MRSA and MSSA carriage in a cohort of haemodialysis patients: Prevalence and short term outcomes

HEART of ENGLAND NHS Foundation Trust

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Introduction

- Infection is a major cause of morbidity for patients on haemodialysis and these patients are at greater risk of bacterial infection, particularly with *Staphylococcus aureus.*[1,2,3]
- Colonisation with *Staphylococcus aureus* is thought to occur in up to half of those on dialysis and nasal colonisation has been shown to increase the risk of subsequent infection . [2,3,4]
- Haemodialysis patients have an increased risk of death with *Staphylococcus aureus* bacteraemia compared to bacteraemia by other pathogens. [3,4,2,5]

Aims

1.To examine the prevalence of MRSA and MSSA carriage in a cohort of chronic haemodialysis patients and establish the demographics of this group.

2.Determine the eradication and re-colonisation rate after adherence to a de-colonisation programme.

3.To determine whether there were any significant differences in short term morbiity and mortality between those successfully eradicated versus those that re-colonised .

Methods

- 666 patients on established haemodiaysis were routinely screened for MRSA and MSSA between June 2009-May 2011 (24 months).
- Swabs were taken at two anatomical sites (nose and access) or more every 4 months within the study period.

Decolonisation treatment:

- All chronic haemodialysis patients at Heart of England Foundation Trust have followed guidelines for MRSA/MSSA screening and treatment since May 2007.
- Those with positive MRSA or MSSA swab results without signs of clinical infection commence decolonisation treatment.
- Patients are then re-screened on day 8. If positive again decolonisation treatment is repeated and if this fails then discussion with microbiology is advised.

Decolonisation treatment:

- Antiseptic body wash for 5 days.
- Bactroban nasal ointment TDS to both nostrils.

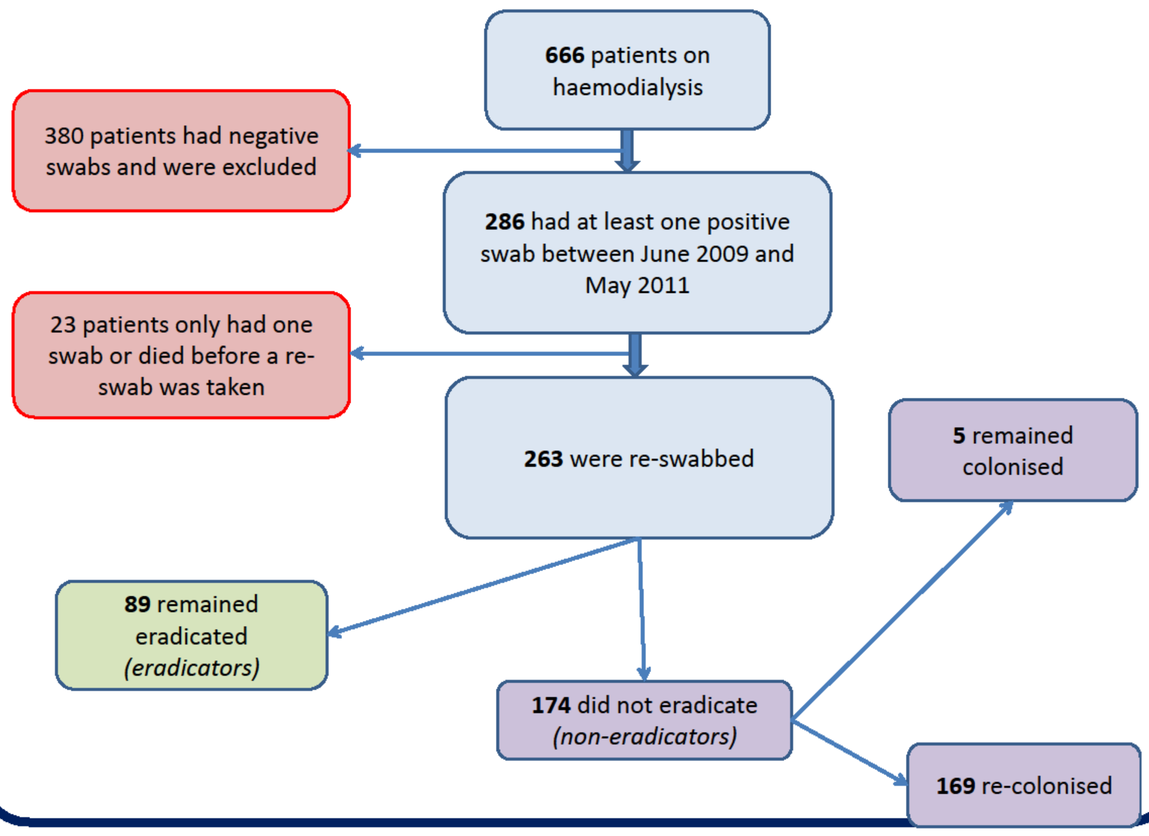
If the patient has a positive line swab:

- Bactroban nasal ointment is to be applied to line exit site when re-dressed at the next 3 dialysis sessions and dressed with mepore.

Data collection:

- Patients were followed up for 18 months following the date of their first positive swab.
- Data regarding demographics, mortality, microbiology results (swabs and blood cultures), frequency and nature of hospital admissions were obtained from the hospital electronic records and the renal unit database (PROTON).

