http://doi.org/10.36582/j.Alkuno.2022.05.04
Al-Kunooze University College
Journal homepage: http://journals.kunoozu.edu.iq/1/archive &
http:// www.iasj.net

Methicillin-Resistant *Staphylococcus aureus* Isolated from different parts of body skin Infections in Basrah city.

ALI MKNS AFAT ALI and AMNA SHAKER MAHDI
E-mail address: ali.miknes@kunoozu.edu.iq

Abstract

Staphylococcus aureus is a major pathogen both within hospitals and in the community. Methicillin, B-lactam antibiotic, acts by inhibiting penicillin-binding proteins that are involved in the synthesis of peptidoglycan, essential mesh-like polymer that surrounds the cells aureus can become resistant to methicillin and other B-lactam antibiotic. Study of staphylococcal diseases of the skin arose directly from Lyell investigation of the outbreak of staphylococcal impetigo and staphylococcal-scaled skin syndrome, the absence of polymorph nuclear infiltration and stainable organisms in the lesion suggested that the extensive splitting of the epidermis might be due to a diffusible product of the organism. To study on the numbers of methicillin-resistant *Staphylococcus aureus* (MRSA), of 467 samples collected from different skin infections referred to the private laboratory, 136 (28—56 %) were MRSA positive by the culture methods,15.12 % of patients by abdomen specimens, 5.46% of patients by dorsal and groins specimens,5,67 % of patients by hands and legs specimens, and 2.31 % of patients by axilla specimens. Significance difference at (P<0.001).

1. Introduction

From the late 1970's and early 1980 and continuing to this day, there has been a developing occurrence of hospital-acquired and community-acquired infections caused by strains of staphylococcus aurous that are resistant to multiple antibiotics, for

* *Corresponding author*.. E-mail address: ali.miknes@kunoozu.edu.iq

most among these strains are methicillin-Resistant S. aureus (MRSA) which has gained worldwide notoriety as a hospital

superbug. A part from methicillin, MRSA is resistant to a as many as 20 different antimicrobid agents representing most of the available drug classes.

Methicillin resistance in Saureus is caused by acquisition of an exogenous gone, meca, that encodes an additional B-lactam- resistant penicillin-binding protein (PBP) called PBP la'. The mecA gene is carried by a mobile genetic elements designated staphylococcal cassette chromosome mec (sccmec), inserted near the chromosomal origin of replication. At least 7 scc me types and several subtypes have been infections surgical site infections, and catheter- related infections, and catheter- related infections are caused by MRSA result in increased lengths of hospitals stay, health care costs, morbidity, and mortality when compared to those caused by methicillin- sensitive *S. aureus* strains; screening every patient at the time of admission in the hospital for MRSA is an important infection control policy. Infection control measures, including patient screening for MRSA colonization procedures, and increasing emphasis on appropriate hand- hygiene and use of appropriate personnel protective equipment, have reduced the clinical MRSA disease burden. intensive care unit admission of a patients are not identified as MRSA positive on admission, the MRSA patient may remain as hidden reservoirs for cross transmission until they are identified by regular culture methods culture-based detection of MRSA with traditional media requires 48-96 hours for results.8,9.

IDI-MRSA assay offers rapid identification of MRSA- colonized patients, in as 2 hrs. 10,11 the BD Gene ohm MRSA Acp assay is currently approved by united states food and drug Administration (FDA) for detection of MRSA from nasal swabs. Many authors have used this assay for detecting MRSA from samples from other site as axilla and groin 12-18

The objective of the present study is the detection number and patients with MRSA colonization in abdomen, dorsal and groin, hands and legs and axilla at the time of

admission into hospitals, outpatient clinic and private Debora they and clinic in Iraq.

2. Methods

This work has been approved in private laboratory especialised in clinical microbiology and Basrah health & Medical technology college in Iraq- from January 2013 to December 2013 were screened for MRSA colonization by swabbing with separate dry, stere swabs from all sites selections. The swabs were immediately transported to the laboratory , Processed immediately or kept at +40° to 8c and processed separately.

