Bites: Human and animal

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Comments

Most bites will be dog, cat or human (closed fist injuries usually). Rates of infection of bites vary between 2–20% in dog bites, 15–50% in cat bites and 9–50% in human bites. This compares with 4–15% in simple lacerations.

Infection rates are higher in hand injuries, puncture wounds, wounds involving joints, tendons, ligaments, or fractures, and wounds requiring debridement. People with diabetes, renal disease, alcohol abuse, on steroids, splenectomised or with other causes of immuno-compromise have higher risk of infection.

The single most important aspect of treatment is thorough wound cleaning. This is best done by copious irrigation with normal saline. Wound cleaning by debriding, scrubbing etc. may also be needed. The use of hydrogen peroxide, Betadine or liquids other than normal saline is no longer supported as they cause more damage to tissues and impair wound healing.

Delayed primary closure (after 3–5 days) is advisable for wounds needing extensive debridement, those with crush injury and wounds more than 6–8 hours old. The time period stated in the current manual is 4–7 days contrary to most recommendations, which state 3–5 days. This is based on a more cautious/conservative approach to the chance of infection developing in a wound that has been closed.

Dog bites

Dog bites actually have a lower rate of infection than other bites. This is multifactorial and due to wounds being larger and more accessible to cleaning, usually earlier presentation than other bites, and slightly less virulent organisms. Dog bites of the face have a lower rate of infection than bites elsewhere and so they can be cleaned and sutured if less than 12 hours old, unless extensive, requiring plastic surgery, or deep structures are involved. The recommendation to extend the time limit for facial wounds to 12 hours seems to be supported by this lower rate of infection. Otherwise the 6–8 hour rule should still apply.

The recommendation in the fourth edition of the CARPA STM is for IMI procaine for five days for all bite wounds, with addition of amoxicillin-clavulanic acid if signs of infection are present after two days of treatment. The British guideline states (from a meta-analysis in 1994) that ‘if 100 patients with dog bites are given oral antibiotics, 84 would escape infection regardless of treatment, 9 would become infected despite treatment, and 7 would avoid infection because of the infection’.

It is difficult to quantify such numbers in Central Australia, but we know the rates of skin infections are higher here than elsewhere. Best practice around the world is currently initial use of oral amoxicillin-clavulanic acid. In fact the eleventh edition of the Australian Antibiotic Guidelines recommends to use one dose of procaine IMI plus five days of Augmentin for all high risk wounds.

Dr Gary Lum, Microbiologist at RDH suggested that because of the 'compliance issue', initial treatment with procaine penicillin may well remain appropriate with the addition of blood cultures at the first sign of fever and early commencement of oral amoxicillin-clavulanic acid. Animal bites can contain organisms such as Capnocytophagia canimorsus, which can cause overwhelming systemic infection. The addition of blood cultures enables growth of a pure culture of the responsible organism rather than a wound swab, which will grow multiple organisms. A wound swab should, of course, still be performed at this stage, i.e. at stage when infection is obvious.

Cat bites

Cat bites have a much higher rate of infection than other animal bites. This is because they are more likely to be puncture wounds — which are therefore harder to access and clean — and also are more likely to occur on the hand. The Pasteurella species, common to both dog and cat bites, is more virulent than the other species found in dog bites, and is usually the sole organism. All the literature therefore supports prophylactic antibiotics for all cat bites. Cat scratch disease is caused by Bartonella henselae and does not require therapy unless the patient is severely immunocompromised, e.g. HIV/AIDS. The preferred treatment is Roxithromycin 300 mg daily for 10 days or intravenous in severe disease.

Human bites

As stated human bites have a high rate of infection. The commonest injury is the closed fist or punch injury (CFI). All punch injuries or wounds about the knuckles should be assumed to be CFI and treated accordingly. They also grow mixed organisms, but more often include anaerobes and gram negatives. The anaerobes are often beta-lactamase producing. All CFI should be left open, i.e. dressed but not sutured. The wound should receive full and meticulous cleaning and twice daily dressings of providone-iodine until the wound is clearly not infected; then use saline for cleaning.

All CFI should have antibiotics, the first preference being amoxycillin-clavulanic acid. This covers anaerobes so metronidazole is not necessary. If penicillin allergy exists then use roxithromycin and metronidazole. All CFI should be considered for early referral for X-ray to exclude fracture. All people with infected human bites of the hand should be hospitalised.

Human bites to other areas of the body should be treated like other wounds, i.e. wound irrigation, debridement, and antibiotics for high risk wounds.

Mucosal lacerations where the teeth go through the lip or cheek to the outside should be irrigated well. Prophylactic antibiotic antibiotics do not reduce the incidence of infection in mucosal bites unless they are through and through lacerations. Penicillin remains the drug of choice.

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Medline searched on keywords: dog bites, human bites, animal bites, antibiotics, wound treatment.

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