



Aerobic Bacteriological Profile of Burns Wound Infection and Antibiogram in Tertiary Care Hospital, Bhopal

KEYWORDS

burns wound, aerobic bacterial isolates, Staphylococcus aureus, Klebsiella species, MRSA, ESBL.

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ABSTRACT INTRODUCTION:

Burns are the one of the most common devastating forms of trauma and major health concern all over the world.¹ In spite of considerable advances in the antimicrobial treatment, infection still continues to pose greater danger for burn patients.² Emergence of antimicrobial resistance among bacterial pathogen limits the therapeutic option effective treatments.³

OBJECTIVE:

To isolate aerobic bacteria associated with burn wounds infection and to determine the susceptibility pattern of isolates.

MATERIAL and METHOD:

In retrospective study of one year from Oct 12 to Oct 13 pus/ wound swabs, from burn wounds were processed by conventional methods. Antibiotic susceptibility was done by kirby-baur disc diffusion method and interpretation was done by CLSI guidelines.⁴

OBSERVATION:

Total 88 organisms were isolated from 124 samples, gram negative bacilli were 68 and gram positive cocci were 20. Pseudomonas aeruginosa showed maximum sensitivity towards Imipenem followed by piperacillin / tazobactam. Staphylococcus aureus showed maximum sensitivity towards Vancomycin followed by Linezolid.

CONCLUSION:

To reduce the prevalence of infection due to the antibiotic resistant organism, strict infection control practices and appropriate empirical antimicrobial therapy are essential.

INTRODUCTION

The major cause of morbidity and mortality in burn patients is due to infections. Burn patients are ideal hosts for opportunistic infections.⁵ In spite of recent advances in the health care practices related to burn wound management and infection control practices, still infection remain the main cause of mortality. Several reports states that nearly 75% of all deaths in burn patients are due to infections.^{6,7,8} Further, infections cause delay in maturation and deep scar formation of burn wounds.⁵ Aerobic bacteria routinely isolated from burn wounds include Pseudomonas aeruginosa, Escherichia coli, Klebsiella spp, Proteus spp, Staphylococcus aureus etc. Pseudomonas aeruginosa has emerged as a predominant member of burn wound flora. The pathogens which cause infections vary from place to place and time to time. Emergence of drug resistant pathogens like MRSA (Methicillin Resistant Staphylococcus aureus) and ESBL (Extended Spectrum Beta Lactamase) producers is leading to inappropriate treatment and hence increased morbidity and mortality. The present study was conducted to know the current aerobic bacteriological profile and their antibiogram of burn wound infections in a tertiary care hospital Bhopal- (M.P.)

OBJECTIVE:

To isolate aerobic bacteria associated with burn wounds infection.

To determine the susceptibility pattern of isolates.

MATERIAL & METHOD:

In retrospective study conducted in Department of Microbiology, People's College of Medical Science and Research Centre, Bhopal- (M.P.) from Oct 12 to Oct 13 pus/ wound swabs, from burn wounds were processed by

conventional methods. Antibiotic susceptibility was done by kirby-baur disc diffusion method and interpretation was done by CLSI guidelines.⁴

OBSERVATION:

Total 88 organisms were isolated from 124 samples, gram negative bacilli were 68 and gram positive cocci were 20. Out of 88 gram negative isolates Pseudomonas aeruginosa was commonest organism followed by klebsiella spp. Staphylococcus aureus was the commonest among gram positive cocci followed by Enterococci. Out of 124 samples 36 samples were sterile. Pseudomonas aeruginosa showed maximum sensitivity towards Imipenem followed by piperacillin / tazobactam. Staphylococcus aureus showed maximum sensitivity towards Vancomycin followed by Linezolid.

TABLE No. 1
DISTRIBUTION OF MICROORGANISM ISOLATED FROM BURN WOUND

Total no. of samples = 124 Sterile sample = 36 Growth = 88 (n)

Microorganism	n	(%)
Pseudomonas aeruginosa	35	28.2
Klebsiella Spp.	17	13.7
Escherichia-coli	5	4.03
Acinetobacter spp.	4	3.22
Staphylococcus aureus	18	14.51
Enterococcus Spp.	2	1.61
Citro bacter Spp. (Other)	3	2.41
Proteus Mirabillis (other)	3	2.41
Proteus vulgaris (Other)	1	0.8
Total	88	70.9

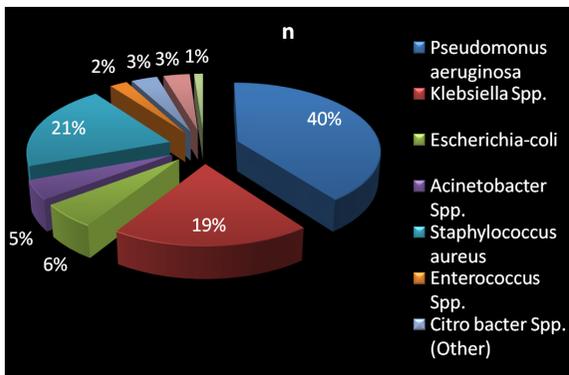
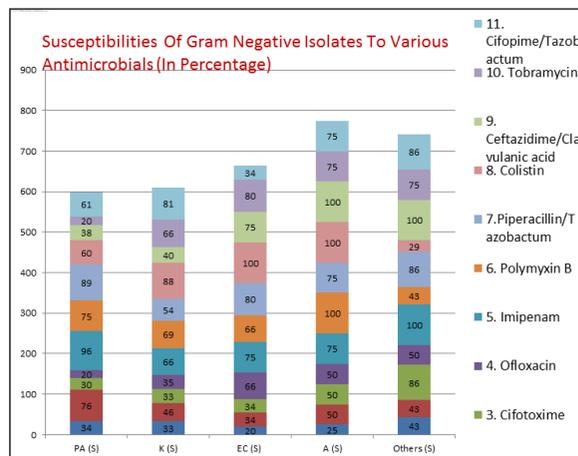


