JAMC, Vol. 5, No. 1, 1992

PATHOGENIC ORGANISMS IN THE ENVIRONMENT OF A TEACHING HOSPITAL

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ABSTRACT:

A survey of bacterial organisms was carried out at District Headquarter leaching Hospital, Abbottabad. It was observed that pathogenic organisms in the hospital environment were quite high as compared to clean area outside the hospital. These micro-organisms were isolated from hands, clothes, nose, car and throat of various staff members and at different places and accessories of the hospital. The predominant organisms found were Staphylococcus aureus, Staphylococcus albus and Escherichia coli.

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INTRODUCTION:

Various types of micro-organisms are widely distributed in nature and present in our environment. The environment of hospital is more polluted with pathogenic organisms. These organisms in the hospital come directly or indirectly from people and patients who come for treatment. Salarzai1 isolated one hundred different pathogenic organisms in a hospital at Peshawar. The presence of various types of organisms and post-operative infections indicate unhygienic conditions prevailing in our hospitals. Besides, organisms are becoming resistant to various antibiotics, this may be due to frequent use of antimicrobials by patients before coming to hospital. Also, there is lack of collection facilities which would otherwise help the doctor to choose right antibiotics for the patients. Walker2 observed that in environmental pollution the most important risk to health is caused by an energy hungry society. The infection in hospital due to pathogens can be minimised by keeping its environment clean, using proper antiseptic fluids and disposing off the used materials in proper way. The present study was conducted to find out the prevalence of the pathogenic organisms in the DHQ Teaching Hospital, Abbottabad.

MATERIAL AND METHODS:

The swabs from various wards, operation theatres, main laboratory, blood bank, clothes, beds and hands of patients, nose, ear, throat, of DHQ Teaching Hospital, Abbottabad staff were cultured on 5% blood agar plates. In these places, separate blood agar plates (size 100mm) were also exposed for 30 minutes for environmental contamination. The control blood agar plates were also exposed in clean area outside the hospital. All these plates were incubated at 37°C for 24 hours aerobically.

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The colonics developed were counted with Quebec Colony Counter model 560 suntex. The isolated organisms were identified by sugar test, Methyl Red (MR), Voges Proskeucr (VP), Citrate agar and Indole production test. All the reagents were of analytical grade.

RESULTS:

Bacterial contamination in different wards and various places of DHQ hospital is listed below. In control places there was least bacterial population found (Table-1). Five out of seven wards were found to have more than 240 Bacterial counts, Surgical Ward was at the top of the list. The operation Theatre, which is supposed to be cleaned area, was highly contaminated. Hospital laboratory, where all sort of clinical tests arc performed was contaminated.

Table-1: BACTERIAL COUNT IN DIFFERENT WARDS OF DHQ TEACHING HOSPITAL ABBOTTABAD AFTER EXPOSING BLOOD AGAR PLATES FOR 30 MINIUTES.

	Total Bacterial Count
CONTROL:	
Shimla Hill	05
Ilyasi Masjid	09
Takiya Camp	06
WARDS:	
Medical "A" Ward	128
ENT Ward	321
Surgical Ward	432
Gynea Ward	305
Children Ward	315
Orthopedic Ward	187
Emergency Ward	245
Blood Bank	190
Main Laboratory	300
OPD	275
Operation Theatre	285
Hospital Canteen	150
Hospital Kitchen	140

Dry dust surface was more contaminated, with staphylococcus aureus, S. Albus, Beta haemolytic streptococci, Proteus Morgagni and Escherichia coli while tables and soap solutions were least contaminated (Table-2).

TABLE – 2: ENVIRONMENT RESERVATION OF BACTERIAL PATHOGENS

Organism	Dry Dust	Wet Surface	Floor	Wash Basin	Table and Almira	Anti-Septic Soln.	Soap Soln.	Tap Water
Staphylococcus Aureus	9	5	7	3	0	0	0	-
Staphylococcus Albus	12	6	4	3	2	0	0	2
Escherichia Coli	2	6	4	5	-	3	-	5
Pseudomonas— aeruginosa	-	-	2	-	4	0	-	-
Klebsiella Spp	-	-	-	2	-	-	0	-
Streptococcus	5	-	4	5	-	-	0	-
Proteus Spp	-	3	-	-	-	-	0	-

The common organisms isolated from hands, clothes, nose, car and throat of various staff members were staphylococcus aures, E-Coli, B-hemolytic streptococci and streptococcus viridans and proteus spp. (Tablc-3).

TABLE – 3: SWAB ANALYSIS OF STAFF

	Hand Finger	Nose	Clothes	Ear	Throat
Staphylococcus Aureus	—	20	—	12	—
Staphylococcus albus	15	28	10	38	2
B-Haemolytic streptococci	—	5	—	3	12
Proteus Spp	—	1	1	—	—
Micrococci Spp	—	1	—	1	—

DISCUSSION

Pathogenic environment in our hospitals has become a public health problem. Besides of our study arc not different from other such studies conducted at various hospitals in the country.[4] The bacterial count in Surgical ward, Gynae and Children wards was maximum. The percentage of Staphylococcus aureus, Staphylococcus albus and B- haemolytic streptococci was predominantly isolated from hands, nose, ear and throat of Hospital staff. The enormous increase in no of bed strength (50 to 500) of this hospital in the past few years without expansion of hospital premises is also one of the contributing factors towards general unhygienic conditions.

The Hospital should adopt standard measures such as daily cleaning with antiseptic fluid, proper sterilization of instruments, keeping the minimum number of visitors etc. The hospital staff

should wear clean clothes and overalls, especially the laboratory and OT staff. Besides, proper ventilation in hospitals is vital as clean air minimise bacterial contamination.[5]

It is concluded from this study that bacterial contamination both atmospheric and personnel is widespread in hospital.

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