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NASAL COLONIZATION WITH STAPHYLOCOCCUS AUREUS IN BASRA MEDICAL AND DENTISTRY STUDENTS

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ABSTRACT: *Staphylococcus aureus is one of a major human pathogen which has long been implicated in some life threatening condition. It can cause community acquired and hospital acquired infections. The infection usually proceeds by colonization of S.aureus. In addition to that the risk of healthy individuals to get the infection from the carriers (community acquired) is increasing problem. So in order to insurance a good quality of patients care continuous and regular surveillance schedule is essential. The aim: to study the prevalence of S. aureus carrier frequency among students in Basra medical college and Basra dentistry college. A total of 100 nasal swabs were collected. 50 swabs were from Basra medical student (32 male and 18 female) and 50 swabs were from Basra Dentistry students (33 male and 17were female), were subjected to bacteriological investigation following standard protocol. S. aureus isolates were identified by mannitol fermentation and coagulase positivity. Highest nasal colonization rate was found among medical student (39.5%) while represented18.4% in dentistry students (P>0.05). Highest positive rate was observed among male than female and in clinical student than the pre clinical students of both college. Conclusion: These results indicate that both dentistry and medical students might have been contaminated with S.aureus during clinical practice which may act as a source of infection to the other individuals which. May leads to many complications like increase the rate of nosocomial infection and multiple drug resistance.*

KEYWORDS: Nasal Carrier, Staphylococcus Aureus, Medical Students, Dentistry Students

INTRODUCTION

Staphylococcus aureus is one of the commonest human pathogen causing nosocomial and community-acquired infections (1). Nosocomial infections due to Staphylococcus *aureus* have become an increasing problem over the last four decades (2).

S. aureus have the ability to involved in awide range of infections varies from minor skin infections to severe life threatening infections such as toxic shock syndrome and septicaemia (3)

The anterior nares have been shown to be the main reservoir of *S. aureus* (1,2,3*)*

Colonisation may be either temporary or persistent and may be at single or various body sites (3).

On epidemiological point of veiw ,carriage of *S. aureus* in the nose appears to play an important role in spreding and persistancy of infection (4). Other sites of colonisation are tracheostomy sites, wounds, sputum of intubated patients(4).

Contaminated hands and surfaces considered as the main source of spreading of colonized bacteia (3, 6) where it can live on for months.

The frequancy of nasal carriage varies widely ranging from 20 to 65% in both patients and healthy population(6).

Carrier state may affect ahelthy individuals which may act as endogenous source for infection as well as asource of cross colonization in both hospital and community acquired infection(6,7)

The rate of S. aureus nasal colonization can be amarker of high risk for consequent infection(2,7).

MATERIALS AND METHODS

A total of 100 nasal swabs were collected. 50 swabs were from Basra medical student(32 male and 18 female) and 50 swabs were from Basra Dentistry students(33 male and 17were female).

The students from each college were divided into 2 groups : Group A represented students of grade 1,2and3 while group B represent students in grade 4,5 those who have frequent clinical sessions samples were obtained from the of students anterior nares(asterile swab wetted with sterile normal saline was inserted 2cm into both anterior nares and rotated it twicely.

The identification of bacterial growth was carried out by inoculating the samples on mannitol salt agar (MSA) plates to get ayellow golden colonies of S.aureus and on blood agar to identify the hemolytic activity of bacteria which give Beta hemolytic zone,after a24-48 hours of incubation at 37oC.

Further identification of S.aures was performed by Gram's staining to observe agram positive bacterial cells arranged as clusters . other confirmatory tests : catalase test,Coagulase test and API staph test.

Statistical analysis: Chi-square test were used to analyzed the findings.

RESULTS:

Table1. The frequency of positive cultures among medical students and dentistry students.

Groups	Positive culture for staphylococcus species	Negative culture for staphylococcus species	Other growth	Total
Medical students	43 86%	5 10%	2	50
Dentistry students	38 76%	10 20%	2	50
Total	81	15	4	100

X^2 =1.975

P>0.005

The results obtained show that out of sixty medical college students sampled 43(86%) had Staphylococcus species colonization. Also, 38 (76%) of Dentistry students sampled were seen to be colonization as shown in Table 1. The difference between the two groups, was statistically not significant.

Table2: The frequency of staphylococcus nasal carriage among groups

Groups	Bacterial growth		Total
	S. aureus	S.epidermidis	
Medical students	17 39.5%	26 60.4%	43
Dentistry students	7 18.4%	31 81.57%	38
Total	24	57	81

X^2 =4.312

P<0.005

Table 2 showed that *S. aureus* nasal carriage had been found in 39.5% of medical students, while in the dentistry students it was 18.4%only.this difference was statistically significance P<0.005.

Table3: Distribution of S. aureus carrier in association with sex

	S. aureus		S. epidermidis	
Groups	Male	Female	Male	Female
Medical students	10 23.25%	7 16.27	17 39.53	9 20.93%
Dentistry students	4 10.52%	3 7.89%	19 50%	12 31.57%
Total	14	10	38	21

X^2=4.417

p>0.005

In relation to gender, male participants were more colonized with S. aureus than the females in both groups and the difference was statistically not significant (p > 0.005).

Table 4: Distribution of S. aureus nasal carriage with pre clinical and clinical students among the study population

Groups	Preclinical	Clinical students	Total
Medical student	8 47.05%	9 52.9%	17
Dentistry students	2 28.57%	5 71.4%	7

Total	**10**	**14**	**24**

X2=0.745

P>0.005

S.aureus colonization was more in clinical than pre clinical students 9(52.9%),5 (71.4%), ,(47.05%),2(28.57%)among the medical and dentistry students respectively . The difference in percentage of nasal for both groups were statistically not significant P>0.005

DISCUSSION

Since the carriage of *S. aureus* in the nares and on the skin contribute to the problem of nosocomial infections, medical students as nasal carriers of nosocomial strains remain a potential source of cross-infection in the hospital environment today(5).

This study highlights the significance of continous education of hospital personnel and workers regarding cross-infection in order to help reduce costly and preventable death.In addition to that its details the effect of exposure to the hospital environment,contact with workers and the in patients on the nasal carriage of *S. aureus* among Basra medical students and Dentistry students.

The overall culture positive samples were **43** (86%)and(76%) among medical students and dentistry students respectively.

17 (39.5%) out of the 43 were *S. aureus* species while only**,7 (18.4%**) out of the 38 culture positive sample of dentistry students found to be *S .aureus* this difference may be due to exposure of medical students to the hospital environments more than dentistry student where their major work places as outpatient works while the medical students became in close contact with patients, health care workers for long period(7,9).

Variation in carriage rates in female subjects has been reported to be associated with oestrogen levels in addition to that ,usually female take care more than male regarding the close contact with patients and the hygienic actors(8) .

The prevalence of nasal carriage was found to be similar in clinical and pre clinical medical students because majority of medical students attended the causality units and being in contact with the patients in the hospital for training purpose,while this is not found usually among the dentistry students(7,9,10).

Although the prevalence of nasal carriage was found to be similar in the pre-clinical and clinical groups with no significant association due to small sample size.

CONCLUSION

These results indicate that both dentistry and medical students might have been contaminated with *S.aureus* during clinical practice which may act as asource of infection to the other

individuals which may leads to many complications like increase the rate of nosocomial infection and multiple drug resistance

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