(10µg), Erythromycin (15µg), Clindamycin (2µg), Ciprofloxacin (5µg), Cotrimoxazole, Chloramphenicol (30µg), Gentamycin (10µg), Linezolid (30µg), Vancomycin (30µg) and Cefoxitin (30µg).

Antibiotics used for Enterocioccus species were Penicillin (10µg), Linezolid (30µg), Vancomycin (30µg), Daptomycin, High level resistance Gentamycin and High level resistance streptomycin.

Antibiotics used for Gram negative organisms were Ampicillin (10µg), Ciprofloxacin (5µg), Cefotaxime (30µg), Meropenem (10µg), Amikacin (30µg), Amoxyclavulanicacid (20/10µg), Ceftriaxone (30µg) and Chloramphenicol (30µg).

Antibiotics used for Pseudomonias species were Ceftazidime(30µg), Gentamycin(10µg), Ciprofloxacin(5µg), Piperacillin-tazobactam(100/10µg), Amikacin(30µg), Meropenem(10µg), Ceftriaxone (30µg) and Cefepime (30µg).

Antibiotics used for Acinetobacter species were Ampicillin-sulbactam (10/10µg), Gentamycin(10µg), Ceftazidime (30µg), Ciprofloxacin (5µg), Amikacin (30µg), Meropenem (10µg), Ceftriaxone (30µg) and Cefepime (30µg).

Statistical analysis: Quantitative variables, Continuous demographic variables (age, sex, and others) were expressed as number while qualitative variables were expressed as percentages.

RESULTS

Out of the 134 pus samples analysed in our study, 92(68.65%) were culture positive and 42(31.34%) were sterile. Only one sample was identified as Caindida species. 6(6.74%) samples had mixed infections of two different aerobic bacteria. 56.17% of the positive culture reports belonged to IPD and 43.83% belonged to OPD. The most common age group was 30-40 years.

Table 1 Showing different isolated aerobic bacteria

Organism	Number	Percentage
Staphylococcus aureus	49	53.84
Escherichia coli	19	20.87
Pseudomonas spp	5	5.49
Proteus spp	4	4.39
Klebsiella spp	3	3.29
Citrobacter spp	2	2.19
Coagulase negative Staphylococcus aureus	2	2.19
Enterococcus spp	1	1.09
Staphylococcus aureus & Proteus spp	2	2.19
Staphylococcus aureus & Acinetobacter spp	1	1.09
Proteus spp & Klebsiella spp	1	1.09
Pseudomonas &Staphylococcus aureus	1	1.09
Proteus spp & Pseudomonas	1	1.09

Table 1 shows different aerobic bacteria isolated in our study. The most common organism was *Staphylococcus aureus* 53.84%, followed by *Escherichia coli* 20.87% and *Pseudomonas* species 5.49%. Only two samples showed mixed growth of *Staphylococcus aureus* and *Proteus* species otherwise mixed growth of *Staphylococcus aureus* and *Acinetobacter* species, Proteus Species and *Klebsiella* species, *Pseudomonas* species and *Staphylococcus aureus* and *Proteus species* and Pseudomonas species were seen only in one sample each.

Table 2 Antibiotic sensitivity pattern of Gram positive cocci

Antibiotics	*Staphylococcus aureus* Total=53	*Enterococcus spp* Total=1	CONS Total = 2
Penicillin	10 (18.86%)	1(100%)	1(50%)
Azithromycin	29 (54.71%)	-	1(50%)
Clindamycin	41 (77.35%)	-	2(100%)
Ciprofloxacin	30 (56.60%)	-	-
Cotrimoxazole	30 (56.60%)	-	-
Chloramphenol	18 (33.96%)	-	-
Gentamycin	42 (79.24%)	-	-
Linezolid	53 (100%)	1(100%)	2(100%)
Vancomycin	53 (100%)	1(100%)	2(100%)
Cefoxitin	6 (11.32%)	-	2(100%)
HLR Gentamycin	-	1(100%)	-
Daptomycin	-	1(100%)	-
HLR Streptomycin	-	1(100%)	-

Table 2 Shows the antibiotic sensitivity pattern of Gram positive cocci as per the CLSI guidelines. In our study, *Staphylococcus aureus* was least sensitive to Penicillin (18.86%). Sensitivity of Azithromycin, Clindamycin, Ciprofloxacin, Cotrimoxazole, Chloramphenicol and Gentamycin were 54.71%, 77.35%, 56.60%, 56.60%, 33.96% and 79.24% respectively. 100% sensitivity was seen with Vancomycin and Linezolid. Only 11.32% were sensitive to Cefoxitin. Therefore, MRSA accounted for about 88.68%.