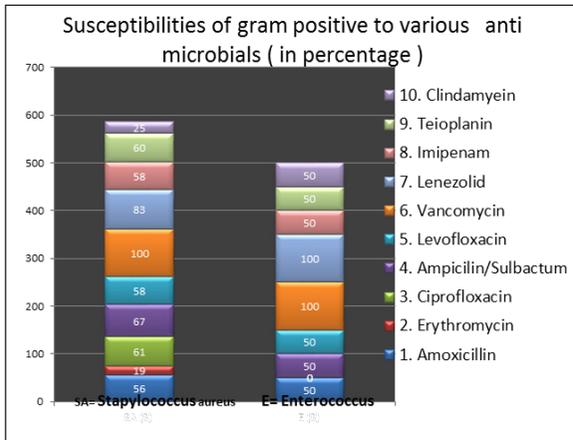
TABLE NO. 2 SUSCEPTIBILITIES OF GRAM NEGATIVE ISOLATES TO VARIOUS ANTIMICROBIALS

Antimicrobials	Pseudo-monas aerugi-nosa n= 35		Klebsiella n=17		Escheri-chia-coli n= 5		Acine-tobacter n= 4		Other n=7	
	n*	S (%)	n*	S (%)	n*	S (%)	n*	S (%)	n*	S (%)
1. Cipro-floxacin	21	7(34)	9	2 (33)	5	1 (20)	4	1 (25)	7	3(43)
2. Amika-cin	21	16(76)	13	6 (46)	3	1(34)	4	2 (50)	7	3(43)
3. Cifo-taxime	20	6(30)	9	2 (33)	3	1 (34)	4	2 (50)	7	6(86)
4. Ofloxa-cin	20	4(20)	14	5 (35)	5	3 (66)	4	2 (50)	4	2(50)
5. Imipe-nem	25	24(96)	9	6 (66)	4	3 (75)	4	3 (75)	6	6(100)
6. Poly-myxin B	24	18 (75)	13	9 (69)	5	3 (66)	4	4 (100)	7	3 (43)
7. Piperacillin/ tazobac-tum	28	25(89)	11	6 (54)	5	4 (80)	4	3 (75)	7	6 (86)
8. Colistin	20	12 (60)	17	15 (88)	5	5 (100)	4	4 (100)	7	2(29)
9. Cef-tazidime/ Clavulanic acid	21	8 (38)	10	4 (40)	4	3 (75)	3	3 (100)	4	4 (100)
10. To-bramycin	20	4 (20)	9	6 (66)	5	4 (80)	4	3 (75)	4	3 (75)
11. Cefepime / tazo bactum	18	11 (61)	16	13 (81)	3	1 (34)	4	3 (75)	7	6(86)

TABLE NO. 3 SUSCEPTIBILITIES OF GRAM POSITIVE TO VARIOUS ANTIMICROBIALS

Antimicrobials	Staphylococcus au-reus n = 18		Enterococcus n=2	
	n*	S (%)	n*	S (%)
1. Amoxicillin	18	10 (56)	2	1 (50)
2. Erythromycin	16	3 (19)	2	0 (0)
3. Ciprofloxacin	13	8 (61)	2	0 (0)
4. Ampicilin/Sul-bactam	12	8 (67)	2	1 (50)
5. Levofloxacin	12	7 (58)	2	1 (50)
6. Vancomycin	18	18 (100)	2	2 (100)
7. Linezolid	18	15 (83)	2	2 (100)
8. Imipenem	12	7 (58)	2	1 (50)
9. Teioplanin	10	6 (60)	2	1 (50)
10. Clindamycin	12	3 (25)	2	1 (50)





DISCUSSION:

In the present study culture positivity was found upto 70.9% in samples from burns patients, which was similar to the studies conducted by Muhammad Naveed Shahzad et.al.⁹

In our study pseudomonas aeruginosa was the predominant isolate of about 28.2% followed by klebsiella spp. (13.7%) which were similar to the studies conducted by Agnihotri et.al.¹⁰

Amongst gram positive organism Staphylococcus aureus was the commonest isolate of about 14.51% followed by enterococcus of (1.6%) similar observation were seen in the study conducted by olive M Liwimbi et.al.¹¹. Proteus mirabilis and Citrobacter spp. was in 3 cases each (2.41%).

Pseudomonas aeruginosa showed maximum sensitivity towards Imipenam of about 96% followed by Piperacillin tazobactum of about 89%.

Staphylococcus aureus showed maximum sensitivity towards Vancomycin (100%) followed by Linezolid (83%). E.coli and Acinetobacter spp. were (100%) sensitive to colistin.

CONCLUSION:

To reduce the prevalence of infection due to the antibiotic resistant organism, strict infection control practices and appropriate empirical antimicrobial therapy are essential.

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