The swabs were first inoculated onto a blood agar plate and mannitol salt agar plate (oxoid, UK). The agar plates were incubated aerobically at 37 co for 24-48 hours and the haemolytic colonies on the mannitol salt agar plates were purified by sub culturing on to another blood agar plate. The sub cultured colonies on blood agar plates were checked for MRSA by standard procedures (Gram stain; 3% catalase; tube coagulase test; coagulase plasma EDTA DIAGNOSTICS. UK).

3. Results

4 mg oxacillin disc was placed; the plate was incubated aerobically at 37 co overnight and the isolate was considered as MSRA if it was resistant to oxacillin. 20 the data using t-test for calculated and analyzed results.Out of 476 samples from 238 patients. The results of the culture method for the detection of MRSA from 476 abdomen, hands and legs, dorsal and groin, and axilla sample are given in table 1. 136 (28.56%) were MRSA positive by the culture method. Out of the 238 patient, 15-12 patients by abdomen specimens, 5.67 by hands and legs specimens, 5.46 of patients by dorsal and groin, and finally 2.31 of patients by axilla specimens. The numbers of MRSA positive samples are shown in Table2. Abdomen 72 (15.12), hands and legs 27, dorsal and groin 26 and axilla 11 respectively.

Table 1- methicillin Resistant Staphylococcus aureus assay with culture method

Culture for MRSA			
Swab sites	Positive number and percentage	Negative number and percentage	Total percentage
Abdomen swabs Number positive Number negative Total	72 (15.12) 3 (0.63) 75(15.75)	31 (6.51) 52 (10.92) 83 (17.43)	103 (21.63) 55 (11.55) 158 (33.18)
Dorsal and groin swabs Number positive Number Negative Total	27 (5.67) 8 (7.68) 35 (7.35)	40 (8.40) 16 (3.36) 56 (11.76)	66 (13.36) 26 (5.46) 92 (19.32)
Hand and legs swab Number positive Number negative Total	26 27 (5.46) 10 8 (2.10) 36 35 (7.56)	33 (6.93) 67 (14.07) 160 (21.00)	60 (12.60) 75 (15.75) 135 (18.35)
Axilla swabs Number Positive Number negative Total	11 (2.31) 7 (1.47) 17 (3.78)	18 (3.78) 56 (11.76) 74 (15.54)	29 (6.09) 63 (13.23) 91 (19.32)

Table 2- number of MRSA positive from one site by culture methods.

Methods	Sites of swab	Total	Number MRSA
Culture	Abdomen	72	(15.12)
	Hand sound legs	27	(5.67)
	Dorsal and groin	26	(5.46)
	Axilla	11	(2.31)
Total		136	(28.56)

Discussion

In this recent study, the MRSA assay detected a large number of MRSA colonized patients detected by the culture method (2826%) abdomen 15.12%, hands and legs 5.67% distal and groin 5-46% and axilla 2.31%, below the detection limits or low numbers of MRSA in the swabs. 21 Bartels et ala2 found that (15.5%) MRSA isolates

from Denmark were less detection. Mathai p et al staphylococcal culture isolates also less number detection (21-6%).

Different culture media used for the isolation of MRSA have been known to have limitations in sensitivity and Paule et al have suggested that cegar-based surveillance remain less sensitive than advanced molecular amplification even when broth enrichments. Nahimana et al have formed a sensitivity by of 47-65% with direct plating to 4 chromogenic medium products to 79-95% when prior broth enrichment was included

Some of the patients with such history of MRSA infection or colonization, lucke et al have considered culture positive results. Similar approach have been used by san et al. Finally, to detect all or most of the MRSA positive patients, it would be better and accurate to collect more one sample from different part of infected cases rather than single swabbing assay.

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