There was only one isolate of *Enterococcus* species, which was found to be sensitive to all the drugs tested i.e., Penicillin, Linezolid, Vancomycin, HLR Gentamycin, HLR Streptomycin and Daptomycin.

Amongst the CONS, out of the two isolates, both were sensitive to Clindamycin, Linezolid, Vancomycin, Cefoxitin but only one was sensitive to Penicillin and Erythromycin.

Table 3 Antibiotic sensitivity pattern of Gram negative bacilli

Antibiotics	Escherichia coli -19	Klebsiella spp-4	Proteus spp-8	Citrobacter spp-2
Ampicillin	9(47.36%)	3(75%)	5(62.5%)	1(50%)
Ciprofloxacin	11(57.89%)	3(75%)	5(62.5%)	1(50%)
Cefotaxime	9(47.36%)	2(50%)	3(37.5%)	2(100%)
Meropenem	15(78.94%)	3(75%)	7(87.5%)	2(100%)
Amikacin	16(84.21%)	3(75%)	6(75%)	2(100%)
Amoxycla-vulanic acid	7(36.84%)	1(25%)	3(37.5%)	1(50%)
Chloramp-henicol	13(68.42%)	2(50%)	5(62%)	1(50%)
Ceftriaxone	15(78.947%)	3(75%)	6(75%)	1(50%)

Table 3 Shows the antibiotics sensitivity pattern of the Gram negative organism isolated in our study.

Escherichia coli was most sensitive to Amikacin (84.21%) followed by Ceftriaxone and Meropenem (78.94%). Escherichia coli were least sensitive to Amoxyclavulanic acid (36.84%). Amongst the *Klebsiella* species isolates Ampicillin, Ciprofloxacin, Meropenem, Amikacin and Ceftriaxone showed the highest sensitivity (75%). Cefotaxime and Chloramphenicol were 50% sensitive and Amoxyclavulanic acid was the least sensitive (25%). For Proteus species, Meropenem was the most sensitive (87.5%) followed by Amikacin and Ceftriaxone (75%), Ciprofloxacin, Ampicillin and Chloramphenicol (62.5%) respectively. Cefotaxime and Amoxyclavulanic acid showed least sensitivity (37.5%). Both the Citrobacter species isolates were sensitive to Cefotaxime, Meropenem and Amikacin (100%). And, only one showed sensitivity to Ampicillin, Ciprofloxacin, Amoxyclavulanic acid, Chloramphenicol and Ceftriaxone (50%) respectively.

Table 4 Antibiotic sensitivity pattern of *Pseudiomonas* spp

Antibiotics	*Pseudiomonas* spp (7) Sensitivity (%)
Ceftazidime	3(42.85%)
Gentami cin	3(42.85%)
Piperacillin-tazobactam	5(71.42%)
Ciprofloxacin	5(71.42%)
Amikacin	4(57.14%)
Meropenem	4(57.14%)
Ceftriaxone	4(57.14%)
Cefepime	2(28.57%)

Table 4 Shows the antibiotic sensitivity pattern of *Pseudiomonas* species. Highest sensitivity was shown by Ciprofloxacin and Piperacillin-tazobactam with 71.42% sensitivity each followed by Amikacin, Meropenem and Ceftriaxone with sensitivity of 57.14% each. Cefepime showed the least sensitivity of 28.57%.

In our study, there was only one isolate of *Acinetobacter* species and it was sensitive to Ampicillin-Sulbactam, Gentamycin, Ciprofloxacin, Meropenem, Amikacin, Ceftriaxone and Cefepime but found to be resistant to Ceftazidime.

