The Prevalence of MRSA Colonization in Elderly Living in Geriatric Homes

Thesis

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معدل انتشار استعمار المكورات العنقودية الذهبية المقاومة للمثسلين فى كبار السن المقيمين فى دور المسنين

رسالة

توطئة لنيل درجة الماجستير في طب و صحة المسنين

مقدمة من

الطبيب/ هيثم حسن منسى حسن
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According to this study participants with renal troubles were of higher risk to have MRSA colonization. Other medical conditions were insignificant. It is worth mentioning that MRSA positive cases had the following combination of comorbidities; 46.1% had CVS and renal troubles, 38.4% had CVS and HTN, and 23% had DM and HTN. García-García et al also stated that significant risk factors for MRSA carriers were recent antibiotic use, previous hospital admission in the last three months, a high comorbidity measured by Charlson index and a history of colonization by MRSA ***(García-García et al., 2011).***

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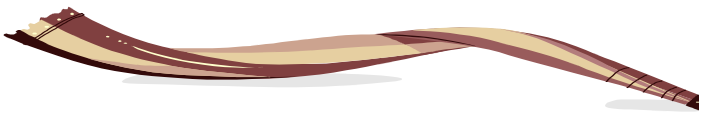

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List of Abbreviations

ADL ..... Activity of daily living.

AIDS..... Acquired Immune-deficiency Syndrome.

CA-MRSA..... Community-acquired methicillin-resistant Staphylococcus aureus.

CDAD ..... Clostridium difficile-associated diarrhea.

CDC..... Center for Disease Control and Prevention.

CLD ..... Chronic liver disease.

COPD..... Chronic obstructive pulmonary disease.

CSAM ..... CHROM agar Staph aureus medium.

CVS ..... Cardiovascular system.

DM..... diabetes mellitus.

GDS..... Geriatric depression scale.

HA- MRSA ... Healthcare-associated methicillin-resistant Staphylococcus aureus.

HIV..... Human Immune-deficiency Virus.

HR..... Hazard ratio.

HTN..... Hypertension.

IADL..... Instrumental activity of daily living.

IHD..... Ischemic heart disease.

LTCF ..... Long-term care facilities..

MMSE..... Mini-mental state examination.

MRSA ..... Methicillin-resistant Staphylococcus aureus.

MSSA..... Methicillin-susceptible S. aureus.

NH ..... Nursing home.

ORSA..... Oxacillin-resistant Staphylococcus aureus.

PAD ..... Peripheral arterial disease.

List of Abbreviations (Cont.)

PBP2a..... Penicillin-Binding Protein 2a.

PCR ..... Polymerase chain reaction.

PFGE ..... Pulsed- field gel electrophoresis.

PVL..... Panton-Valentine leucocidin.

SD ..... Standard Deviation.

SPSS..... Statistical Package for Social Sciences.

SSTI's..... Skin and soft tissue infections.

USA ..... United States of America.

VA ..... Veteran's Affairs.

VISA ..... Vancomycin-intermediate S. aureus.

VRE..... Vancomycin-resistant enterococci.

VRSA..... Vancomycin-resistant S. aureus.

Introduction

Healthcare-acquired infections are considered one of the most significant patient safety issues facing hospitals today. Methicillin-resistant *Staphylococcus aureus* (MRSA), a major cause of healthcare-acquired infection, continues to become increasingly more prevalent ***(Tiemersma et al., 2004).***

community-acquired methicillin-resistant *Staphylo-coccus aureus* (CA-MRSA) has emerged as a common pathogen causing skin and soft tissue infections (SSTI's). In many parts of North America CA-MRSA has now replaced methicillin-susceptible S. aureus (MSSA) as the primary cause of SSTIs. There are several commonly cited risks for CA-MRSA infection, yet little is known about colonization rates in high-risk individuals. Hence the growing threat of MRSA is becoming increasingly recognized by the public and health care providers ***(Borgundvaag et al., 2008).***

In 2008, MRSA has evolved to be common place in the community and hospital setting. So failure to act quickly can lead to increased morbidity and mortality for patients ***(Corriere and Decker, 2008).***

It is known that Infections are very common in the setting of long-term care facilities and represent a major cause of morbidity and mortality among institutionalized elderly individuals. Some characteristics specific for the setting of a

nursing home favor the spread of infectious diseases. Residents are clustered in a confined living arrangement and daily activities often take place in groups. Some residents are cognitively impaired and unable to follow basic hygiene precautions ***(Catharina et al., 2007).***

MRSA is commonly causes only asymptomatic colonization, *Staphylococcus aureus* is a highly pathogenic organism with the potential to cause serious infections, such as blood-stream infections, pneumonia, endocarditis, skin and soft tissue infections, and bone and joint infections, often associated with significant morbidity and mortality ***(Bradley, 2002).***

Therefore MRSA represents an important burden on sub-acute and chronic care facilities. Epidemiologic surveys indicate that rates of MRSA cross-infection are increasing in these settings. Since MRSA carriers without symptomatic infection are an important reservoir and source of spread, risk profiles to identify elderly patients at high risk of MRSA carriage have been developed ***(Manian et al., 2002).***

Thus colonization of residents of long-term care facilities with (MRSA) is an important healthcare concern. MRSA colonization is prevalent; in two of the most common sites of colonization, nares and wounds, colonization rates range from 8% to 53%, and 30% to 82%, respectively. With such a large number of patients harboring the organism, it is imperative that

long-term care facilities are knowledgeable regarding the overall significance of MRSA, are aware of MRSA infection rates at their facilities, and have established a threshold above which outbreak precautions will be instituted. More importantly, facilities must ensure that appropriate precautions (e.g., hand washing, glove changes, and gowns) are utilized to prevent transmission of MRSA to noncolonized residents. If these basic measures are taken, MRSA-colonized residents of long-term facilities should be able to be fully integrated into the everyday activities within the long-term care environment ***(Suzanne, 2004).***

Von Baum and his colleagues in 2002 found that numerous risk factors for MRSA colonization, all these risk factors are mostly present in elderly living in geriatric homes like:

- Age over 65 years
- Prolonged hospital stay
- Multiple hospitalizations
- Invasive devices (e.g. catheters, gastric/endotracheal tubes, surgical drains)
- Open wounds
- Severe underlying illness

• Treatment with multiple broad-spectrum antibiotics

• Close proximity to patients colonized or infected with MRSA

Also, *Manzur in 2010* found that residence in a home with a low ratio of nurses to beds, residence in a care home in a deprived area, male sex, presence of an invasive device, and a hospitalization duration of more than 10 days during the previous 2 years were independently associated with MRSA colonization ***(Manzur, 2010).***

Aim of the Work

To evaluate the prevalence of MRSA colonization in elderly living in geriatric homes.