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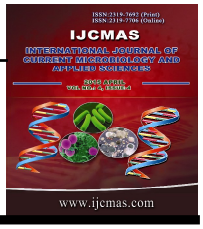

Original Research Article

Incidence of *Staphylococcus aureus* in Surgical Site Infections in a Teaching Hospital

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A B S T R A C T

Post- operative wound infections occur when the inoculum of contaminating micro-organisms is not contained by host defences, proliferates and produces established infection. The objective was to isolate and identify the incidence of *Staphylococcus aureus* from the infected surgical site. This study was undertaken in various surgical units, to isolate bacterial pathogens from surgical site infections. Total number of specimens collected was 250. Out of which pus swabs were 210, pus aspirates were 40. The positive cultures for *Staphylococcus aureus* in this study were 108 (43.2%), Coagulase negative *Staphylococci* are 37 (14.8%), *Enterococcus faecalis* 21 (8.4%), *Klebsiella pneumoniae* 19 (7.6%), *Proteus vulgaris* 12 (4.8%), *Escherichia coli* 9 (3.6%) and no bacteria grown in 44 samples (17.6%). It has been concluded that the most common organism in surgical site infections was *Staphylococcus aureus* found in the present study.

Keywords

Surgical Site Infections (SSI), *Staphylococcus aureus*, Pus swabs, Pus aspirates

Introduction

Post –operative wound infection is an infection that develops within 30 days after an operation, within one year if an implant was placed and infection appears to be related to the surgery (Horan et al., 1992).

These infections number approximately 5,00,000 per year, among an estimated 27 million surgical procedures and account for approximately one quarter of the estimated 2 million nosocomial infections each year. Post operative wound infection remains the major source of illness and one of the causes of death in surgical patients (Nichols, 1998).

Staphylococcus was first identified in 1880 in Aberdeen, Scotland by the surgeon Sir Alexander Ogston in pus from a surgical abscess in a knee joint (Ogston, 1984). It is estimated that 20% of the human population are long-term carriers of *S. aureus* (Kluytmans et al., 1997) which can be found as part of the normal skin flora and in anterior nares of the nasal passage.

S. aureus is the most common species of staphylococcus to cause Staphylococcal infections and is a successful pathogen due to a combination of nasal carriage and bacterial immuno-evasive strategies. *S. aureus* can cause a range of illnesses, from

minor skin infections, such as pimples, impetigo, boils (furuncles), cellulitis folliculitis, carbuncles, scalded skin syndrome and abscesses, to life-threatening diseases such as pneumonia, meningitis osteomyelitis, endocarditis, toxic shock syndrome (TSS), bacteremia and sepsis. Its incidence ranges from skin, soft tissue, respiratory, bone, joint, endovascular to wound infections. It is still one of the five most common causes of nosocomial infections and is often the cause of postsurgical wound infections.

Materials and Methods

A total of 250 clinically suspected cases of post operative wound infection were taken from various surgical units like general surgery, orthopaedic, cardiothoracic, urology, nephrology, neurology and other superspeciality units.

Wound infection was diagnosed if any one of the criteria was fulfilled

Serous/non- purulent discharge from wound with signs of inflammation like

Oedema
Redness
Warmth
Raised local temperature
Fever >38°C
Tenderness
Induration
Pus discharge from wound

Wound deliberately opened up by the surgeon due to localised collection.

Pus swabs and Pus aspirates were collected. From each case two swabs were collected.

One of the swabs collected was used for preparation of direct smear and stained by Jensen's modification of Gram's stain. After allowing it to air dry, the smears were screened under oil immersion objective to note the morphological features of the bacteria and the presence of inflammatory cells.

Second swab was used for culture by inoculating it on media viz., Blood agar, MacConkey agar, Chocolate agar.

The inoculated Blood agar and MacConkey agar plates were incubated at 37°C overnight. The inoculated Chocolate agar plates were incubated in an atmosphere of 5–10% CO_2 in a candle jar. After overnight incubation the plates were examined for bacterial growth. Further identification and confirmation of isolated organisms was done by the standard identification tests.

After 48 hours incubation chocolate agar plates were similarly examined and the colonies further processed.

Result and Discussion

This study was undertaken in various surgical units, to isolate *Staphylococcus aureus* from surgical site infections.

Total number of specimens – 250
Pus swabs – 210 (84%)
Pus aspirates – 40 (16%)

Positive cultures for *Staphylococcus aureus* were 108 (43.2%).

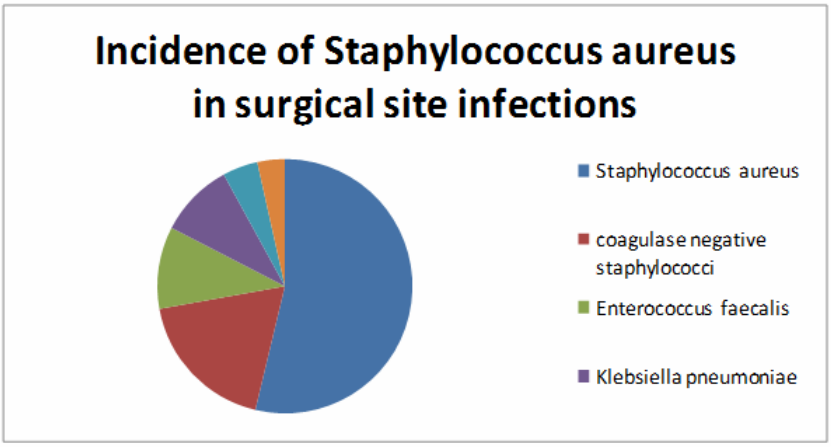
Coagulase negative *Staphylococci* were 37 (14.8%), *Enterococcus faecalis* 21 (8.4%), *Klebsiella pneumoniae* 19 (7.6%), *Proteus vulgaris* 12 (4.8%), *Escherichia coli* 9 (3.6%) and no bacteria grown in 44 samples (17.6%).

Table.1 Distribution of total number of specimen

Total number of specimens	Pus swabs	Pus Aspirates
250	210 (84%)	40 (16%)

Table.2

Total number of cultures	Number of cultures positive for *Staphylococcus aureus*	Percentage positive
250	108	43.2%



Surgical site infection is the commonest post operative complication and causes significant post-operative morbidity and mortality, prolongs hospital stay and adds between 10–20% to the hospital costs. Although the total elimination of wound infection is not possible, a reduction in the infection rate to a minimal level could have significant benefits in terms of both patient comfort and medical resources used.

The emergence of antibiotic resistant forms of pathogenic *S. aureus* is a worldwide problem in clinical medicine. This study was undertaken in various surgical units, to isolate *Staphylococcus aureus* from surgical site infections.

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