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Study Of Catheter Associated Blood Stream And Urinary Tract Infections In Burns Patients.

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ABSTRACT

Nosocomial infections are one of the most common complications affecting hospitalized patients and contribute to excess morbidity and mortality Burn injury is the most important health problem in many countries of the world. This was an observational, prospective study. The study was conducted in department of General Surgery of a tertiary care centre. The study was conducted for a period of 18 months. Period which was required for collecting data 01/01/2021 to 30/06/2022 , Period that was required for analyzing data 01/07/2022 to 01/10/2022 . The study was conducted among burns patient admitted in Male and Female general surgery burns ward of tertiary care hospital. We noted various Organisms isolated in our case in there culture. 31.7% cases had Pseudomonas A., 25% cases had No organisms isolated, 10% cases had Proteus and E coli respectively, 8.3% cases had Klebsiella, 6.7% cases had Staph Aureus, 5% cases had Acinetobacter sp., 1.7% cases had Enterobacter sp. and Enterococcus each. Indwelling urinary catheters and intravenous catheter are a routine in most burns patients. As with any medical innovation the benefits of the catheters must be weighed against its potential adverse effects. The most common adverse effect being catheter associated urinary tract infections and intravenous catheter associated infections. The antimicrobial pattern of resistance is a very important option for treatment in burn patients.

Keywords: Urinary tract infections, nosocomial infection

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INTRODUCTION

Nosocomial infections are one of the most common complications affecting hospitalized patients and contribute to excess morbidity and mortality Burn injury is the most important health problem in many countries of the world [1-3]. Organisms associated with nosocomial infections in burn patients include organisms found in thepatient's own endogenous (normal) flora, from exogenous sources in the environment, and from healthcare personnel [4]. Catheter associated infection & septic thrombophlebitis in patient are as higher as 57% [5]. Franchesi *et al.* described 80% correlation between the organism cultured from tip and connectors of catheters within two days of placement [6]. The distribution of organisms changes over time in the individual patient and such variation can be improved with suitable management of the burn wound and patient [7].

Sources of organisms may be endogenous (the patient's own flora) or exogenous (the environment and from health care personnel). Organisms associated with infection in burn patients include gram-positive, gram-negative, and yeast or fungal organisms. The distribution of organisms changes over time in the individual patient, however, and such changes can be ameliorated with appropriate management of the burn wound and the patient [8]. The typical burn wound is initially colonized predominantly with gram-positive, Organisms of particular concern include methicillin-resistant S aureus, enterococci, group A b-hemolytic streptococcus, and coagulase-negative staphylococci [9]. Fungal organisms, especially Candida (yeast) species and molds like Aspergillus, Mucor, and Rhizopus, have been associated with serious infections in burn patients but are difficult to diagnose [10]. Hence, present study was carried out to find the prevalence of catheter induced infections in burn patients.

METHODOLOGY

This was an observational, prospective study. The study was conducted in department of General Surgery of a tertiary care centre. The study was conducted for a period of 18 months. Period which was required for collecting data 01/01/2021 to 30/06/2022, Period that was required for analyzing data 01/07/2022 to 01/10/2022 . The study was conducted among burns patient admitted in Male and Female general surgery burns ward of tertiary care hospital.

Sample size is determined by Complete Enumeration method. All the cases available during the study period is considered and studied with consideration of exclusion and inclusion criteria, All the relevant information was recorded in case record form (CRF).

The study was conducted after obtaining permission from the InstitutionalEthics committee and department of general surgery.

All the data collected as a part of this study was kept strictly confidential and used for the purpose of the study only.

Selection criteria

Study participants were selected based on following selection criteria.

Inclusion criteria

- Burn patients primarily admitted in our hospital and managed in burn ward
- Age: 15 to 70 years
- Patients of both sex (Male & Female)
- Patients who received a central venous/peripheral catheter and foley'scatheter.

Exclusion criteria

- Patients whose record was not available.
- Patients who were lost to follow up the initial Procedure.

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- Patient unwilling for giving their consent.
- Withdrawal policy
- Patient who does not turn up for follow up.
- Patient who opts to quit the study.

RESULTS

In our study, we had total 60 cases, 50% of them were less than 30 years of age, 38.3% cases were between 30 to 60 years of age, while 11.7% cases were more than 60 years of age.

Table 1: Distribution depending on organism found on culture

Organism	Frequency	Percentage
Acinetobacter sp.	3	5
E. Coli	6	10
Enterobacter sp.	1	1.7
Enterococcus	1	1.7
Klebsiella	5	8.3
No organisms isolated	15	25.0
Proteus	6	10.0
Pseudomonas A.	19	31.7
Staph Aures	4	6.7
Total	60	100

We noted various Organisms isolated in our case in there culture. 31.7% caseshad Pseudomonas A., 25% cases had No organisms isolated, 10% cases had Proteus and E coli respectively, 8.3% cases had Klebsiella, 6.7% cases had Staph Aureus, 5% cases had Acinetobacter sp., 1.7% cases had Enterobacter sp. and Enterococcus each.

