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Animal Bite Emergency

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Abstract
When the bite of any animal occurs, the bite wound should first be thoroughly rinsed with soap and water under running water to effectively remove saliva and secretions from the bite site. Then it is necessary contact family doctor or emergency medical service where the wound will be treated and disinfected. As a rule, bite wounds are not sutured except when skin and tissue defects are very large. Tetanus protection is performed and antibiotic therapy is administered to prevent secondary wound infection.

Keywords: bite, animal, cat, dog, snake, health

Introduction

An emergency is commonly defined as any condition perceived by the prudent layperson—or someone on his or her behalf-as requiring immediate medical or surgical evaluation and treatment [1]. On the basis of this definition, the American College of Emergency Physicians states that the practice of emergency medicine has the primary mission of evaluating, managing, and providing treatment to these patients with unexpected injury and illness.

So what does an emergency physician (EP) do? He or she routinely provides care and makes medical treatment decisions based on real-time evaluation of a patient's history; physical findings; and many diagnostic studies, including multiple imaging modalities, laboratory tests, and electrocardiograms. The EP needs an amalgam of skills to treat a wide variety of injuries and illnesses, ranging from the diagnosis of an upper respiratory infection or dermatologic condition to resuscitation and stabilization of the multiple trauma patient. Furthermore, these physicians must be able to practice emergency medicine on patients of all ages. It has been said that EPs are masters and mistresses of negotiation, creativity, and disposition. Clinical emergency medicine may be practiced in emergency departments (EDs), both rural and urban; urgent care clinics; and other settings such as at mass gathering incidents, through emergency medical services (EMS), and in hazardous material and bioterrorism situations.

In healthcare delivery, we attempt to meet the health and medical needs of the community by providing a place for individuals to seek preventative medicine, care for chronic medical conditions, emergency medical treatment, and rehabilitation from injury or illness [2]. While a healthcare institution serves the community, this responsibility occurs at the level of the individual. Each individual expects a thorough assessment and treatment if needed, regardless of the needs of others. This approach is different than that practiced by emergency managers, whose goal is to assist the largest number of people with the limited resources that are available. As such, emergency management principles are focused on the needs of the population rather than the individual. When either planning for a disaster or operating in a disaster response mode, the hospital should be prepared at some point to change its focus from the individual to the community it serves and to begin weighing the needs of any individual patient versus the most good for the most patients with scarce resources. Moving from the notion of doing the most for each individual to doing the best for the many is a critical shift in thinking for healthcare institutions considering a program of comprehensive emergency management. While the initial planning for emergencies by hospitals is focused on maintaining operations and handling the care needs of actual or potential increased numbers of patients and/or different presentations of illness or injury than is traditionally seen, there is also the need to recognize that at some point during a disaster, act of terrorism, or public health emergency there may be an imbalance of need versus available resources. At this point the approach to delivering healthcare will need to switch from a focus on the individual to a focus on the population. This paradigm shift is one of the core unique aspects of hospital emergency management that allows the hospital to prepare to maximize resources in disasters and then to know when to switch to a pure disaster mode of utilizing its limited and often scant resources to help the most people with the greatest chance of survival.

The healthcare delivery system is vast and comprised of multiple entry points at primary care providers, clinics, urgent care centers, hospitals, rehabilitation facilities, and long-term care facilities. The point of entry for many individuals into the acute healthcare system is through the emergency department (ED). Since the late 1970s, the emergency medical services (EMS) system has allowed victims of acute illness and injury to receive initial stabilization of life-threatening medical conditions on the way to the emergency department. Among the many strengths of the ED is the ability to integrate two major components of the healthcare system: prehospital and definitive care. The emergency department maintains constant communications with

the EMS system and serves as the direct point of entry for prehospital providers into the hospital or trauma center. Emergency physicians represent a critical link in this process by anticipating the resources that ill and injured patients will need upon arrival at the ED, and initiating appropriate life-saving medical care until specialty resources become available. In this context, the healthcare system is an emergency response entity.

