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Prevalence of Methicillin Resistant *Staphylococcus aureus* Among Patients attending different hospitals in Khartoum State

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Dedication

*To my lovely parents,
sister
&
husband*

Acknowledgments

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ABSTRACT

This study was carried out in Khartoum State, during the period from December 2003 to October 2005, to study the prevalence of methicillin resistant *Staphylococcus aureus* (MRSA) among patients attending different hospitals and evaluate the *in vitro* activity of penicillin, amoxicillin, cephalexin, cloxacillin, methicillin and vancomycin by using National Committee on Clinical of Laboratory Standard (NCCLS) modified Kirby-Bauer Disc Diffusion Technique against *S. aureus* strains isolated from patients attending different hospitals. This study was done on 248 samples collected from infected wound and urinary tract.

The specimens were cultured on blood agar, and McConkey's agar for primary isolation. Identification was done by Gram's stain, catalase test, coagulase test, DNase test and mannitol fermentation.

A total of 163 clinical isolates of *S. aureus* were recorded, 15 (9.2%) isolates from these were MRSA.

The results obtained from this study showed that the MRSA remain a versatile and dangerous pathogen in human with frequency of 9.2% between patients infected by *S. aureus* and also showed that the most effective antimicrobial against *S. aureus* was vancomycin (99%), because it had the lowest resistance rate. The sensitivity rate of cephalexin, penicillin, amoxicillin, cloxacillin, and methicillin, were 147/163 (93%)

23/163 (14%), 17/163(10%), 55/163 (34%) and 147/163(90%) respectively.

Vancomycin was also evaluated for its effectiveness on *Staphylococcus aureus* resistant to cephalixin (90%).

ملخص الأطروحة

تم تنفيذ هذه الدراسة في ولاية الخرطوم في الفترة من ديسمبر 2003م إلى مارس 2005م . ولقد صممت هذه الدراسة لمعرفة معدل إنتشار بكتريا المتكورات العنقودية الذهبية

المقاومة للمضاد الحيوي الميزسلن بين المرضى الوافدين للمستشفيات، وتقييم فعالية المضادات الحيوية الآتية المستخدمة كعلاج للمتكورات العنقودية الذهبية، وتشمل البنسلين، الاموكساسلين، السفالكسين الكلوكسسلين، الميزسلين والفانكوميسين على طريقة كرى باور لعمل اختبار الحساسية لمعرفة كفاءة هذه المضادات الحيوية المستخدمة في الدراسة.

أجريت هذه الدراسة على 248 عينة جمعت من الجروح والمسالك البولية الملتهبة. تم عزل هذه البكتريا على وسط الاجار الدموي ومن ثم التعرف عليها بواسطة الاختبارات الكيميائية الحيوية الآتية عمل صبغة الجرام , اختبار الكتاليز, اختبار تخمر سكر المانتول , اختبار تخثر البلازما واختبار تكسير الحمض النووى. بلغ مجموع المتكورات العنقودية الذهبية التى عزلت 163 كان 15(9.2%) منها مقاومة للمضاد الحيوي الميزسلين.

أوضحت نتيجة هذه الدراسة أن الإصابة بالبكتريا العنقودية الذهبية المقاومة للميزسلن ذات خطورة بالنسبة للإنسان وقد بلغ معدل المصابين بها 9.2%. كما أوضحت الدراسة أن الفانكوميسين (99%) مضاد حيوى فعال لهذه البكتريا وذلك نسبة لضعف معدل المقاومة له. كما وجد أن

نسبة فعالية السيفالكسين، البنسلين، الاموكسيسلين، الكلوكسلين والميزسلين 147/163 (%93)، 23/163 (%14)، 17/163 (%10) ، 55/163 (%34)، 147/163 (%90) و على التوالي 0
كما شملت الدراسة تقييم فعالية الفانكوميسين الذي بلغت فعاليته على العنقودية الذهبية المقاومة للسفلكسين 90%.

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