

بِسْمِ اللَّهِ الرَّحْمَنِ الرَّحِيمِ

قال تعالى: {رَبَّنَا آمَنَّا بِمَا أَنزَلْتَ وَاتَّبَعْنَا الرَّسُولَ فَاكْتُبْنَا مَعَ الشَّاهِدِينَ}

صدق الله العظيم

آل عمران (53)

Dedication

This work is dedicated to

My parents ...

My friends and my colleagues ...

*Children who participated in this
study...*

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Firstly, thanks to Almighty ALLAH for giving me patience and support to complete this work.

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ABSTRACT

Methicillin resistant *Staphylococcus aureus* (MRSA) continues to be a major cause of serious infections in the community worldwide while in Sudan we still lacking the preliminary data for this pathogen. This study was undertaken to determine the prevalence of *Staphylococcus aureus* nasal carriers among primary school children in Omdurman City, Khartoum State and, also to evaluate the antibiotic susceptibility pattern of the isolates. The distribution of sample was as follows: 50 (50/100) nasal swabs are taken from children of Nour Algofran Primary School and 50 (50/100) samples are taken from Gobaa Primary school children. All samples were cultured on Manitol salt agar. Different biochemical tests and Gram's stain were used for identification of *S. aureus*. The results confirmed the existence of *S. aureus* in 43; (43%) of enrolled children among which 7; (16%) are methicillin resistant *staphylococcus aureus* (MRSA) were identified by using disk diffusion method according to the Clinical Laboratory Standards Institution (CLSI) guidance. Erythromycin resistance was present in 7(16%) isolates. However, no isolate were resistant to vancomycin. All isolates were resistant to penicillin G. There is no significant association between *Staphylococcus aureus* nasal carriage and gender ($p= 0.484$), age ($p= 0.884$), household number ($p= 0.496$) and recent respiratory tract infections ($p= 0.104$). The results of this study indicated that the carriage of MRSA exists among young healthy school children who lack traditional risk factors for MRSA.

ملخص الأطروحة

تعتبر بكتريا المكورات العنقودية المقاومة للميثيسلين مسبب رئيسي لكثير من الأمراض الخطيرة بينما في السودان لا نزال نفتقر إلى البيانات الأولية لهذا الكائن الممرض.

هدفت هذه الدراسة إلى تقديم أدلة عن تواجد المكورات العنقودية المقاومة للميثيسلين المحمولة في الأنف بين طلاب المدارس الابتدائية في مدينة أمدرمان بولاية الخرطوم ومعرفة خصائصها بالإضافة إلى إجراء اختبارات الحساسية المتعلقة بهذه البكتريا .

تم أخذ مسحة للأنف ؛ 50 من طلاب مدرسة قباء الابتدائية و 50 عينة أخرى من طلاب مدرسة نور الغفران الابتدائية . تم زراعة جميع العينات على أقار الدم ومن ثم أقار ملح المانيتول. وعمل الاختبارات البايوكيميائية اللازمة بالإضافة لصبغة غرام للتعرف على البكتريا. أظهرت النتائج وجود المكورات العنقودية الذهبية عند 43(43%) من الأطفال المضمنين في الدراسة. تم الكشف عن وجود المكورات الذهبية المقاومة للميثيسلين باستخدام طريقة الانتشار القرصي كيربي (لمعرفة تحسس البكتريا للمضادات الحيوية) تبعاً لتعليمات معهد المعامل السريرية وكان عددها سبعة (16%). كانت هناك مقاومة للإرثرومايسن بنسبة 16 بالمائة، كل البكتريا المعزولة كانت مقاومة للبنسلين ج ولم تكن هناك أي مقاومة للفانكوميسين.

لم توجد علاقة ذات دلالة إحصائية بين حمل بكتريا المكورات العنقودية الذهبية المحمولة في الأنف والجنس ($p=0.484$)، العمر ($p=0.884$)، عدد أفراد الأسرة ($p=.496$) والإصابة الحالية بأمراض الجهاز التنفسي ($p=0.104$).

أظهرت النتائج وجود نسبة عالية من بكتريا المكورات العنقودية الذهبية المحمولة في الأنف والمقاومة للميثيسلين بين أطفال المدارس الابتدائية والذين يفتقرون إلى عوامل الخطورة الاعتيادية.

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List of Abbreviations

AIDS	Acquired immunodeficiency syndrome
CA-MRSA	Community-acquired methicillin resistant <i>Staphylococcus aureus</i>
CAPD	Continuous ambulatory peritoneal dialysis
CDC	The Center for disease control and prevention
CNS	Coagulase- negative Staphylococci
DNase	Deoxyribonuclease
DST	Drug susceptibility testing
EDTA	Ethylene diaminetetracetic acid
ET	Exfoliative toxins
FAME	Fatty acid modifying enzyme
G	Gram
HA-MRSA	Hospital-acquired methicillin resistant <i>Staphylococcus aureus</i>
HIV	Human immunodeficiency virus
IgG	Immunoglobulin G
IV	Intravenous
McF	McFarland
MHC	Major histocompatibility complex
MIC	Minimum inhibitory concentration

min	Minute
MRSA	Methicillin-resistant <i>Staphylococcus aureus</i>
MSSA	Methicillin-sensetive <i>Staphylococcus aureus</i>
ORSA	Oxacillin-resistant <i>Staphylococcus aureus</i>
PBP2	Penicillin binding protein 2
PCR	Polymerase chain reaction
PFGE	Pulsed field gel electrophoresis
PH	Power of hydrogen
PRSA	Penicillin resistant <i>Staphylococcus aureus</i>
Psi	Pounds per square inch
PVL	Panton valentine leukocidin
RT-PCR	Real-time polymerase chain reaction
<i>S.aureus</i>	<i>Staphylococcus aureus</i>
SCCmec	Staphylococcal Cassette Chromosome mec
<i>spp.</i>	Species
SPSS	Statistical package for the social sciences
SSSS	Staphylococcal scalded- skin syndrome
SSTI	Skin and soft tissue infections
<i>Staph</i>	<i>Staphylococcus</i>
TSS	Toxic shock syndrome
USA	United states of America
UTIs	Urinary Tract Infections
V/V	Volume per volume

VISA	Vancomycin -intermediate <i>Staphylococcus aureus</i>
VRSA	Vancomycin resistant <i>Staphylococcus aureus</i>