Patient Conditions

In most emergencies there is no time to disclose the necessary information for an informed consent [3]. Here the providers simply act according to what they think will be in the best interests of the patient. These situations frequently happen in hospital emergency rooms and when emergency medical personnel arrive on the scene of an accident or sudden illness.

The emergency exception to informed consent is often quite obvious, but this is not always so. It does not apply, for example, when personnel taking care of somebody in an emergency happen to know what the patient wants. In such a situation they would not do what they think is best for the patient but what they know the patient wants.

It is important to note that the emergency exception that allows physicians to do what they think is best for the patient without obtaining informed consent from the patient or proxy has one major restriction; namely, they cannot do what they think is best if it is otherwise than what they know the patient or proxy wants. Sometimes, for example, emergency department personnel might know from previous admissions that a particular patient from a local nursing home desires only palliative care. If that patient arrives by ambulance at the same emergency department, it is hard to see how it would be morally reasonable for physicians to take aggressive measures to keep the patient alive when, even though there is no time to obtain consent for orders not to attempt resuscitation or not to intubate, they know he or she or a proxy has decided not to have aggressive life-sustaining measures performed.

Patients accessing emergency care services can present with complaints that are extremely diverse, and the way doctors, nurses and paramedics elicit information from patients predominantly focusses on obtaining biomedical details [4]. In some cases, this approach is warranted, as the urgent need to identify signs and symptoms of life-threatening illness or injury is paramount. Yet, 90% of patients accessing emergency services are not critically ill or injured but seek help and advice. In addition to seeking advice, patients may also be anxious, frightened, intoxicated, misusing drugs or have unhealthy lifestyles. They may have psychosocial reaction to physical disease or vice versa – physical illness such as irritable bowel syndrome, asthma, tension headache can be triggered by psychosocial factors. The effects and interpretation of illness will trigger a different response to the individual depending on their view and experiences. All these factors will have different needs and concerns and it is important to elicit these concerns within a consultation. However, it has been found that nurses working in emergency care disregard the potential for anxiety and the need for support and reassurance in patients who are not severely ill or injured. In addition, where communication skills of junior doctors working in emergency departments have been researched, they are found to use approaches considered to be more physician/illness orientated than patient-centred. By way of similarities of patient presentations in the pre-hospital setting, this could equally be assumed for paramedic practice.

Cats and Dogs

Cats and dogs cause most animal bites [5]. Cat bites can cause very deep puncture wounds and present a serious risk of infection because punctures cause bacteria to be forced deep into the skin and tissues. Dog bites also carry a risk of infection and increased incidence of damage to affected tissues. These bites usually produce marks that have broken the skin and sometimes bleeding, depending upon the severity and location of the bites. Redness and swelling typically occur within twenty-four to forty-eight hours.

For animal bites, check with a veterinarian for related health risks and have the wounds looked at by a physician. Doctor may want to administer a tetanus shot and in some cases antibiotics.

Wild animals that gain access to homes such as raccoons, stray pets, rats, and bats pose a much more serious risk, as they are more likely to carry and transmit rabies and other viruses. These types of bites require immediate medical attention.

In the United States, approximately 4 to 5 million episodes of animal bites occur every year, resulting in approximately 300 000 visits to emergency departments, 10 000 hospitalizations, and 20 deaths, mostly among young children [6]. In England and Wales, 200 000 people per year seek medical help in hospitals after dog bites; in France, the number is 500 000. In Germany, 35 000 people per year are bitten by dogs; 1 to 2% of the mare treated in ambulatory care units.

Ninety percent of animal bites are from dogs and cats. Three to 18% of dog bites and 28 to 80% of cat bites become infected, with occasional sequelae of purulent arthritis, septic shock, endocarditis, and meningitis. However, bites from several other, sometimes exotic, animal species should not be overlooked even though theyoccur rarely.

