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## Case report

### GARENOXACIN IN SKIN & SKIN STRUCTURE INFECTIONS COMPLICATED BY BEAR BITE

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#### ABSTRACT

Animal bites have always been a common problem to humans. The incidence of resistant organisms is also increasing in the community. Garenoxacin a novel oral des-fluoroquinolone with potent antimicrobial activity against common pathogens causing skin and soft tissue infections, including resistant strains offers the benefit of broad spectrum of coverage including gram positive, gram negative and anaerobic organisms. The result of the case study indicates that garenoxacin is very effective in treating skin and soft tissue infections caused by animal bites.

**Keywords:** Garenoxacin, Wound infection, Animal bite

#### INTRODUCTION

Animal and human bites are a common problem<sup>1</sup>. Proper care requires wound inspection for injury to deeper structures; meticulous wound care at the initial encounter; and decisions regarding primary closure, the provision of prophylactic antibiotics for wounds at high risk for infection, and prophylaxis for tetanus and rabies as indicated. In case of inadequate or undertreated cases, Extensive morbidity, including disability and cosmetic damage is expected to be a foregone conclusion due to underlying infection. For wounds that appear infected at the time of initial assessment, antibiotic therapy is usually started after Gram stain and/or culture reports are made available.<sup>2</sup> There is a lack of controlled studies evaluating the use of different antibiotics in infected bite wounds. Empirical treatment should be directed toward the most common infecting organisms. The predominant pathogens in animal bite wounds are the oral flora of the biting animal and human skin flora. Infection usually results from a mixture of organisms. Common

pathogens include Pasteurella species, staphylococci, streptococci, and anaerobic bacteria.

Circumstances when the use of prophylactic antibiotics may be used include

#### Table 1: Prophylactic use of antibiotics

Dog bites more than 8-12 hours old
Moderate to severe dog bite less than 8-12 hours (Oedema, Crush injuries)
Puncture wounds, particularly if bone or joints were penetrated
Severe facial wounds
All hand bites
Wounds in the genital area
Wounds in immunocompromised or asplenic patients
Moderate to severe cat or human bites

#### CASE STUDY

A female aged 68 years weighing 52kgs was presented to a Doctor in a tertiary care setting. The patient presented with facial trauma due to bear attack leading to disfigurement of the face. This event occurred a day prior to presentation when she wandered into the outskirts of her village for

household chores. Patient was conscious, averagely built and had vital parameters including temperature, pulse and respiratory rate within normal limits. She had no history of any chronic illnesses, including diabetes mellitus or tuberculosis in the past. Similarly no icterus or generalized lymphadenopathy was observed. The patient was stabilized and wounds were cleaned and dressed for further action. A reconstructive surgery was performed on the face on the same day with excision sample was sent for further analysis and culture. The culture report showed *P. aeruginosa* & *S. aureus* on the third day. As Surgical prophylaxis, patient received Amoxicillin-clavulanate injection 1.2 g every 8 hours with Metronidazole 500 mg every 8 hours for three days. The patient accepted oral feeds on the third day and shifted to Garenoxacin tablets (400 mg OD) for 10 days. Clinical inflammatory response around the surgical flaps subsided within five days. There was no graft rejection, discharge, dehiscence or infection nidus around the sutures. The sutures were removed after 15 days



**Fig 2: Before and after treatment pictures of facial disfigurement in patient who sustained trauma due to Bear attack**

## DISCUSSION

Facial laceration or injury remains an important cause of cosmetic disfigurement unless closed. Infection of these wounds is common, perhaps due to the excellent blood supply to the face and scalp. Provision of proper wound care is essential for good outcomes and to reducing infection risk in patients who undergo wound closure. When bite wounds are sutured, extensive irrigation, debridement, avoidance of deep sutures (if possible), institution of prophylactic antibiotic therapy, and close follow-up are indicated. A common approach involves initial IV

therapy until infection is resolving followed by oral therapy to complete a course of 10 to 14 days.

Aggressive wound management of animal bite wounds is thought to decrease the infection rate<sup>2</sup>. Cleansing of the wound with a few hundred mL of high pressure saline is usually effective. Removal of devitalized tissues is also important to prevent a nidus of infection.

Despite the lack of prospective studies, primary wound closure is not typically performed on bite wounds. In general, bite wounds are left open, reevaluated within 2 to 3 days, and managed by secondary intention or delayed primary closure. Some retrospective studies have also suggested primary closure of puncture wounds, crush injuries, wounds that are more than 24 hours old, wounds over the hands, wrists, feet and joints, wounds in immunocompromised individuals, and wounds inflicted by cats or humans<sup>3</sup>. Once the wound has been observed for a few days and there are no signs of infection delayed closure can be attempted. Non-infected facial wounds less than 24 hours old can probably be repaired<sup>4</sup>. Facial wounds can be closed with high rates of success, probably due to high vascularity and absence of dependent edema.

For wounds that appear infected at the time of initial assessment, antibiotic therapy should be started after a Gram stain and aerobic and anaerobic cultures have been obtained. There is a lack of controlled studies evaluating the use of different antibiotics in infected bite wounds. Empiric treatment should be directed toward the most common infecting organisms.

Garenoxacin, a recently introduced des-fluoro(6)quinolone in India offers broad yet potent spectrum of activity against Gram positive, Gram negative and Anaerobic pathogens<sup>5,6</sup>. The excellent clinical response observed with Garenoxacin during the post-operative period probably highlights its clinical utility as a useful 'switch' therapy while preventing post-surgical infections

## CONCLUSION

Garenoxacin offers a broad spectrum of activity against various pathogens involved in skin and soft tissue infections including gram positive, gram negative and anaerobic organisms. Garenoxacin appears to be a suitable option for the resistant or difficult to treat infections and add to the armamentarium of the clinicians.

**Conflict of interest: Nil**

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