ORIGINAL RESEARCH PAPER
Volume - 12 | Issue - 03 | March - 2023 | PRINT ISSN No. 2277 - 8179 | DOI : 10.36106/ijsr
INTERNATIONAL JOURNAL OF SCIENTIFIC RESEARCH

AN INSTITUTIONAL BASED INTERVENTIONAL OBSERVATIONAL AND COMPARATIVE STUDY OF BACTERIOLOGICAL PROFILE OF SURGICAL SITE INFECTION IN ABDOMINAL SURGERIES

Surgery

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ABSTRACT

Background- Infection caused by microorganisms from an outside source following surgery is less common. When skin is incised, underlying tissue is exposed to overlying endogenous flora. Most typically, aerobic gram-positive cocci such as Staphylococcus serve as the contaminant, with resistant pathogens such as methicillin-resistant S. aureus (MRSA) representing an increasing proportion of such infections in recent years **Methods-** This study was performed in surgical unit of the Department of General Surgery at MDM Hospital affiliated to Dr S.N. Medical College, Jodhpur, Rajasthan, India. Patients below 13 years of age and patients undergoing non-abdominal surgeries were excluded from the study. The study period was from July 2018 to January 2021. **Results-** In present study most common organism on culture was E. coli; 75% in group A and 69.77% in group B. Second most common organism was Klebsiella, 25% in group A and 11.63% in group B. **Conclusion-** It is concluded that E. coli, is the most common causative micro-organism of SSTI following laparotomy.

KEYWORDS

SSI, E.coli, Micro-organism

INTRODUCTION

Infection caused by microorganisms from an outside source following surgery is less common. When skin is incised, underlying tissue is exposed to overlying endogenous flora. Most typically, aerobic gram-positive cocci such as *Staphylococcus* serve as the contaminant, with resistant pathogens such as methicillin-resistant *S. aureus* (MRSA) representing an increasing proportion of such infections in recent years.[1] Entry into hollow viscera exposes surrounding tissue to gram-negative bacilli such as *Escherichia coli*, gram-positive organisms such as enterococcus, and, occasionally, anaerobes such as *Bacillus fragilis*.[2] Yeast species and viral pathogens also pose a risk.[3]

Surgical site infections also raise costs due to prolonged hospitalization, additional diagnostic tests, therapeutic antibiotic treatment, and, rarely, additional surgery. Deep SSIs tend to raise costs more than superficial infection.[4]

MATERIAL AND METHODS

An institutional based interventional observational and comparative study was performed in surgical unit of the Department of General Surgery at MDM Hospital affiliated with Dr S.N. Medical College, Jodhpur, Rajasthan, India. Patients below 13 years of age and patients undergoing non-abdominal surgeries were excluded from the study. The study period was from July 2018 to January 2021.

Patients were divided into two groups. In two hundred fifty patients, a negative suction drain was placed in subcutaneous plane at the time of closure of abdomen after laparotomy (Group A) whereas in hundred patients, no negative suction drain was placed in subcutaneous plane (Group B).

In this study, detailed history was taken and systemic examination was done of all the patients included. Patients underwent pre-operative routine blood and radiological investigations as required. Patients were assessed for elective/emergency abdominal surgery. After pre-anaesthetic workup and informed consent, surgery was planned. Operative details of the procedure, duration of surgery, mode of anaesthesia, elective/emergency, incision site and size were noted.

Post-operative daily observation of surgical site and drain amount and content were recorded. Post-operative details in terms of surgical site infection, seroma formation, wound dehiscence and burst abdomen were noted. Sample for culture and sensitivity was taken from surgical site in case of SSI. Drain was removed after collection if drain was nil for 48 hrs. Any patient who died in the postoperative period due to a systemic cause was excluded from the study.

RESULTS

Table 1: Distribution of patient according to age

Variable	Group A	Group B
Age in yrs	41.86±18.38	42.07±18.50
Male : Female	153:62	85:25

In this study, most of the patients (35.35%) were between to 31 to 50 years in group A, whereas most of the patients (34.55%) in group B were between 13 to 30 years of age. Mean age of group A and B was 41.86 and 42.07 years respectively. Male patients in group A was 72.50%, whereas in group B was 77%. Male to female ratio in group A was 2.63:1 and in group B was 3.31:1.

Table 2: Organism grown in culture

Organism	Group A		Group B	
	N	%	N	%
E Coli	21	75.00	30	69.77
Klebsiella SP	7	25.00	5	11.63
Enterococcus SP	0	0.00	3	6.98
Enterococcus Facium	0	0.00	1	2.33
Staph Aureaus	0	0.00	2	4.65
Yeast body grown on culture	0	0.00	1	2.33
No organism	0	0.00	1	2.33
Total	28	100.00	43	100.00

In present study most common organism on culture was *E. coli*; 75% in group A and 69.77% in group B. Second most common organism was *Klebsiella*, 25% in group A and 11.63% in group B.

DISCUSSION

In present study, swabs were taken from surgical stitch line and sent for culture and sensitivity. Most common organism grown on culture was E. coli; 75% in group A, 69.77 % cases in group B. followed by Klebsiella in 25% cases in group A and 11.63% cases in group B. In the study of Sahu[4], most of the wound cultures showed monobacterial growth of which maximum was Escherichia coli (50%) followed by Staphylococcus aureus (20%). Kumar[5] in their study found that the most common organism isolated was E.coli accounting for 62.5% and 62.7% of cases in drain group and control group respectively, followed by Klebsiella (12.5% vs 24.14%), Stapylococcus aureus(12.5% vs 10.34%) and Candida(12.5% vs 3.45%).

CONCLUSION

It is concluded that E. coli, is the most common causative micro-organism of SSTI following laparotomy.

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