Animal bites may be due to accidental exposure (in children or dog owners), occupational exposure(in farmers, laboratory personnel, veterinarians, or animal trainers), or recreational exposure (in tourists, hunters, trappers, wilderness campers, or owners of exotic pets). Even licking by pet dogs or cats may transmit potentially pathogenic bacteria that may induce severe, occasionally lethal disease, particularly in patients with immune deficiencies.

A broad spectrum of etiological agents has been found in bite wounds, particularly in those inflicted by dogs and cats. There are only a few case reports of bites from more exotic animals and their number must be considered incomplete. About 85% of bites harbor bacteria originating from teeth and oral cavities of the animal or from the cutaneous flora of the victim. Fungi have rarely been reported, possibly due to insufficient media and/or incubation time.

Venomous Creatures

The venomous creatures exacting the greatest toll in terms of human injury include the arthropods, especially the hymenoptera or stinging insects (bees, wasps, hornets, yellow jackets, and fire ants), a handful of spider species, scorpions, and the venomous reptiles, particularly snakes [7].

The major impact of hymenoptera is seen in the 0.3–3.0% of the human population that is dangerously allergic to these insects and at risk of anaphylaxis if stung. The vast majority of deaths related

to venomous creatures in the US are due to hymenoptera-induced anaphylaxis. The spiders of major consequence include the widow spiders (Latrodectus species) which are found throughout much of the world, the brown spiders (Loxosceles species, the best known of which is the brown recluse, L. reclusa), and the Australian funnel-web spiders (Atraxand Hadronyche species). Scorpions are of limited medical importance in the US with only one potentially dangerous species (Centruroides exilicauda), but they are much more important in other regions of the world, particularly Central and South America, Africa and the Middle East. In Mexico, for example, scorpions take a higher toll in terms of human mortality than do venomous snakes. The most dangerously venomous scorpions fall into the genera Centruroides, Tityus, Buthus, Buthacus, Androctonus, Leiurus, Mesobuthus, and Parabuthus.

Management

Whether animal or human in origin, these injuries must be considered as potentially serious injuries and managed expeditiously [8]. Both can rapidly become infected if they are not treated properly. Dog bites can range from simple puncture wounds, to irregular tears, to missing chunks of tissue. The canines (the longest teeth) can penetrate deeply, taking bacteria deep into the wound. Depending on the patient (and the dog), underlying fractures have also been reported.

Unlike other sites on the body, bites and scratches on the face can often be closed primarily. This is due to the excellent blood supply and relatively good healing potential of the face, compared to elsewhere. However, these injuries must be thoroughly cleaned and irrigated prior to suturing and should be monitored closely for signs of infection. Antibiotics should be prescribed according to local protocol. All crushed and devitalized tissue should be carefully removed. Abscesses can develop in the deeper tissues. More unusual bites (e.g. farmyard animals, snakes, and spiders) require specialist knowledge due to the risks of exotic infections or venoms.

Bites cause contaminated puncture wounds, contaminated crush injuries, or both [9]. All carry a high risk of bacterial infection, some also a risk of viral or other infections (eg rabies).

Establish what the biting animal was, how long ago and where the bite occurred. Obtain X-rays if fracture, joint involvement (look for air) or radio-opaque foreign body (FB) (tooth) is suspected.

Most bacterial infections occur > 24hr after injury and are due to staphylococci or anaerobes. Pain, inflammation, swelling ± regional lymphadenopathy within 24hr suggests P. multocida infection. Take wound swabs of all infected wounds, then treat with cleaning, elevation, analgesia, and antibiotics. Oral co-amoxiclav and outpatient review at ≈ 36hr is appropriate for localized wound infection with no systemic symptoms and no suspected underlying joint involvement. Refer patients with spreading infection for IV antibiotics and admission.

In evaluating a bite wound, it is important to determine what type of animal caused the wound and how old the wound is [10]. One must also elicit host factors that may affect wound healing, such as diabetes, peripheral vascular disease, glucocorticoid use, or other immunocompromised states.

