fluoroquinolone-susceptible MSSA and MRSA strains. Conclusion: Treatment of hospitalized patients with antibiotics possessing activity against MSSA or MRSA resulted in a decrease in the burden of nasal carriage. Further studies are needed to determine if such treatment reduces the frequency of dissemination of staphylococci to skin and the environment. Figure. Effect of antibiotic treatment on the nasal burden of MSSA and MRSA in hospitalized patients

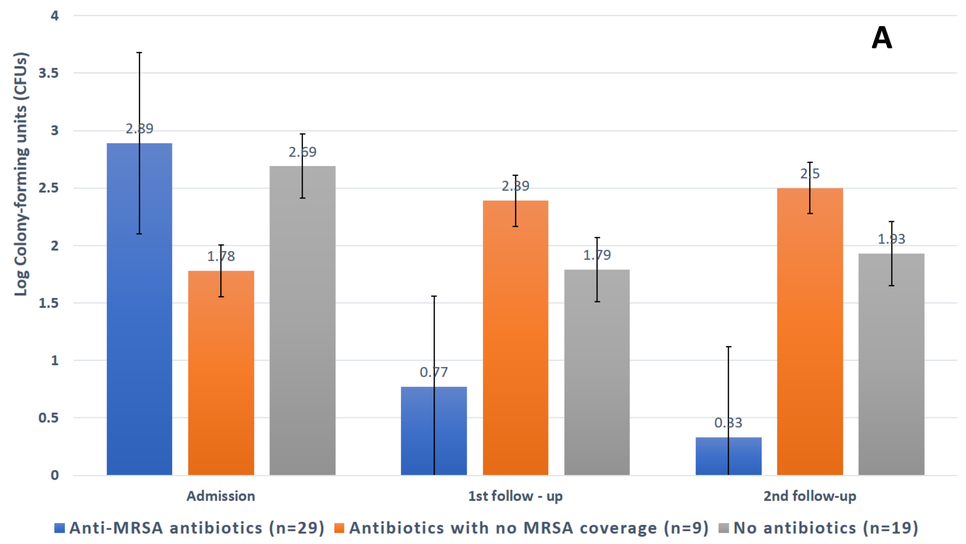
Introduction

- Systemic antibiotic treatment plays a major role in determining the burden of carriage of many healthcare-associated pathogens
- However, relatively little information is available on the impact of systemic antibiotics on the burden of nasal methicillin-susceptible and -resistant *Staphylococcus aureus* (MSSA and MRSA)

Methods

- From October to December 2016, 2552 nasal swabs from 1482 patients at a VA Hospital were cultured for MSSA and MRSA upon admission, ward transfer, and discharge
- We measured the concentrations of MSSA and MRSA using quantitative cultures and assessed the impact of antibiotics with or without anti-MSSA or anti-MRSA activity on the burden of carriage in comparison to colonized patients not receiving antibiotic treatment
- We did retrospective chart review of all *S. aureus* carriers to assess for invasive infections at baseline and at 7-month follow-up

Figure 1. Effect of antibiotic treatment on the nasal burden of MRSA (panel A) and MSSA (panel B) in hospitalized patients



