APRONS- BOON OR BANE?

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ABSTRACT

BACKGROUND

Aprons have long been a doctor's ornamental and symbolic professional wear when a doctor has been recognised, respected and valued as very significant person if he wore a long sleeved white coat with a stethoscope around the neck in the past. There have been many studies done about the safety of wearing aprons by the medical professionals and many countries like Great Britain have discarded and abandoned the use of long white coats as it is considered a serious threat with regards to the nosocomial infections. In India, it has still been a custom and code that a doctor and medical students wear aprons in the Hospital. Various studies have proved that aprons worn by doctors carry dangerous microbial flora. Hence, a prospective study is done to cognise the question if "Aprons are a boon or bane?."

MATERIALS AND METHODS

This was a prospective study done to identify the bacteriological flora present on the aprons of 150 students in our institute NRIIMS, Visakhapatnam. The institutional approval and ethical committee clearance were taken. The swabs were taken from the pocket region of the aprons of all the students. The collected swabs were immediately sent to the microbiology department in different culture media including nutrient agar, blood agar and Robertson's Cooked Meat broth.

RESULTS

Various bacteria are identified namely; 1. Gram-positive bacilli; 2. Micrococci; 3. Coagulase-negative staphylococcus; 4. Gram-positive cocci; 5. Micrococci with gram-positive bacilli; 6. Micrococci with aerobic spore bearing bacilli; 7. Gram-negative coccobacilli; 8. Gram-positive bacilli with ASB. The significance of the study is that majority of the identified organisms were normal body flora. Out of 150 aprons, 38 aprons were found to be sterile and one or more of above-mentioned flora are identified in 112 aprons. 25 out of 38 aprons, which were found sterile were washed regularly at least once in 7 days. 74 (49.2%) aprons are found to be having micrococci. 32.6% are with rest of the identified bacteria are namely gram-positive bacilli with ASB and other polymicrobials. Another significant point of the study is the % of sterility decreased as the number of days since the aprons washed increased. Least contamination is found in aprons washed regularly. 100% contamination is found in aprons not washed for more than a month. The x^2 test is applied to test the significance. The test value is 41.5939 with 27 d.f. is significant at 0.05 level of significance $P<0.05$.

CONCLUSION

According to our study, although it appears that aprons can be safely worn as no harmful flora was identified on culture from aprons, it is still necessary to maintain 100% sterility to prevent even opportunistic infections in immune compromised patients. Apart from other sterility measures with regards to aprons, it is necessary to wash aprons on regular basis to maintain the safety of wearing aprons and to safeguard the patients. Hence, aprons can be either boon or bane when appropriately used.

KEYWORDS

Aprons, Nosocomial Infections, Fomite, Microbial Flora, Sterility.

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BACKGROUND

Aprons have long been a doctor's ornamental and symbolic professional wear when a doctor has been recognised, respected and valued as very significant person if he wore a long-sleeved white coat with a stethoscope around the neck in the past. The presence of doctor in long white apron has always given the patient a hope of reassurance and confidence of getting cured of his ailment. Now, in the present times, these white coats have become an issue of concern that they harbour and carry microbes, which can cause cross infections among patients sharing same space in the hospital. There have been many studies done about the safety of wearing aprons by the medical professionals and many countries like Great Britain have discarded and abandoned the use of long white coats as it is considered a serious threat with regards to the nosocomial infections

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especially when health institutions are waging a serious battle against some deadly microbes like MRSA (methicillin-resistant staph. Aureus). In India, it is still been a custom and code that doctors and medical students wear aprons in the hospital. Various studies have shown that aprons worn by doctors carry dangerous microbial flora.[1] The evidence is also divided with some studies showing aprons as harmful while others showing aprons are totally harmless. Hence, a prospective study is done to cognise the answer to the question if "Aprons are a boon or bane?."

MATERIALS AND METHODS

This was a prospective study done to identify the bacteriological flora present on the aprons of 151 students of second and third clinical year in our institute, NRIIMS, Visakhapatnam. The institutional approval and ethical committee clearance were taken. The swabs were taken from the pocket region of all the students. The collected swabs were immediately sent to the microbiology department, which were inoculated into the nutrient agar, blood agar and Robertson-Cooked Meat broth culture media. These results were collected and analysed.

