Evaluation of the Diversity Bacterial in wounds of Burn patients Hospitalized in Major Hospitals in Aba, Abia State, Nigeria

Abstract

Burn injuries are common and major health problem throughout the world. Infection of burn injuries is common complication and is the major cause of death in burn patient. The aim of this research work was to evaluate the diversity of the microbial population in burn wounds of patients hospitalized in major hospitals within Aba metropolis. The health facility from which wound swap samples were generated were randomly selected by simple random sampling technique. Sterile wound swabs were collected with swab sticks from burns on patients hospitalized in the facilities for analysis after which wound swabs were cultured at room temperature of 36^{o}c. Examination of the swaps which was performed using standard procedure revealed the presence of Klebsiella, *E.coli,* pseudomonas, and *Styphylococus aureus*, at the composition of 10.8%, 20.2%, 25.9% and 43.1% respectively. In conclusion, the study revealed that burn wounds on patients within Aba metropolis were predominantly infected by *Styphylococus aureus.*

Keywords: Burn injuries, Aba, Patients, *Styphylococus aureus*

Introduction

Burn injuries have been classified as common as well as an outstanding health concern globally. A main type of injury, it is estimated that 1% of the world population is affected by severe burn injury during their life [1]. It is responsible for about 1% of the total disease seeks hospital attention which translates to substantial health care expenditure [2]. Research has shown that more than 95% of burns injuries occur in developing countries and has been linked to significant morbidly, disability and mortality [3].

Infection of burn injuries is common complication a notable cause of death in burn patients [4]. Over 70% deaths occur in burn patients owing to infection in the absence of adequate care and treatments. Patients with thermal injury require immediate and specialized care in order to minimize morbidity and mortality [5].

Wound infection is the primary reason for delayed healing. However, it is worthy to note that wound infection is initiated by a particular bacteria at a certain critical levels not necessarily all bacteria [6]. Therefore, an in depth knowledge of the bacterial composition of would could serve as an effective treatment guide.

METHODLOGY

Selection of Facility of Interest

Hospitals that participated in this study were randomly selected using random sampling technique were all situated within Aba metropolis.

Consent

Informed consent was sought and obtained from the management of the selected hospitals.

Sample Collection

Sterile wound swabs were collected with swab sticks from burns on patients hospitalized in the selected facilities for analysis. The wound swabs were cultured at room temperature of 36^{o}c.

RESULT

Table 1: Bacterial Diversity in wounds of Burn patients in Aba Hospitals

Organism	Frequency	Percentages (%)
Klebsiella	14	10.8%
E. Coli	30	20.2%
Pseudomonas	36	25.9%
Staphylococus aureus	60	43.1%

DISCUSSION

The presence of bacteria in wounds does not necessarily indicate infection. Wound healing occurs in the presence of bacteria [6]. It is the particular species of bacteria e.g *Staphylococcus aureus* or haemoltic streptococci past a certain critical levels that lead to clinical infection which is detrimental to wound healing [7]. Many factors affect the progress of microorganisms in a wound from colonization to infection [8] one of which is the organism type and dose [9], 1993). Table 1 shows the bacterial diversity and percentage composition in wounds of burn patients in major hospitals within Aba metropolis indicating the presence of Klebsiella, *E. Coli*, Pseudomonas, *Staphylococus aureus*. This result is consistent with the finding of Sani et al. [10] who reported *Staphylococcus aureus, Escherichia coli, Pseudomonas aeruginosa, Klebsiella neumonia, Streptococcus pyogenes* etc to be the common bacterial pathogens associated with wound infection. The research also showed that the percentage composition of *S. aureus* was more than other bacteria reportedly present. These

organisms exhibit natural resistance to many antibiotics and antiseptics in which they survive for a long period of time and may even multiply in the presence of minimal nutrients and have the ability to colonize traumatized skin [11].

CONCLUSION

The bacterial diversity reportedly present in wound swap generated from major hospitals with Aba metropolis is not too different from what other research had previously revealed. However, the percentage composition of *S. aureus* was more than other bacteria reportedly present.

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