

## Summary

A total of 225 specimens were collected from patient and carries (medical staffs) during the period from October 2012 to March 2013 in Diwaniyah Teaching Hospital, Hakim Teaching Hospital and Zahra Hospital Maternity and Children in AL-Najaf province, 163 clinical specimens were included wound (31), pus (24), ear (14), vaginal (21), urine (43) and blood culture (30) while 62 carries specimens were included skin and nasal. 185 isolates (82.2%) from 225 as given positive culture for any microorganism. According to growth on mannitol salt agar, Only 88/185 isolates (47.5%) identified as *Staphylococcus*, the coagulase test was performed and the results showed that from total 88 isolates of Staphylococci, 28 isolates (31.8%) were coagulase-positive (COPS), while 60 isolates (68.2%) were coagulase-negative (CONS). A total 60 CONS isolates, 40 clinical isolates while only 20 carries isolates.

Using VITEK 2- Compact system for definitive identification of CONS isolates, the most common isolates species among was *S.epidermidis* which was accounted for 18 isolates (30%), *S.saprophyticus* was the second with 13 isolates (21.7%), followed by *S.hemolyticus* was 11 isolates (18.3%), *S.homins* was 7 isolates (11.7%), *S.lentus* was 6 isolates (10%), *S.capitis* was 4 isolates (6.7%) and one isolated (1.6%) of *S.auricularis*.

The Majority of CONS were belong to clinical isolates that obtained from urine samples (40%), followed by Blood (27.5%) while skin (60%) and nasal (40%) from the total carries isolates.

The production of slime layer using Congo red agar method revealed that 16 (40%) of clinical CONS isolates and 3 (15%) of carries CONS isolates had the ability to produce this layer.

The ability of clinical and carries CONS isolates to produce other virulence factor were investigated and the result showed that clinical CONS isolates can produce many enzymes and toxin that contributed in their virulence such as lipase which were determined in 18 isolates (40%), protease production in 15 isolates (37.5%) where urease production in 17 isolates (42.5%) and also produce hemolysin in 17 isolates (42.5%) , while carries CONS isolates showed the ability to produce lipase 7 isolates (35%), protease production in 6 isolates (30%) while urease produce in two isolates (10%) and production hemolysin in 7 isolates (35%).

The results antimicrobial sensitivity test of CONS isolates showed that the vancomycin was the more effective on both clinical and carries CONS isolates which was susceptible to this antibiotic that reached to (90%) , and the incidence resistance to  $\beta$ -lactams antibiotics was very obvious in penicillin (80%) and in methicillin (75%).

Molecular detection of *mecA* (methicillin-resistant), *icaA* (biofilm formation) and *Sec* (Enterotoxin) genes among CONS were investigated by polymerase chain reaction (PCR). The result indicated that from all 40 clinical CONS isolates, 30 isolates (75%) showed have *mecA* gene , while 12 isolates (30%) have *icaA* gene and only 10 isolates (25%) have both genes ie. *mecA* and *icaA* . 8 isolates (20%) have *Sec* gene and only two isolates (5%) have three genes (*mecA*, *icaA* and *Sec*). in case carries CONS isolates , the result showed 7 isolates (35%) have *mecA* gene and two isolates (10%) had *icaA* gene while one isolate (5%) have two gene ie. *mecA* and *icaA* . the *Sec* gene has not detected in all carries CONS isolates.

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## *List of Abbreviations*

<i>Abbreviation</i>	<i>Meaning</i>
Aap	Aggregation-associated protein
<i>agr</i>	accessory gene regulator
ATCC	American Type Culture Collection
Atl E	Autolysin E
Bap	biofilm-associated protein
CONS	Coagulase-Negative Staphylococci
COPS	Coagulase-Positive Staphylococci
Emb p	Extracellular matrix binding protein
FAME	Fatty acid modifying enzymes
Feb	Fibrogen-binding protein
<i>ica</i> operon	intercellular adhesion operon
ICU	Intensive care unit
IL	interleukin
LPXTG	Leu-Pro-any-Thy-Gly
INF- $\gamma$	Interferon gamma
GB	Grass buffer
JCSC	Java Coding Standard Checker
MGEs	Mobile Genetic Elements
MHC	Major histocompatibility complex
MSCRAMMs	Microbial surface components recognizing adhesive matrix molecules
NVE	Native valve endocarditic

Orfs	Open reading frames
PBP2	Penicillin-Binding Protein 2
PBPs	Penicillin-Binding Protein
PCR	Polymerase chain reaction
PIA	polysaccharide intercellular adhesin
PMSs	Phenol-soluble modulins
PVE	Prosthetic valve endocarditic
RPLA	Reversed passive latex agglutination assay
SCCs	Staphylococcal Cassette Chromosomes
SEs	Staphylococcal Enterotoxins
Th-1	T-help 1
TNF	Tumor necrosis factor alpha
TSST-1	Toxic shock syndrome toxin-1
UTI	Urinary Tract Infections
VSE	vulnificus serovar E