Table 2: Distribution depending on antibiotic sensitivity

Sensitive	Frequency	Percentage
Not done	15	25.0
Amoxicillin	2	3.3
Ceftriaxone + Sulbactem	5	8.3
Cetriaxone + Sulbactem	1	1.7
Gentamicin	1	1.7
Imipenem	2	3.3
Linezolid	5	8.3
Meropenem	11	18.3
Piperacillin + Tazobactem	17	28.3
Vancomycin	1	1.7
Total	60	100

We noted various antibiotic sensitivity reports in our study. We found that 28.3% cases were sensitive to Piperacillin+Tazobactem, 18% cases to Meropenem, 8.3% cases to Linezolid and Ceftriaxone+Sulbactem each, 3.3% to Amoxicillin and Imipenem each, 1.7% cases to Cetriaxone + Sulbactem, Gentamicin, and Vancomycin each, while in 25% cases, Antibiotic sensitivity was not done.

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Table 3: Distribution depending on antibiotic resistant

Resistant	Frequency	Percentage
Amoxicillin	7	11.7
Ampicillin	5	8.3
Ceftriaxone	1	1.7
Ciproflox	7	11.7
Cotrimoxazole	5	8.3
Gentamicin	2	3.3
Linezolid	1	1.7
None	15	25.0
Piperacillin + Tazobactem	1	1.7
Tetracycline	13	21.7
Tobramycin	3	5.0
Total	60	100

We noted Antibiotic resistance in our cases. We had 25% cases with no Antibiotic resistance, 21.7% cases were resistant to Tetracycline, 11.7% cases resistant to Amoxicillin, Ciproflox each, 8.3% cases to Ampicillin and Cotrimoxazole each, 5% cases to Tobramycin, 3.3% cases to Gentamicin, while only 1.7% cases were resistant to Linezolid, Ceftriaxone and Piperacillin + Tazobactem each.

Table 4: Distribution depending on species involved

Species	Frequency	Percentage
Gram +ve Anaerobe	7	11.7
Gram -ve Aerobe	31	51.7
Gram -ve Anaerobe	7	11.7
None	15	25.0
Total	60	100

We noted distribution depending on the species involved. In our study, 25% cases had no species, 31% cases had Gram -ve Aerobe, 7% cases had Gram +ve Anaerobe and Gram -ve Anaerobe each.

DISCUSSION

In our study, we had total 60 cases, 50% of them were less than 30 years of age, 38.3% cases were between 30 to 60 years of age, while 11.7% cases were more than 60 years of age. Study by Behnam Sobouti et al [10] showed that mean age of 4.52±3.63 years. Campos Júnior et al [11] showed that age ranged from 4 to 79 years (mean age = 37.1 years; standard deviation = ±19.7 years. Study by Azimi et al [12] showed that majority cases were in age group of 16 to 30 (36%) followed by 31 to 45 years (24%).

In our study, 70% cases were successfully Discharged from hospital while 30% cases Expired.

In our study, we noted the % of burns in all our cases. Majority cases were less than 20% burns which were almost 33.3% cases, 31.7% cases had 20 to 40% burns, 16.7% cases had 40 to 60% burns, 15% cases had 60 to 80% burns, while only 3.3% cases had more than 80% burns. Study by Azimi et al [13] showed that majority 39% burnt 1-29, 31% burnt 30-50 etc. We noted various Organisms isolated in our case in there culture. 31.7% cases had Pseudomonas A., 25% cases had No organisms isolated, 10% cases had Proteusand E coli respectively, 8.3% cases had Klebsiella, 6.7% cases had Staph Aureus, 5% cases had Acinetobacter sp., 1.7% cases had Enterobacter sp. and Enterococcus each. We noted distribution depending on the species involved. In our study, 25% cases had no species, 31% cases had Gram -ve Aerobe, 7% cases had Gram +veAnaerobe and Gram -ve Anaerobe each.

We noted various antibiotic sensitivity reports in our study. We found that 28.3% cases were sensitive to Piperacillin+Tazobactem, 18% cases to Meropenem, 8.3% cases to Linezolid and Ceftriaxone+Sulbactem each, 3.3% to Amoxicillin and Imipenem each, 1.7% cases to Cetriaxone + Sulbactem, Gentamicin, and Vancomycin each, while in 25% cases, Antibiotic sensitivity was not done.

We noted Antibiotic resistance in our cases. We had 25% cases with no Antibiotic resistance, 21.7% cases were resistant to Tetracycline, 11.7% cases resistant to Amoxicillin, Ciproflox each, 8.3% cases to Ampicillin and Cotrimoxazole each, 5% cases to Tobramycin, 3.3% cases to Gentamicin, while only 1.7% cases were resistant to Linezolid, Ceftriaxone and Piperacillin + Tazobactem each. PatelBM et al [7] showed Antimicrobial resistance was 63.5% of the isolates, particularly in Gram-negative bacteria.

CONCLUSION

Indwelling urinary catheters and intravenous catheter are a routine in most burns patients. As with any medical innovation the benefits of the catheters must be weighed against its potential adverse effects.

The most common adverse effect being catheter associated urinary tract infections and intravenous catheter associated infections. The antimicrobial pattern of resistance is a very important option for treatment in burn patients.

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