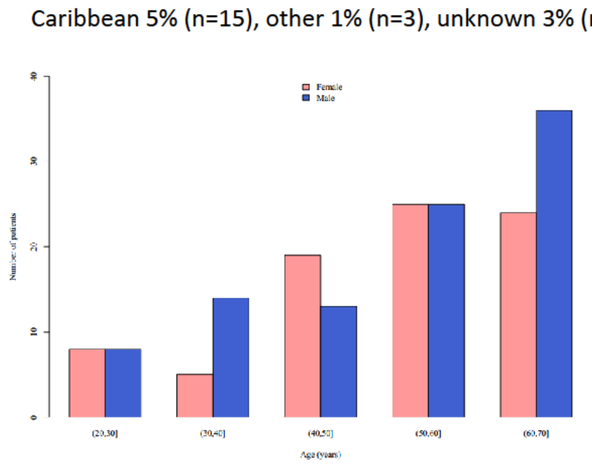
Patient selection:

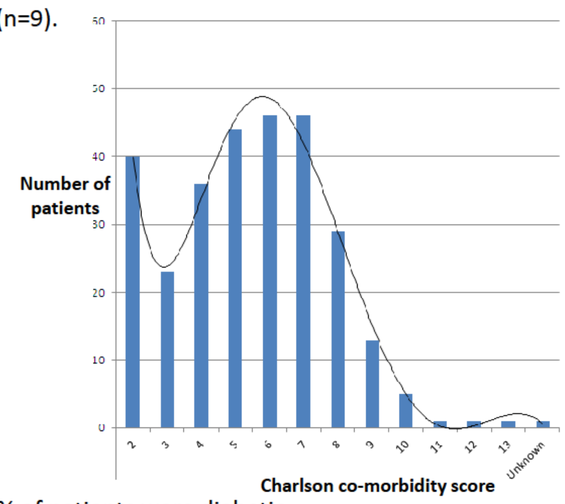


Results

Patient demographics:

- Out of the 666 patients screened 286 (43%) had at least one positive swab during the study period. Of these patients 118 (41 %) were female and 168 male (59 %). Median age was 65 yrs with the range 21-90.
- Of the swab positive patients the ethnic origin was Caucasian 60% (n=171), Asian 31% (n=88), Afro-Caribbean 5% (n=15), other 1% (n=3), unknown 3% (n=9).





- The mean charlson co-morbidity index was 5.4. 36% of patients were diabetic.

Microbiology:

Initial swab:

- 91.7% MSSA (n=262).
- 8.3% MRSA (n=24).

Blood cultures:

- Over 18 months 23 patients had at least one positive blood culture (20 with MSSA and 3 with MRSA).
- 1 patient grew MRSA in a sputum culture.

Results of re-swabs:

263 patients were re-swabbed after deolonisation treatment during follow up:

- 34% (n=89) remained successfully eradicated.
- 64% (n=169) re-colonized.
- 2% (n=5) patients remained colonised.

- There was no significant difference in age (p=0.46), Charlson index (p=0.37) or incidence of diabetes (p=0.18) between the two groups..
- There was a higher incidence of positive blood cultures in the non-eradicators (20) versus the eradicators (3) (n=0.009).

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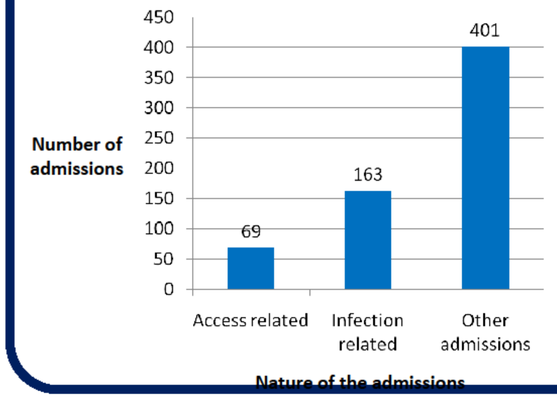
Short term outcomes:

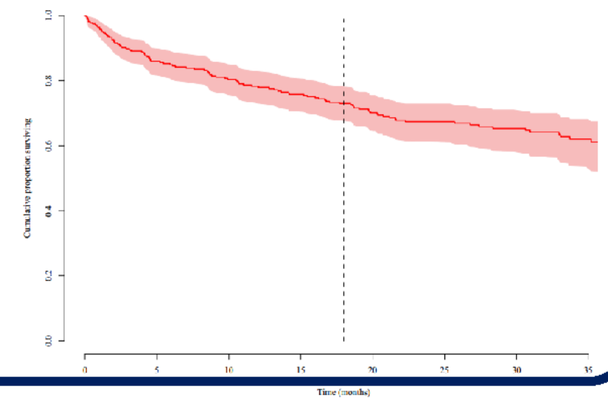
Frequency and nature of admissions

- 633 hospital admissions in total.
- 163 admissions related to infection (26%).
- 69 admissions were related to access (11%).
- No difference between eradicators and non-eradicators.



Survival

- 107 (40%) died within 18 months.
- No difference in death rates in 18 months between the two groups.
- Kaplan-Meier survival curve to date shown for all 286 patients. Dashed line indicates 18mth follow up



Conclusion

- The prevalence of MRSA and MSSA carriage in our cohort of chronic haemodialysis patients was 43%
- Decolonisation therapy was successful in eradicating carriage with *Staphylococcus aureus* for at least 18 months in 34% of our patients.
- Those that re-colonised or remained colonised had a higher rate of bacteraemia with MSSA/MRSA compared to those that remained eradicated.
- Those not do not successfully eradicate are not easily identified from their demographics or co-morbidities.
- We would, based on our findings, advocate routine surveillance and aggressive attempts at eradication of *Staphylococcus aureus* carriage in haemodialysis patients.

References

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Miscellaneous

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