

ISOLATION AND IDENTIFICATION OF STAPHYLOCOCCUS AUREUS AND METHICILLIN RESISTANT STAPHYLOCOCCUS AUREUS (MRSA) FROM TONSILS BY CHROMAGAR MEDIA

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ABSTRACT

To identify Staphylococcus aureus and methicillin – resistant Staphylococcus aureus (MRSA) by chromogenic media from patients who had tonsillectomy in Al-Basra General Hospital in Basra city, Iraq. A total of 63 core tonsils isolates were collected in Al-Basra General Hospital in Basra city. A total of 142 bacterial isolates were recovered from the core of the tonsils by culturing on Brain Heart Infusion broth and then on CHROMagar orientation. All positive samples of S. aureus isolates have been inoculated on CHROMagar MRSA. From 142 bacterial isolates, 34 isolates (24%) were detected as S. aureus. 33 isolates (97%) from 34 S. aureus isolates were identified as MRSA as they showed the pink colored colonies on CHROMagar MRSA. The females (19 patients) were more than males (14 patients) with percentages (57.6%, 42.4%) respectively. Twenty patients aged from (1-9 years), nine patients aged from (10-19 years), three aged from (20-29 years), and one patient aged from (30-39 years) represented (58.8%, 29.4%, 8.8% and 3%) respectively. This finding demonstrates a high percentage of MRSA among patients with tonsillitis. Presence of MRSA associated with tonsillitis patient gives a high risk factor to patients.

Key words: Staphylococcus aureus, MRSA, Tonsils, Chromoagar

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INTRODUCTION

Methicillin-resistant *Staphylococcus aureus* (MRSA) is any strain of *Staphylococcus aureus* that has developed, through the process of natural selection, resistance to beta-lactam antibiotics, which include the penicillins (methicillin, dicloxacillin, nafcillin, oxacillin, etc.) and the cephalosporins. MRSA is a bacterium responsible for several difficult-to-treat infections in humans (1).

MRSA is of particular concern in hospitals, prisons and nursing homes, where patients with open wounds, invasive devices and weakened immune systems are at greater risk of nosocomial infections than the general public. MRSA began as a hospital-acquired infection, but now it is sometimes community-acquired. MRSA may become a potential source for the spread of Group A-beta-hemolytic streptococci (GABHS) to other body sites and to other persons (2). The rate of recovery (MRSA) in tonsils that were removed because of recurrent tonsillitis was not previously reported. This study investigated the rate of recovery of MRSA from tonsils that were removed because of recurrent infection. The most common cause of tonsillitis is viral infection (adenovirus, rhinovirus, influenza, coronavirus, and respiratory syncytial virus)(3). It may also be caused by Epstein-Barr virus, herpes simplex virus, cytomegalovirus, or HIV(3).The second most common cause is bacterial infection predominantly is Group A β -hemolytic streptococcus (GABHS), which causes strep throat(3). Less common bacterial causes are: *S. aureus* (including MRSA) (4).

Streptococcus pneumoniae, *Mycoplasma pneumoniae*, *Chlamydia pneumoniae*, *Bordetella pertussis*, *Fusobacterium sp.*, *Corynebacterium diphtheriae*, *Treponema pallidum*, and *Neisseria gonorrhoeae* (3).

There is an increase of recovery of MRSA in various infections. The rate of recovery MRSA in tonsils removed due to recurrent Group A β -hemolytic streptococci (GABHS) tonsillitis was not previously reported. A recent study by Brook & Foote proved for the first time the recovery of MRSA from 16% of the tonsils removed from 44 children because of recurrent GABHS tonsillitis (4).CHROMagar MRSA is a selective and differential medium designed to detect MRSA in nasopharyngeal specimens and thus determine MRSA carriage (5).It is very specific and sensitive medium for the rapid identification of MRSA from clinical samples (6). The purpose of this study is to evaluate the in vitro affinity of a CHROMagar MRSA medium.

METHODOLOGY

Sixty three core tonsils cultures for aerobic bacteria were obtained from 63 patients who had tonsillectomy because of recurrent tonsillitis in Al-Basra General Hospital in Basra city. A total of 142 bacterial isolates were recovered from the core of the tonsils by culturing on Brain Heart Infusion broth (Himedia, India) and then on CHROMagar orientation (CHROMagar™, Paris, France). *S. aureus* isolates (34 isolates) appeared as white colonies. *S. aureus* isolates then have

been inoculated on CHROMagar MRSA (CHROMagar™, Paris, France).

RESULTS

Thirty three isolates out of 34 isolates (97%) were identified as MRSA as they showed the pink colored colonies on CHROMagar MRSA (Fig.1). The females (19 patients) were more than males (14 patients) with percentages (57.6%, 42.4%) respectively. Twenty patients aged from (1-9 years), nine patients aged from (10-19 years), three aged from (20-29 years), and one patient aged from (30-39 years) represented (58.8%, 29.4%, 8.8% and 3%) respectively (Table 1).

Table 1: MRSA isolates according to age group and gender of patients

Age group	Male	Female	Percentage
1-9 years	8	11	60.7%
10-19 years	4	6	27.3%
20-29 years	1	2	9%
30-39 years	1	0	3%
Total	14	19	100%



Fig. 1: Pink colonies of MRSA on CHROMagar MRSA

CHROMagar *S. aureus* is a selective and differential medium developed to isolate and identify *S. aureus*. It has been used to identify *S. aureus* in clinical specimens such as respiratory samples and wound swabs (7). Available chromogenic media for MRSA detection incorporate chromogens to differentiate *S. aureus* from other pathogens and antibiotics for selective growth of MRSA led to shorten the time of detection and subsequently treatment (8).

Table (1) showed that MRSA isolates are more in the age group (1-9) years, this may cause by bad Using of antibiotics: not follow the caregiver's instructions for giving antibiotics, Giving antibiotic medicine for a long time, or give antibiotics when the child does not need them. All these can cause germs to become resistant. MRSA is more likely to cause an infection child has a weak immune system when he have diabetes or has recently had chemotherapy. Infections with influenza or varicella may also lead to MRSA infection. A woman who has MRSA may give it to the baby by birth and breast-feeding.

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