

**PREVALENCE AND SENSITIVITY PATTERN OF *STAPHYLOCCUS AUREUS* IN SURGICAL WOUND INFECTIONS****SARITA YADAV,\* APARNA YADAV, MADHU SHARMA,  
AND UMA CHAUDHARY .**

Department of Microbiology, Pt. B.D. Sharma UHS, Rohtak, Haryana, India.

**\*Corresponding Author** yadav78sarita@yahoo.com,madhusharma71@rediffmail.com**ABSTRACT**

The problem of infection has been persistent in the surgical world even after the introduction of antibiotics. Pathogens that infect surgical wounds can be part of normal flora or acquired from the hospital environment or other infected patients. *Staphylococcus aureus*, being the normal microbial flora of the skin is one of the commonest causes of wound infection. A total of 1088 pus samples from surgical wounds were received in the Department of Microbiology, Pt.B.D.S,UHS, Rohtak over a period of one year. The isolates were identified using standard laboratory procedures. All the isolates were tested for susceptibility to various commonly used antibiotics and screened for oxacillin susceptibility according to CLSI guidelines. Out of 1088 pus samples received, 833(76.5%) were culture positive. *S.aureus* accounted for 10.6% of surgical wound infections. Methicillin resistance was documented in 54 (60.6%) of the *S.aureus* isolates. Highest efficacy was observed with linezolid (100%). The hospital acquired surgical site infection is alarming. Hospital disinfection and treatment protocols should be practiced.

**KEY WORDS**

Staphylococcus, MDR, Surgical wound infection

**INTRODUCTION**

The problem of infection has been persistent in the surgical world even after the introduction of antibiotics. Pathogens that infect surgical wounds can be part of normal flora or acquired from the hospital environment or other infected patients. *Staphylococcus aureus*, being the normal microbial flora of the skin, is one of the

commonest causes of wound infections. Its increasing incidence is a growing concern with emergence of virulent, antibiotic resistant strains in the community settings.<sup>1</sup> The present study was conducted to see the prevalence of *S.aureus* in surgical wounds and to analyze the antimicrobial susceptibility pattern of the isolates.

## MATERIALS AND METHODS

A total of 1088 pus samples from surgical wounds were received in the Department of Microbiology, Pt.B.D.Sharma, BDS, UHS, Rohtak over a period of one year. All the samples were inoculated onto the blood agar and MacConkey agar plates and the isolates were identified using standard laboratory procedures.<sup>2</sup> All the isolates were tested for susceptibility to various commonly used antibiotics and screened for oxacillin susceptibility according to CLSI guidelines.<sup>3</sup>

## RESULTS

Out of 1088 pus samples received, 833(76.5%) were culture positive. *S.aureus* accounted for 10.6% (n- 89) of surgical wound infections. Highest efficacy was observed with linezolid (100%) followed by gatifloxacin (84.26%), amoxycylav(75.28%), cephalixin(53.93%), doxycycline(51.68%), erythromycin(48.31%) and pristinamycin(32.58%). Methicillin resistance was documented in 54 (60.6%) of the *S.aureus* isolates. All MRSA isolates were 100% sensitive to linezolid and vancomycin while gatifloxacin had 66.6% efficacy and pristinamycin was effective in eight(14.8%) isolates only.

## DISCUSSION

The hospital acquired surgical site infection is alarming and has been a problem in the field of surgery for a long time. Most bacteria live on our skin, in the nasopharynx and the gastro-intestinal tract of the body with little potential for causing disease because of first line defence within the body. Surgical operations, diseases, nutrition and other factors affect these defences. The skin barrier is disrupted by every skin incision, a contamination is inevitable despite the best skin preparation.<sup>4</sup>

The primary aim of this study was to determine the occurrence of *S.aureus* in post-operative wound infections and its sensitivity pattern to commonly used antibiotics. The

incidence of *S.aureus* in our study was 10.6%. It is in concordance with various other reports.<sup>5,6</sup> High incidence has been reported by others.<sup>4,7</sup> This could be attributed to differences in geographical location and hygienic measures.

The present study indicated that linezolid and gatifloxacin had highest sensitivity to the *S.aureus* isolates. Dhar et al<sup>6</sup> have also reported similar sensitivity pattern for gatifloxacin(86.6%). Cephalixin, a representative of first generation cephalosporins had the efficacy of 53.93% in our study. It has been documented that first generation cephalosporins in general, have more in vitro activity against *S.aureus* as compared to second and third generation cephalosporins with the exception of cephmandole, cefuroxime and possibly cefaclor. Cephalosporins of later generations have lower activity against staphylococci and offer no advantage over first generation cephalosporins.<sup>8</sup> MRSA is now one of the commonest bacteria causing nosocomial infections. The present study also revealed high prevalence rate of MRSA in our hospital (60.6%). This may be due to prolonged stay in the hospital, instrumentation and surgical intervention. An oral streptogramin, pristinamycin was the least effective drug (32.58%) in our study. Similar pattern has been reported from an earlier study<sup>9</sup> from our institute (36.0%). The drug was also found to be ineffective for MRSA isolates(14.8%) which is in contrast to the study by Dancer et al<sup>10</sup> who reported it to be highly effective drug against MRSA(87.0%).

The overall result of this study emphasizes that the magnitude of surgical wound infection problem may be increasing because many of the causative organisms have started to develop some form of drug resistance to currently used antibiotics. It is essential to give special attention in reducing surgical site infections. Hospital disinfection and treatment protocols should be practiced vigorously and monitored regularly by hospital infection control committee to keep the incidences in control.

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