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Multi-Drug Resistant Organisms Associated Surgical Site Infection - A Case Report

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ABSTRACT

Introduction: Surgical site infections (SSIs) are the second most prevalent category of healthcare-associated infections, and they continue to be one of the most frequent postoperative complications and causes of readmission following surgery. Multi-drug resistant organisms associated with surgical site infections are capable of ending up in significant post-surgical morbidity and mortality.

Case report: 73 year old female diagnosed with multi-drug resistant organism associated surgical site infection following wound debridement in emergency department. She was treated with fluroquinalones and there were no signs of infection both clinically and microbiologically after the completion of treatment on further follow up.

Conclusion: Strict infection control protocols, practicing proper hand hygiene, and giving patients the best possible operative care, the incidence of SSIs can be reduced. Providing the best possible supportive care requires careful planning involving surgical teams, microbiologists, and infection control teams.

Keywords: Surgical Site infections; Coagulase-Negative staphylococci; Enterobacter cloacae

INTRODUCTION

Surgical site infections (SSIs) are the second most prevalent category of healthcare-associated infections and they continue to be one of the most frequent postoperative complications which may cause readmission after surgery.[1-3]. The majority of surgical site infections (SSIs) are brought on by exogenous and/or endogenous bacteria that penetrate the surgical site either during (primary infection) or after the procedure (secondary infection) [4]. Initial infections which often appear within 5 to 7 days after surgery, are severe.[5]. The majority of SSIs are infections that affect the skin and subcutaneous tissue, although they can occasionally develop into necrotizing infections. Pain, discomfort, erythema, swelling, and discharge are common symptoms of infected surgical wounds[6,7]. The risk of SSIs can be significantly influenced by a variety of patient-related factors - old age, nutritional status, pre-existing infection, comorbid illness, and procedure-related factors –the poor surgical technique, prolonged surgery duration, preoperative part preparation, inadequate sterilization of surgical instruments[8-10]. MRSA has become a worldwide epidemic over the past forty years, and the line separating community- and hospital-acquired MRSA is getting increasingly hazy[11]. Vancomycin and Linezolid are examples of broad range of empirical medications used to treat MRSA[12].

CASE REPORT

A 76-year-old female patient was admitted to the emergency department with an injury to her third toe on the right foot caused by stepping on a stone. Wound debridement and suturing were performed on the third toe while the patient was under local anaesthesia. On the 3rd day patient presented with swelling, redness, local rise in temperature ,and pus discharge from the wound site. She was diagnosed with surgical site infection clinically. Wound debridement was done and samples including tissue and pus were sent for microbiological examination. The culture and sensitivity report revealed heavy growth of multi-drug resistant Enterobacter cloacae complex and Methicillin-resistant Coagulase-negative Staphylococcus aureus (MRCoNS). The patient was started with antibiotics, specifically Levofloxacin 750 mg iv stat followed by 500 mg OD for 14 days. After completing the 14-day course, a follow-up culture was negative, surgical site healed very well and there were no signs of infection.

DISCUSSION

Coagulase-negative staphylococci (CoNS) are among the most frequently isolated organisms and are frequent invaders of human skin[13-15]. They are primarily spread through nursing and/or medical treatments. Once introduced, foreign bodies can be colonized by CoNS, which dramatically reduces the success of the corresponding medical operation and adds considerable medical and financial expenses. Due to changes in patients and procedures, CoNS are presently among the most common nosocomial infections. They play a major role in both infections caused by foreign bodies and infections in preterm babies. Physicians must properly employ glycopeptides to stop the spread of antibiotic resistance in coagulase-negative staphylococci that are methicillin-resistant and the rising number of isolates with decreased glycopeptide sensitivity. Distinguishing between coagulase-positive staphylococci and CONS is a fundamental step, and this is typically accomplished in

most laboratories through the use of slide and tube coagulase tests. However, biological techniques for speciation are being rapidly replaced by molecular markers such as polymerase chain reaction (PCR) and spectrometric techniques like matrix-assisted laser desorption/ionization time-of-flight mass spectrometry[16]. Colony morphologic studies, Gram staining, and catalase and coagulase tests were used to identify all MR-CoNS isolates. The MicroScan Walk Away R system was used to identify the isolates and MR-CoNS was detected if the minimum inhibitory concentration of oxacillin was less than 0.5 g/Ml[17].

Enterobacter cloacae (E. cloacae), is a common nosocomial infection that seldom causes infectious osteoarthritis in immunocompetent individuals who have not recently undergone surgery or trauma. It is mostly found in the digestive system. E.cloacae is a common anaerobic Gram-negative bacterial strain found in soil, water, and sewage. To prevent surgical site infections, it is important to avoid risk factors such as the use of unnecessary medical devices or inappropriate antibiotics, as they can contribute to colonization or exacerbation of Enterobacter infections[18]. Biofilms can also form on sutures and other surfaces within the surgical site, so proper sterilization techniques should be employed to reduce the risk of infection[19].

CONCLUSION

SSI results in significant patient morbidity and mortality and increased hospital cost. By following strict infection control protocols, practicing proper hand hygiene, and giving patients the best possible operative care, the incidence of SSIs can be reduced. Lower SSI rates can result in both successful therapeutic outcomes for patients and cost savings for hospitals. To deliver the greatest supportive care, a comprehensive strategy including the surgical team, a microbiologist, and an infection control team is required.

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Author's contribution

All authors are equally contributed in Conceptualization, Datacuration Format analysis, Investigation, Methodology Software Supervision Validation Visualization, Writing - review & editing.

Conflicts of Interest

All Authors declares that there are no conflicts of interest.

ABBREVIATION

PCR - Polymerase Chain Reaction

MRI - Magnetic Resonance Imaging

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