The physical examination should include a full exploration of the wound. The type of wound (laceration, crush, or puncture) and the extent of involvement of deep structures must be determined. One should keep in mind that the canine jaw may generate forces up to 450 psi, a force that is sufficient to penetrate the cranium of a child. If the wound occurs over a joint, the joint should be examined through the full range of motion. When appropriate, radiographs should be obtained to look for fractures, foreign bodies, and air in the joint or soft tissues. For bite wounds to the scalp, computed tomography of the head should be considered.

Responsibility of the Physicians

The aim is to provide excellence in emergency department (ED) care by cultivating the following desirable habits [11]:

- Listen to the patient.
- Exclude the differential diagnoses (‘rule out’) and refine the possible diagnosis (‘rule in’) when assessing any patient, starting with potentially the most life-or limb-threatening conditions, and never trivializing.
- Seek advice and avoid getting out of depth by asking for help.
- Treat all patients with dignity and compassion.
- Make sure the patient and relatives know at all times what is happening and why, and what any apparent waits are for.
- Maintain a collective sense of teamwork, by considering all ED colleagues as equals whether medical, nursing, allied health, administrative or support services.
- Consistently make exemplary ED medical records.
- Communicate whenever possible with the general practitioner (GP).
- Know how to break bad news with empathy.
- Adopt effective risk management techniques.

The duty of care is a physician’s obligation to provide treatment according to an accepted standard of care [12]. This obligation usually exists in the context of a physician– patient relationship but can extend beyond it in some circumstances. The physician–patient relationship clearly arises when a patient requests treatment and the physician agrees to provide it. However, creation of this relationship does not necessarily require mutual assent. An unconscious patient presenting to the ED is presumed to request care and the physician assessing such a patient is bound by a duty of care. The Emergency Medical Treatment and Active Labor Act (EMTALA) requires ED physicians to assess and stabilize patients coming to the ED before transferring or discharging them. Such an assessment presumably creates the requisite physician–patient relationship.

When caring for a patient, a physician is obligated to provide treatment with the knowledge, skill, and care ordinarily used by reasonably well-qualified physicians practicing in similar circumstances. In some jurisdictions, these similar circumstances include the peculiarities of the locality in which the physician practices. This locality rule was developed to protect the rural practitioner who was sometimes deemed to have less access to the amenities of urban practices or education centers. However, the locality rule is being replaced by a national standard of care in recognition of improved information exchange, ease of transportation, and the more widespread use of sophisticated equipment and technology.

Establishing the standard of care in a given case requires the testimony of medical experts in most circumstances, unless the breach alleged is sufficiently egregious to be self-evident to the lay jury member—for example, amputating the wrong limb or

leaving surgical implements in the operative field. A physician specializing in a given field will be held to the standard of other specialists in the same field, rather than to the standard of nonspecialists.

To be eligible to receive federal funds such as Medicare and Medicaid, hospitals with an emergency department must offer emergency and stabilizing treatment services to the public without bias or discrimination [13]. The Emergency Medical Treatment and Active Labor Act is a comprehensive federal law that obligates hospitals offering emergency services to do so without consideration of a patient's ability to pay. It's important to note that this obligation does not apply to inpatients or non-emergent conditions. The absence of bias in the delivery of care should not be misunderstood to suggest all hospitals must provide all medical services, but rather the services they choose to offer must be delivered without bias to the individual patient.

A hospital and its entire staff owe a duty of care to patients admitted for treatment [14]. Following an emergency call, the ambulance service has a duty to respond and provide care. Accident & Emergency (A&E) departments have a duty of care to treat anyone who present themselves and are liable for negligence if they send them away untreated. Hospitals without an A&E facility will display signs stating the location of the nearest A&E department. This ensures that the hospital could not be held negligent if a patient presented and required emergency treatment as the hospital or its staff had never assumed a duty of care. Once a patient is handed over, a duty of care is created between the patient and the practitioner and this cannot be terminated unless the patient no longer requires the care or the carer is replaced by another equally qualified, competent person. It is therefore extremely important that practitioners are aware of their local policies, professional standards and their scope of practice to avoid becoming liable for litigation by putting a patient at risk, delivering ineffective care or breaching their duty of care.

