Incidence of Infections Among Compound Fractures in Orthopaedics IPD: A Hospital Based Study

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ABSTRACT

Introduction: In orthopedic trauma patients, infection is a common problem related with increased morbidity. Even with improvements in management, infection still remains a significant problem. This study is of great importance as the incidence of compound fracture cases is increasing due to the increasing number of road traffic accidents and development of antibiotic resistance.

Methodology: 196 compound fractures cases were 20-60 age group included in this study. This study conducted in the Department of Orthopaedics, Era’s Lucknow Medical College. The duration of study was over a period of two years.

Results: In this study, we found that 83.6% single type of culture, 13.2% mixed culture and 3.2% other like candida. Different type of organism was isolated from this study.

Conclusion: This study concludes that, an infection is very much prevalent in compound fracture patients and shows an increasing incidence pattern.

Keywords: Compound Fracture, Organism, Monomicrobial, Polymicrobial.

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Article History:

Received: 23-07-2018, Revised: 21-08-2018, Accepted: 18-09-2018

INTRODUCTION

Compound fracture is a fracture in which broken bone fragments lacerate the soft tissue and protrude through a wound in the skin. It has some exceptional risks beyond those encountered with closed fractures that may occur with similar amounts of force. The risk of infection and delayed healing are the severe problems with these fractures. In open fractures, the contact of hematoma with the external milieu, makes it more prone to infection.¹² It has been reported that between 60-70% of open fracture injuries will have positive wound cultures before treatment commences in the hospital. It has been proved that sepsis occurs in 2-25% of all open fractures, which leads to significant morbidity.³ Gustilo and Anderson classification is the most widely used classification for open fractures. It groups into three major grades: the energy of the fracture, extent of contamination, and the degree of soft-tissue damage.⁴ Type I infections have 0%–2% risk of infection, Type II infections have a 2%–12% risk, and Type III infections have the highest risk of 10%–50%.⁵,⁶ In order to administer an effective antibiotic treatment for these fractures, understanding the bacterial flora is very important. It seems that there are two principal factors that produce infection: the dose and virulence of the organism. Wound debridement and irrigation are the pillar in reducing the incidence of infection. Road traffic accidents are the most responsible factor of compound fracture cases. It is a growing problem worldwide and accountable for around 50 million injuries annually.³ In India, most of the cases of compound fractures end up in fracture site infection due to many risk factors like gross contamination, delayed intervention, multiple surgeries etc. A few studies have been reported on bacteriology of open fracture wounds in India.³² This study was aimed at determining the trend of causative micro-organisms of fracture site infection in the orthopedic ward of Era’s Lucknow Medical College and Hospital, Lucknow, Uttar Pradesh, India.

MATERIALS & METHODS

Study Population

196 compound fractures cases were 20-60 age group included in this study.

Study Area

This study conducted in the Department of Orthopaedics, Era’s Lucknow Medical College and Hospital.

Study Duration

The duration of study over a period of two years.
Data Collection
In the operating room, samples were taken after debridement was done using the standard procedure under strict aseptic conditions and were immediately transported to the microbiology department for culture and antibiotic sensitivity testing. Antibiotic therapy was modified based on the sensitivity reports.

Data Analysis
Data were analyzed by using Microsoft excel.

RESULTS
In our study 196 total numbers of cases were included. Among the all cases 64.2% were male & 35.7% cases were female. Most of the cases were belongs to 41-50 age (64.3%) age group followed by other age group. In this study, we found that 83.6% single type of culture, 13.2% mixed culture and 3.2% other like candida. Different type of organism was isolated from this study which showed in table 4.

<table>
<thead>
<tr>
<th>Organisms</th>
<th>n</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Staphylococcus aureus</td>
<td>19</td>
<td>9.6%</td>
</tr>
<tr>
<td>Pseudomonas aeruginosa</td>
<td>34</td>
<td>17.4%</td>
</tr>
<tr>
<td>CONS</td>
<td>9</td>
<td>4.5%</td>
</tr>
<tr>
<td>Klebsiella spp</td>
<td>78</td>
<td>39.7%</td>
</tr>
<tr>
<td>Proteus spp</td>
<td>46</td>
<td>23.4%</td>
</tr>
<tr>
<td>E. coli</td>
<td>6</td>
<td>3.1%</td>
</tr>
<tr>
<td>Citrobacter</td>
<td>4</td>
<td>2.2%</td>
</tr>
<tr>
<td>Mixed culture</td>
<td>26</td>
<td>13.2%</td>
</tr>
<tr>
<td>Candida</td>
<td>6</td>
<td>3.2%</td>
</tr>
<tr>
<td>Total</td>
<td>196</td>
<td>100%</td>
</tr>
</tbody>
</table>

CONCLUSION
This study concludes that, an infection is very much prevalent in compound fracture patients and shows an increasing incidence pattern. Recently, among varied results regarding the pathogenic organism, there is a changing trend from gram positive like, Staphylococcus aureus towards gram negative organisms like Klebsiella, Proteus, Pseudomonas.
To reduce the incidence of fracture site infections, there is a vital need to adopt basic principles of asepsis and sterilization and to use antibiotics in these patients sensibly.

REFERENCES

Source of Support: Nil. Conflict of Interest: None Declared.

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