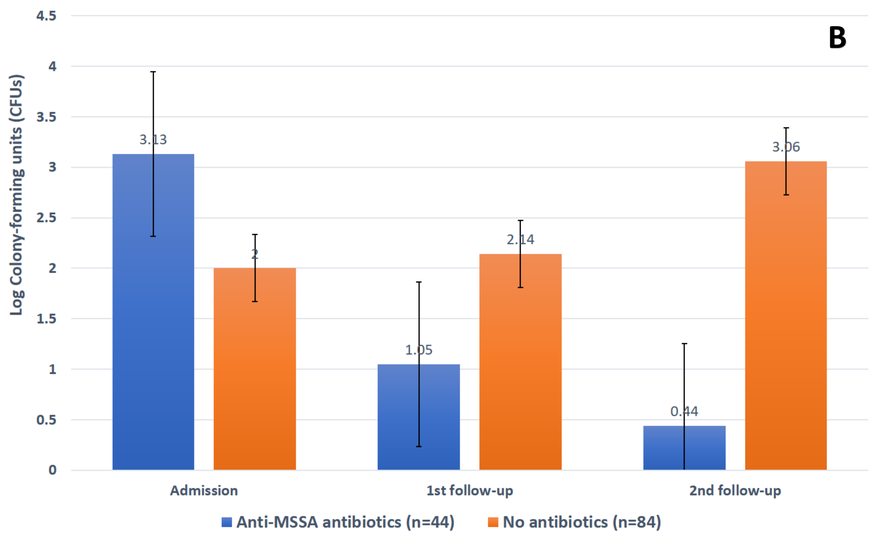
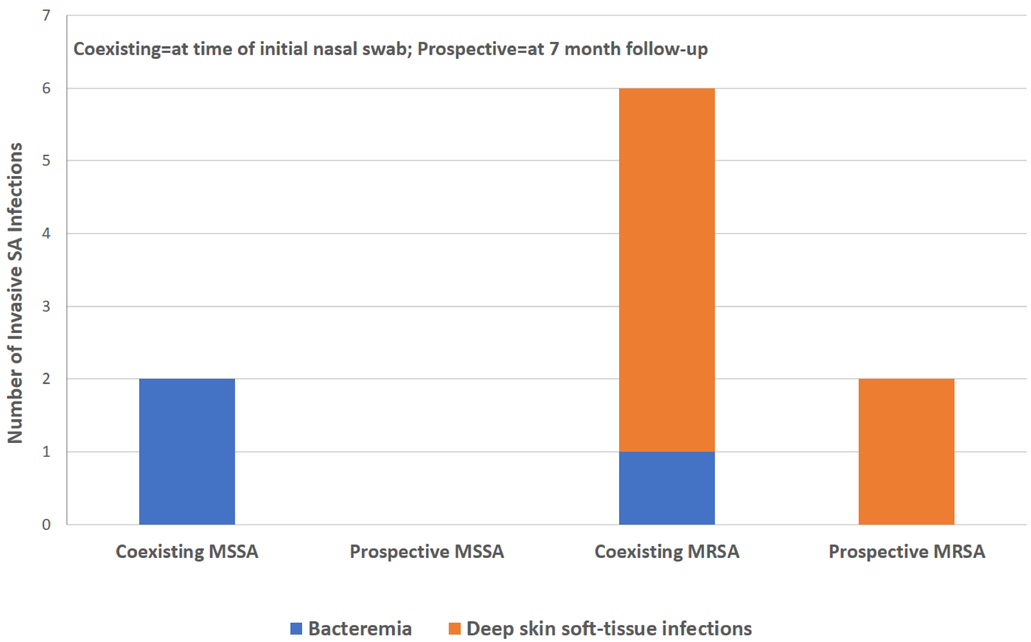


Figure 2. Invasive *Staphylococcus aureus* infections among hospitalized patients



Results

- Of 1482 patients, 237 (16%) had nasal carriage of MSSA and 92 (6%) had nasal carriage of MRSA at the time of admission.
- Paired samples were available in 128 patients carrying MSSA and 57 patients carrying MRSA
- Treatment with antibiotics with anti-MRSA (e.g., vancomycin, trimethoprim-sulfamethoxazole, doxycycline) or anti-MSSA activity resulted in a reduction in the burden of nasal carriage (P<0.01), whereas treatment with antibiotics lacking anti-MRSA activity did not (P>0.05)
- Fluoroquinolone treatment reduced the burden of nasal carriage of fluoroquinolone-susceptible MSSA and MRSA.
- At 7-month follow-up, there were no MSSA invasive infections among MSSA-colonized patients while there were 2 deep SSTIs (2%) among those colonized with MRSA

Conclusions

- Treatment of hospitalized patients with antibiotics possessing activity against MSSA or MRSA resulted in a decrease in the burden of nasal carriage.
- Further studies are needed to determine if such treatment reduces the frequency of dissemination of staphylococci to skin and the environment.