Conclusion

When the bite of any animal occurs, the patient's approach should be individual, detailed and fundamental and nothing should be left to chance. It does not matter whether someone got a bite to the head, neck or face, whether the bite occurred on bare skin or over clothing, whether the injury was from a known domestic animal or unknown, whether the animal was provoked, etc. If the injury arose from rabies or rabies suspected animals, unknown animals or animals which after 10 days of monitoring showed signs of rabies, vaccination against rabies of the injured person is mandatory.

References

1. Jones TR. Approach to the Emergency Department Patient“ in Stone, C. K.; Humphries, R. L. (eds): „CURRENT Diagnosis And Treatment Emergency Medicine, Seventh Edition“, The McGraw-Hill Companies, New York, USA, 2011, 1.
2. Reilly MJ, Markenson DS. Introduction to Hospital and Healthcare Emergency Management“ in Reilly, M. J.; Markenson, D. (eds): „Health Care Emergency Management - Principles and Practice“, Jones & Bartlett Learning, Sudbury, USA, 2011, 5-6.
3. Devettere RJ. Practical Decision Making in Health Care Ethics - Cases and Concepts, Third Edition“, Georgetown University Press, Washington, USA, 2010, 83-84.
4. Gubbins K, Nixon V. Consultation and Communication Skills“ in Nixon, V. (ed): „Professional Practice in Paramedic, Emergency and Urgent Care“, John Wiley & Sons, Ltd, Chichester, UK, 2013, 23.
5. Saubers N. Everything First Aid Book - How to Handle Falls and Breaks, Choking, Cuts and Scrapes, Insect Bites and Rashes, Burns, Poisoning, and When to Call 911“, Adams Media, F+W Publications, Avon, USA, 2008, 77. – 78.
6. Bauerfeind R, von Graevenitz A, Kimmig, P, Schiefer HG, Schwarz T. Zoonoses - Infectious Diseases Transmissible from Animals to Humans, Fourth Edition“, ASM Press, Washington, USA, 2016, 477.
7. Norris RL. Terrestrial Venomous Bites and Stings“ in Mahadevan, S. V.; Garmel, G. M. (eds): „An Introduction to Clinical Emergency Medicine“, Cambridge University Press, Cambridge, UK, 2005, 644.
8. Perry M. (ed): „Head, Neck and Dental Emergencies, Second Edition“, Oxford University Press, Oxford, UK, 2018, 47.
9. Wyatt JP, Illingworth RN, Graham, C. A.; Hogg, K. (2012.): „Oxford Handbook of Emergency Medicine, Fourth Edition“, Oxford University Press, Oxford, UK, pp. 414. – 415.
10. Townes DA, Strange GR. „Human and Animal Bites“ in Strange, G. R.; Ahrens, W. R.; Schafermeyer, R. W.; Toepper, W. C. (eds): „Pediatric Emergency Medicine - A Comprehensive Study Guide“, The McGraw-Hill Companies, Inc., New York, USA, 1999, 775.
11. Brown AFT, Cadogan MD. Emergency Medicine - Diagnosis and Management, Sixth Edition“, Hodder Arnold, London, UK,, 2011, 446.
12. Eckerline ChA, Brantley JC. Legal Aspects of Emergency Care“ in Stone, C. K.; Humphries, R. L. (eds): „CURRENT Diagnosis And Treatment Emergency Medicine, Seventh Edition“, The McGraw-Hill Companies, New York, USA, 2011, 45.
13. Wollf A. Types of Emergency Departments“ in Solheim, J. (ed): „Emergency Nursing - The Profession, The Pathway, The Practice“, Sigma Theta Tau International, Indianapolis, USA, 2016, 162.
14. Latcham K. Professional and Legal Issues“, in Nixon, V. (ed): „Professional Practice in Paramedic, Emergency and Urgent Care“, John Wiley & Sons, Ltd, Chichester, UK, 2013, 135.