RESULTS

Various bacteria are identified namely-

- Gram-Positive Bacilli (GPB).
- Micrococci.
- Coagulase-negative staphylococcus.
- Gram-Positive Cocci (GPC).
- Micrococci with gram-positive bacilli.
- Micrococci with aerobic spore-bearing bacilli.
- Gram-Negative Coccobacilli (GNCB).
- Gram-positive bacilli with Aerobic Spore-Bearing (GPB with ASB).

Duration in Weeks (Since Aprons Washed)	Total	Species Identified									
		Gram-Positive Bacilli	Sterile	Micrococci	Coagulase-Negative Staph	GPC	Micrococci with GPB	Micrococci with Aerobic	GNCB	GPB with ASB	Polymicro
		(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
Less than 1 week	89 (58.94)	6 (3.97)	25 (16.55)	34 (22.52)	4 (2.65)	8 (5.30)	4 (2.65)	2 (1.32)	00	3 (1.99)	3 (1.99)
1-2 weeks	33 (21.85)	3 (1.99)	10 (6.62)	17 (11.26)	00	1 (0.66)	00	1 (0.66)	1 (0.66)	00	00
2-4 weeks	22 (14.57)	2 (1.32)	3 (1.99)	12 (7.95)	3 (1.99)	1 (0.66)	1 (0.66)	00	00	00	00
4 weeks above	7 (4.63)	3 (1.99)	00	1 (0.66)	00	00	1 (0.66)	1 (0.66)	00	1 (0.66)	00
Total	**151**	**14**	**38**	**64**	**7**	**10**	**6**	**4**	**1**	**4**	**3**

Distribution of Species According to Duration in Weeks (n=151)

The significance of the study is that majority of the identified organisms are normal body flora. Out of 151 aprons, 38 aprons were found to be sterile. 25 out of 38 aprons were found to be sterile while they were washed within one week. 74 aprons are found to be harbouring micrococci with 64 of them growing only micrococci, 6 aprons with micrococci with GPB and four aprons growing micrococci with ASB. This amounts to 49.2% of aprons are with micrococci. 32.6% are with rest of the identified bacteria namely gram-positive bacilli with ASB and other polymicrobials.

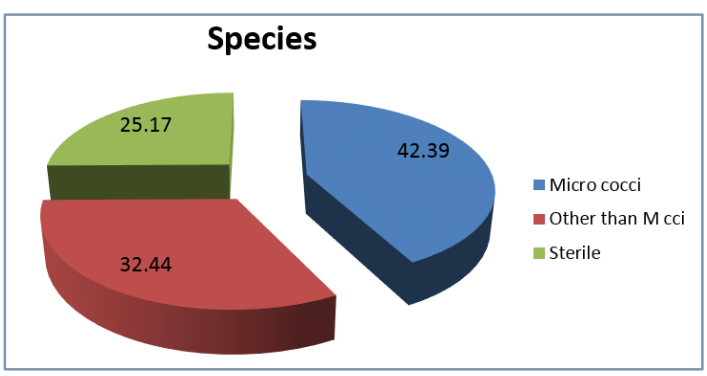

Figure 1. Distribution of Micrococci with Other Species and Sterile in Percentage

The other significant point of the study is the number of sterile aprons (% of sterility) decreased as the number of days increased since the aprons are washed. Least contamination is found in aprons washed regularly. 100% contamination is found in aprons not washed for more than a month.

The x^2 test is applied to test the significance.

The test value is 41.5939 with 27 d.f. is significant at 0.05 level of significance $P<0.05$.

