

Fracture Healing and Wound Healing in HIV infected individuals

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Abstract: Backgrounds: Acquired Immunodeficiency Syndrome caused by the Human Immunodeficiency Virus (HIV) is today one of the most common cause of secondary immunodeficiency. Fracture and soft tissue healing rates and risk of postoperative infections may differ in HIV infected patients.

Materials and Methods: A retrospective comparative study was conducted with of 40 randomly chosen cases of HIV infected patients and a control group of 40 patients.

Results: Thirty-one (77.5 %) patients presented with trauma, seventeen (42.5 %) due to motor vehicle accident, 13 (32.5 %) cases secondary to fall and one (2.5%) patient due to firearm injury. The average fracture healing time in closed fractures treated conservatively was found to be normal / comparable to healthy individuals in this study according to radiological and clinical parameters. The wound healing time and rate of infection in HIV infected individuals was comparable to normal individuals. For patients not in ARC, the post-operative infection rates are comparable with those for non-HIV patient population.

Conclusions: Fracture healing and wound healing rates doesn't differ significantly in HIV patients. However, the surgeon must be aware of the risk of late-onset hematogenous infections in HIV patients with ARC.

Keywords: HIV, infection, wound healing, fracture healing.

Thesis Question: 1. Is healing of wounds and fractures different between HIV infected individuals and normal counterparts?

2. What is the incidence of infection in these treated HIV infected patients?

Thesis Answer: 1. Wound healing and fracture healing in HIV infected individuals was comparable to healthy individuals.

2. Rate of infection in HIV positive Stage 2 was comparable to normal individuals. But patients in ARC (AIDS Related Complex) tend to develop late-onset implant related hematogenous infections.

THESIS SUMMARY

Introduction

Acquired Immunodeficiency Syndrome caused by the Human Immunodeficiency Virus (HIV) is today one of the most common cause of secondary immunodeficiency. The AIDS pandemic is fast spreading across the globe. In India, 40,00,000 people have AIDS / HIV with a prevalence of 0.8 %³³. AIDS is the end result of a progressively decreased immunological competence caused by HIV.

The Human immunodeficiency virus damages and progressively destroys the immune system by interacting with the CD4 subset of helper T- cells and using them for replication. This results in an immunocompromised state in an individual infected with HIV and renders him susceptible to a variety of infections and diseases. It is highly likely that like any other illness of chronic nature, HIV infection may affect or actually retard the healing process necessary

for convalescence. Fracture and soft tissue healing rates may be expected to suffer in HIV infected patients, more so in those with signs of AIDS-related complex. Owing to its immunosuppressive nature, the possibility or likelihood of postoperative infections should logically increase.

Aims and Objectives

- To study the healing of soft tissue injuries / open wounds in orthopedic patients infected with HIV.
- To study the rate of fracture healing in HIV infected patients.
- To study the incidence of infections in these treated HIV positive patients.
 1. In the immediate post-op period.
 2. In the follow up period.

Methods

A retrospective study was conducted at our institute in order to assess the response of HIV infected patients, treated for orthopedic conditions including trauma and other conditions. A total of 40 randomly chosen cases of HIV infected patients and a control group of 40 randomly chosen cases of non-HIV infected patients admitted in the orthopedics wards were selected for this study.

Patients were clinically assessed for any symptoms and signs of AIDS Related Complex (ARC) to determine the stage of the HIV infection by the Center For Disease Control (CDC) system of USA. Patients were examined on the second and tenth postoperative day to assess the wound healing and to rule out infection. The postoperative follow up of these patients was mainly in the form of clinical examination and X Rays with routine hemograms. The absolute lymphocyte count was calculated as a prognostic factor for fracture healing.

Result

The present study included 40 cases of HIV infected individuals compared with a study of 40 randomly chosen non-HIV infected patients. Thirty-one (77.5 %) patients presented with trauma, seventeen (42.5 %) due to motor vehicle accident, 13 (32.5 %) cases secondary to fall and one (2.5%) patient due to firearm injury. The average fracture healing time in these patients with closed fractures treated conservatively in casts or in traction was comparable to the study group. Eighteen (45%) trauma cases and eight (2.5%) cold cases were taken up for elective surgery strictly following the WHO guidelines for surgical precautions. 68% trauma and 69% cases in the control group were taken up for surgery. Operative intervention in the symptomatic HIV infected individuals did not accelerate the rate of development of AIDS in any of the cases.

Conclusion

1. The average fracture healing time in closed fractures treated conservatively was found to be normal / comparable to healthy individuals in this study according to radiological and clinical parameters. This finding is consistent with the literature review.
2. In open fractures the rate of wound infection was higher (71.4 %) in seronegative individuals.

3. For patients not in ARC, the post-operative infection rates are comparable with those for non-HIV patient population. Patients who are in ARC tend to develop late-onset implant related hematogenous infection, which is probably similar to the mechanism of opportunistic infection.

4. The wound healing time and rate of infection in HIV + ve individuals in Stage 2 of CDC classification is comparable to normal individuals.

Clinical Message

Fracture healing and wound healing rates doesn't differ significantly in HIV patients. However, the surgeon must be aware of the risk of late-onset hematogenous infections in HIV patients with ARC.

Keywords

HIV, infection, wound healing, fracture healing.

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