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Original Article

Frequencies of inducible clindamycin resistance in methicillin-resistant *Staphylococcus aureus* (MRSA) isolates from tonsillitis in Al-Basrah governorate, Iraq

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ABSTRACT

Background: Clindamycin, an antibiotic from the macrolide-lincosamide streptogramin B (MLSB) family, is one such treatment option for infections caused by methicillin-susceptible and methicillin-resistant Staphylococcus aureus (MSSA and MRSA). Macrolide, lincosamide, and streptogramin B are all used to treat staphylococci infections (MLS_B).

Methods: In this study, 45 isolated out of 300 tonsillitis swabs were tested. Both standard techniques and the Vitek®2 system were used to identify the isolates. The disk diffusion method was used to discover patterns of methicillin resistance and antibiotic sensitivity. According to CLSI standards, erythromycin and clindamycin antibiotic disks were used to detect inducible , constitutive clindamycin resistance (D test) and confirm results of antibiotic disc methods by the Vitek®2 system.

Results: The 45(26.47%) isolates Staphylococcus aureus out of the 170 (56.67%) swabs samples were positive for bacterial growth. The Vitek®2 system was used in the present study to investigate and identify the S. aureus (n=45) isolates. The 37 (82.22%) isolates out of (n=45) isolates were identified as S. aureus isolates, while 8 (17.78%) isolates didn't give results out of the (n=37) S. aureus isolates, 34(91.89%) S. aureus isolates were classified as MRSA isolates, while 3(8.11%) S. aureus isolates were classified as MSSA isolates In the present study 17 (45.9%) were erythromycin-resistant and clindamycin sensitive with D-test positive results. These isolates showed the iMLSB phenotype. While 21(54.1%) isolates were shown erythromycin-resistant and clindamycin resistant with D-test negative results.

Conclusion: For the best results in choosing the right medication and eliminating cost and time losses, the D test and Vitek®2 system for inducible clindamycin resistance should really be implemented into the routine work of antibiotic susceptibility testing in institutions and healthcare clinical laboratories.

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1. Introduction

Staphylococcal infections are becoming more widespread, ranging from skin and soft-tissue infections to life-threatening illnesses including bacteremia and endocarditis. Long-term antibiotic therapy and hospitalization are required for chronic S. aureus infections, resulting in increased healthcare costs. (Huemer et al., 2021) . Family therapies Streptogramin B (MLS_B)are frequently used to treat skin and soft tissue infections caused by S.aureus isolates (Otto,2010). S. aureus isolates from Human could be constitutively resistant to MLS_B drugs family ($cMLS_B$) or inducible resistant ($cMLS_B$). In addition to treat penicillin hypersensitivity person (Bora et al.,2018).

The D-test helps in being able to identify this type of resistance in S. aureus isolates when employing an erythromycin disc in near to a clindamycin disc. If iMLSB resistance is not established, clindamycin therapy may be unsuccessful (Becker et al.,2014; Chika et al.,2018). Therefore, present study used D-test and Vitak®2 system to investigate the incidence of inducible clindamycin resistance by methicillin-resistant Staphylococcus aureus (MRSA) isolates isolated from tonsillitis patients in Al-Basrah governorate, Iraq.

2. Materials and Methods

Collection of specimens

Through January to March-2020, a total of 300 swab samples were collected from tonsillitis patients who admitted to the local hospital of Al-Basrah governorate, Iraq, distributed 55(27.5%) samples from Maternity and Childhood hospital, 28(14%) samples from Alshifaa hospital, 27(13.5%) samples from Alsadar teaching hospital, 48(24%) samples from Almawany hospital and 42(21%) samples from Alfayhaa hospital .

Isolation and identification