DISCUSSION

In our study, a total of 68.65% showed culture positive for aerobic bacteria out of which 6.74% samples had mixed infections of two different aerobic bacteria. Similar finding was also reported by B Biradar A et al.[7] Majority of our results were mono-microbial (96.73%) and *Staphylococcus aureus* was found to be the most common pathogen in our study (55.06%), similar reports were also observed by Sharma A et al.[8-10] Biradar A et al observed similar results and P Tiwari et al.[8,11] The second common pathogen in our study was *E.coli* (21.34%) followed by *Pseudomonas* spp.5.62%. Duggal S et al also found similar result.[12] Though *S. aureus* was the predominant organism, Gram-positive cocci accounted for only 49% of the total isolates, 51% being Gram negative bacilli. Such GNB dominance in the aerobic growth in pus culture has been highly seconded by studies reported by Mantravadi HB.[13]

In our study, Gram positive organisms obtained were 100% sensitive to Vancomycin and Linezolid. *Staphylococcus aiureus* isolates were more from OPD than IPD and difference in the sensitivity pattern was observed between the two though the statistical significance was not found out as the difference were in few numbers and also the sample size was small. Amongst the in-patient *Staphylococcus aiureus* showed sensitivity to Gentamycin and Clindamycin. Amongst the out-patient, the most sensitive drug was Azithromycin followed by Gentamycin. We found that only18.86% of *Staphylococcus aiureus* was sensitive to Penicillin and it was comparable with the finding of Jamatia A *et al*.[14] Ananthi B *et al*[1,3] also found that Gram positive organisms were 100% sensitive to Vancomycin and Linezolid. In our study, MRSA were 88.67%. Therefore, empirical antibiotic treatment should be primarily directed against this pathogen. Tiwari P *et al*[8,10] suggested that strict enforcement of hand washing and timely discharge of patients without delay will go a long way towards reducing the spread of this pathogen in this hospital.[15]

Amongst the GNB isolated in our study, *Escherichia coli* (20.87%) was the most common pathogenic isolate though it was the second most common organism isolated. It was found that it was most sensitive to Amikacin, followed by Meropenem which was similar when compared to a study conducted by Mantravadi HB *et al*.[16,17] There was no difference observed in the sensitivity pattern amongst the IPD and OPD isolates.

In our study, *Pseudomonas species* (5.49%) was the 3rd most common pathogenic isolate and were most sensitive to ciprofloxacin and Piperacillin-tazobactam (71.42%);

comparable finding was also seen in other studies.[16,18,19] P. aeruginosa is a prototypical "multidrug resistant (MDR) pathogen" recognized for its ubiquity, its intrinsically advanced antibiotic resistance mechanisms. *P. aeruginosa* is a reason for high fatality rate, as it has arisen as a vital pathogen for nosocomial infection in hospital settings.[20] Therefore, judicial usage of antibiotics becomes a necessity.

In our study, the incidence of Coagulase negative Staphylococcus (CONS), which grew as pure growth was only 2.19%, which may be due to small sample size. And, we have reported CONS as pathogenic as it is now being increasingly recognized as pathogens. CONS have become a common cause of nosocomial infections.[21] But we sent the reports with a note stating to clinically correlate as CONS is an opportunistic bacteria. Mane P et al found that 15.53% CONS isolates were from pus.[21-23] Golia Set aland Asangi Y S *et al* found CONS isolates from pus samples were 47% and 33.3% respectively.[24-26]

The strength of the study was that the laboratory technicians have been consistent with their tests results which increases comparability and reliability and reduces variability.

CONCLUSION

This study concludes by proposing Gentamicin and Ceftriaxone as empirical treatment for Gram positive cocci and Gram negative bacilli. The antibiotic pattern and the bacterial profile of pus may change from time to time and place to place, as observed by different studies. Therefore, similar studies should be conducted from time to time. And, there is a need for larger scale study for more significant results. There is also a need to include anaerobes in such studies.

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