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A Risk Factor Assessment Study Associated with Surgical Site Infection at District Hospital Sikar.

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ABSTRACT

Background: Surgical site infections (SSI) are the most common nosocomial infection and frequently cause morbidity and mortality among inpatients of hospitals. The aim is the analysis of the risk factors for Surgical Site Infections. **Methods:** In this study, 100 surgically operated cases were taken with age group between 15-60 years. Study was done in surgery department of District Hospital Sikar from January 2015 to December 2015. All cases were registered fulfilled the inclusion criteria. **Results:** Out of 100, 20 patients had surgical site infection. The SSI rate was 1% in clean surgeries, 9% in clean contaminated ones, 30% in contaminated ones and 60% in dirty surgeries. The SSI rate was significantly less in patients who received pre-operative antibiotic prophylaxis. Most common organism involved was staphylococcus aureus. **Conclusion:** The incidence of SSI is high in our setup. Elderly age group, diabetic, immunocompromised have more chances to have SSI than others.

Keywords: SSI, Immunocompromised, Surgical Site, Nosocomial.

INTRODUCTION

Infection is the clinical manifestation of the inflammatory reaction incited by invasion and proliferation of microorganisms. Despite modern surgical techniques and the use of antibiotic prophylaxis, surgical site infection (SSI) is one of the most common complications encountered in surgery. SSI places a significant burden on both the patient and health system, especially in Africa where resources are limited.[1] SSI occurs in up to 40% of surgical procedures, delaying recovery by one week on average and often resulting in the need for further surgical procedures. It is still a major limiting factor in advancing the horizons of surgery in spite of the progress made in its control. SSI is thus a major cause of morbidity, prolonged hospital stay, and in-creased health costs. Before the mid-19th century, surgical patients commonly developed postoperative "irritative fever," followed by purulent drainage from their incisions, overwhelming sepsis, and often death. It was not until the late 1860s, after Joseph Lister introduced the principles of antisepsis that postoperative infectious morbidity de-creased substantially.[2] Lister's work radically changed surgery from an activity associated with infection and death to a discipline that could eliminate suffering and prolong life Advances in infection control practices include improved operating room ventilation, sterilization methods, barriers, surgical technique, and availability of antimicrobial prophylaxis.[3] Despite these activities, SSIs remain a substantial cause of morbidity and mortality among hospitalized patients. This may be partially explained by the emergence of antimicrobial-resistant pathogens and the increased numbers of surgical patients who are elderly and/or have a wide variety of chronic, debilitating, or immunocompromising underlying diseases. There also are increased numbers of prosthetic implant and organ transplant operations per-formed. Thus, to reduce the risk of SSI, a systematic but realistic approach must be applied with the awareness that this risk is influenced by characteristics of the patient, operation, personnel, and hospital.[4]

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MATERIALS AND METHODS

In this study, 100 surgically operated cases were taken with age group between 15-60 years. Study was done in surgery department of District Hospital Sikar from January 2015 to December 2015. All cases were registered fulfilled the inclusion criteria.

RESULTS

Out of 100, 20 patients had surgical site infection. The SSI rate was 1% in clean surgeries, 9% in clean contaminated ones, 30% in contaminated ones and 60% in dirty surgeries. The age of study subjects ranged between 15 years to 60 years. Majority 70% of them belonged to 30-40 years group. BMI was less in 64% of patients with SSI. Half of them were diabetic. Anaemia was found to be 75% of patients with SSI. The SSI was most common in emergency laparotomies. The SSI rate was significantly less in patients who received pre-operative antibiotic prophylaxis. Most common organism involved was staphylococcus aureus.

DISCUSSION

The prevalence rate of surgical site wound infection, though preventable, is high. Studies by Agarwal (1972), Rao and Harsha (1975), Kowli et al. (1995) and Anvikar (1999) have shown surgical site infection rates in India to be between 4 to 30% (Agarwal, 1972; Rao and Harsha, 1975; Kowli et al., 1985; Anvikar et al., 1999).[5] Harbarth et al. (2008) have observed that methicillin-resistant S. aureus alone constituted 5.1% of surgical site infections (Harbarth et al., 2008).[6] In our study the prevalence of SSIs was 12%; the common etiologic agents among gram-positive organ-isms being S. aureus and Enterococcus spp. Among the gram-negative organisms are P. aeruginosa, E. coli and Klebsiella spp. (Rao and Harsha, 1975).[7] These results are consistent with literature reports indicating that S. aureus was the commonest isolate from postoperative wound infection (Nichols, 1998; Schaberg, 1994; Cruse and Foord, 1980). E. faecalis was seen in 33.3% of surgical site infec-tions. Kowli et al. (1985) found an infection rate of 17.4% when preoperative stay was 0-7 days, and an infection rate of 71.4% with a preoperative stay of more than 21 days (Kowli et al., 1985). Anvikar et al. (1999) demonstrated that preoperative hospital stays predisposed an in-dividual to 1.76% risk of acquiring an infection.[8] With an increase in preoperative stay, the risk increased proportion-ally. A preoperative stay of one week increased the risk rate to 5% (Anvikar et al., 1999). Prolonged postoperative hospitalization, which is a major concern of most of the hospitals, has been evident in patients developing surgical site infection (Nichols, 1984).The rate of SSI varies greatly worldwide and from hospital to hospital. The rate of SSI varies from 2.5% to 41.9% as per different studies.[9] The incidence of SSI in the present study is 21.66% even though high, is in agreement with the various studies. The rate of SSI increases with the increase in age. In the current study a higher proportion of SSI was found among the subjects older than 50 years. This is comparable to other studies. This is due to poor immune response, existing co morbidities in old patients and reduced compliance with treatment. The pre operative antibiotic prophylaxis reduced the rate of SSIs from 20% to 8.42%. The difference was statistically significant (p=0.0095). Contrary to the results of our study, a higher SSI rate in patients who had received pre-operative antibiotics, was observed by P.K. Agarwal et al.[10]

CONCLUSION

The incidence of SSI is high in our setup. Elderly age group, diabetic, immunocompromised have more chances to have SSI than others. Our study reveals that though SSIs have been widely studied since a long time, they still remain as one of the most important causes of morbidity and mortality in surgically treated patients. The steps taken to reduce SSIs are still not adequate. Proper infection control measures and a sound antibiotic policy should reduce SSIs in the future.

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