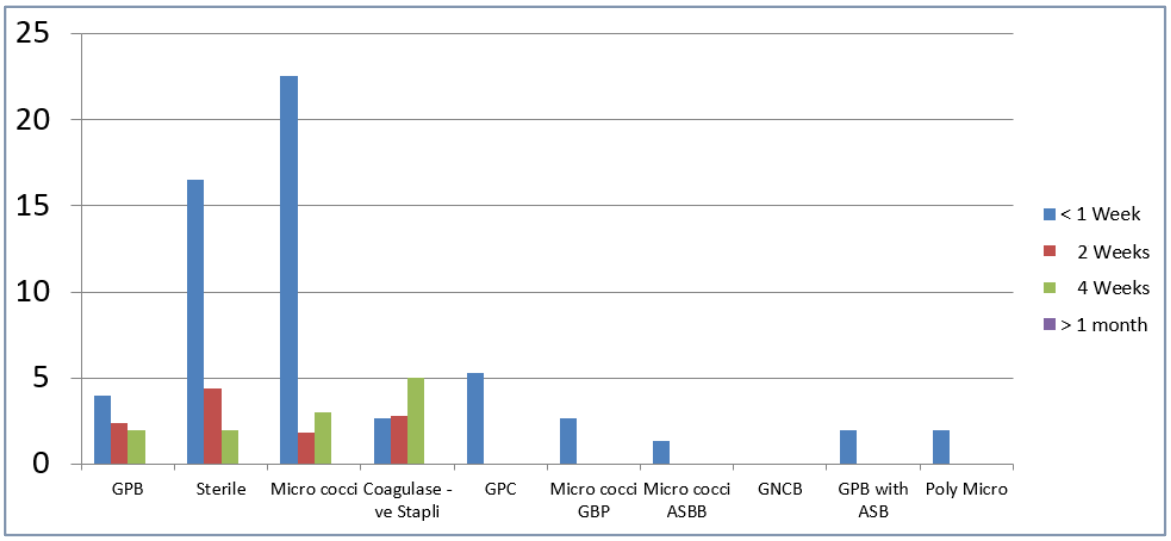

Figure 2. Distribution of Species According to Duration in Weeks in Percentage

DISCUSSION

Various studies proved that aprons serve as a source of carrier of microbial flora[2] and that they are an important cause of nosocomial infections. This has led to abandonment of aprons in some countries like Great Britain. It is still a custom and norm in Indian Medical Institutions that doctors, medical students and other healthcare personnel wear aprons. There is a divided opinion and evidence whether aprons are a real threat and whether they should be used or discarded. Our study shows that aprons are reasonably safe to use provided they are regularly washed and also if there are strict protocols to maintain sterility in the clinical areas to prevent fomite-induced nosocomial infections in institution.[3] There is a chance of easy transfer of organisms from healthcare professionals to the patients.[4] Hence, it forms the responsibility of both healthcare personnel and institutions alike to safeguard their patients by adhering to strict practices to maintain sterility.[5]

CONCLUSION

According to our study, although it appears that aprons can be safely worn as no harmful flora was identified on culture from aprons, it is still necessary to maintain 100% sterility to prevent even opportunistic infections in immune compromised patients.[6] Apart from other sterility measures with regards to aprons, it is necessary to wash aprons on regular basis to maintain the safety of wearing aprons and to safeguard the patients. Hence, aprons can be either boon or bane when appropriately used.

Further research and large studies are required by world healthcare body in this arena to arrive to a universal consensus whether to ban or wear the aprons.

REFERENCES

[1] Harsh P, Shahidhar A, Bhat M, et al. Microbial contamination of the white coats of dental staff in the clinical setting. J Dent Res Dent Clin Dent Prospects 2009;3(4):136-140.

[2] Wong D, Nye K, Hollis P. Microbial flora on doctors' white coats. BMJ 1991;303(6817):1602-1604.

[3] Muhadi SA, Aznamshah NA, Jahanfar S. A cross-sectional study of microbial contamination of medical students' white coat. Mal J Microbiology 2007;3(1):35-38.

[4] Lidwell OM, Towers AG, Ballard J. Transfer of microorganisms between nurses and patients in a clean air environment. J Appl Bacteriol 1974;37(4):649-656.

[5] Bennett JV, Brachman PS. Hospital infection. 4th edn. Philadelphia: Lippincott Williams and Wilkins 1997.

[6] Hambraeus A. Transfer of staphylococcus aureus via nurses' uniforms. Journal of Hygiene 1973;71(4):799-814.