

Exotic Reptile Bites

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Reptiles are a growing part of the exotic pet trade, and reptile bites have been considered innocuous in the emergency medicine literature. Two cases are reported of reptile bites, one from a green iguana and the other from a reticulated python. The treatment concerns associated with reptile bites are discussed. (*Am J Emerg Med* 1997;15:536-537. Copyright © 1997 by W.B. Saunders Company)

The exotic pet industry in the United States is growing rapidly, with an estimated 7.3 million pet reptiles owned by about 3% of all US households. Snakes have long been the standby of this trade, from reticulated pythons to red-tail boas, and there have always been some pet owners who keep venomous snakes and other "dangerous" reptiles such as caimans or alligators. Today, the reptile trade is increasingly being dominated by the sale of lizards. Although many pet owners prefer other lizards such as the bearded dragon, monitor lizards, anoles, or chameleons, the common green iguana (*Iguana iguana*) has become the most popular choice.

Most iguanas are of gentle disposition and will learn to be comfortable around humans. However, some iguanas may be overly aggressive. Iguanas can grow to up to 2 meters in length (mostly tail), and can deliver significant injury with their teeth, claws, and tails. Iguanas are sold by size, and although most iguanas are sold as babies, some importers will sell the larger adults. Many of these adult iguanas are "wild caught," and may never become accustomed to human contact. Head-bobbing, nodding, and "push-ups" are characteristic behaviors many lizards use to establish territory and dominance.¹ The first response when confronted is to run, but when cornered, the pet iguana may attempt to defend itself.

Injuries from iguanas and other exotic pets are usually minor. Iguanas can inflict painful scratches if their nails are not regularly trimmed; tail whipping can also be painful. Pet snakes have long been known to bite their owners. Over the last 6 months, physicians at our medical center have seen four separate reptile bites, three from *Iguana iguana*. We

present two of these four cases to demonstrate that these injuries may not be as innocuous as described previously in the emergency medicine literature. We also review the literature and discuss the salmonellosis infection associated with iguanas.

CASE REPORTS

Patient 1. A 23-year-old woman presented to the emergency department (ED) a few hours after being bitten by her large male iguana (5 feet long). The patient stated that this particular animal had a very poor disposition and could be irritable and aggressive. She stated that while trying to move him, she was bitten on her right wrist. There was a moderate amount of bleeding, which quickly resolved. She had been bitten multiple times in the past but thought this time she needed stitches. On physical exam the patient had a large laceration in the shape of the iguana's jaw (Figure 1) penetrating the skin into the superficial fat on the radial surface of her right wrist. There were no signs of infection, and the wound was irrigated, explored, and sutured loosely. Two days later the patient returned for routine wound check and was noted to have a small amount of localized erythema and tenderness. She was administered intramuscular cefazolin and a prescription for cephalexin. She returned for a second wound check with no further signs of symptoms of infection, and on follow-up she continued to do well.

Patient 2. A 25-year-old man sustained a puncture wound on his right hand from his 8-foot python 3 days before presentation at our medical center. He was treated at a local hospital with irrigation and a single dose of parenteral antibiotics and discharged with a prescription for oral antibiotics. On routine wound check he had persistent swelling in the area of the bite, along with increasing erythema and tenderness. Incision and drainage was attempted without success, and the patient was transferred to our facility for specialty referral and admission. On physical exam, the patient had a small healing puncture wound on the dorsal surface of his right hand, at the midshaft area of the second metacarpal. There was localized erythema, tenderness, swelling, warmth, and fluctuance. There was also a small needle puncture and incision from the outside hospital. Plain radiographs showed soft-tissue gas with no bony involvement, fracture, or periosteal elevation. Orthopedic consultation was obtained and the patient was admitted to the orthopedic infection service for intravenous antibiotics and possible operative debridement. No cultures were obtained. He received 3 days of intravenous ampicillin/sulbactam followed by a 24-hour trial of antibiotics. The patient's hospital course was unremarkable and he was discharged home to be followed up in clinic.

DISCUSSION

Most reptiles do not breed well in captivity and are usually captured in the wild or bred on farms. Green iguanas

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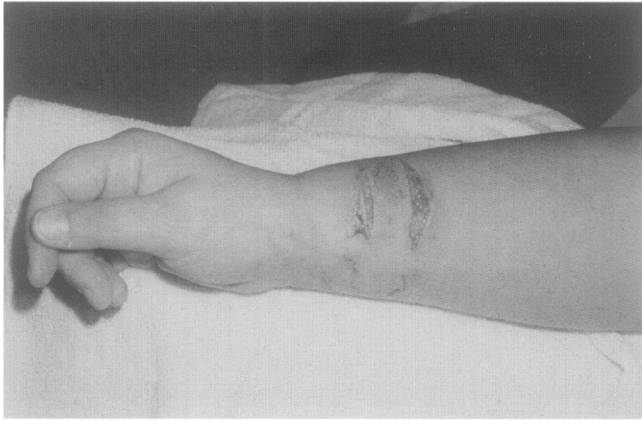


FIGURE 1. Lacerations from bite of *Iguana iguana*.

are usually farmed and imported from Central and South America, mainly Columbia.² In 1989, 139,844 green iguanas were imported into the US; in 1992, 433,866 were imported; and in 1993, 795,741 were imported. Although efforts to breed snakes in captivity are increasing in the US, there were still 70,000 ball pythons imported in 1994.³ Adolescents and young adults are frequently attracted to these unusual pets, and although the health risk from this relationship is usually worse for the pet, there are certain risks to the owner.⁴ Iguanas, like turtles and many other reptiles, have been associated with salmonellosis.

Many factors are associated with the development of infection in animal bite wounds: bacterial load, location of injury, depth of injury, presence of foreign body, treatment delay, wound care, and the existence of underlying disease. Although very little data have been reported on wounds from exotic pets, physicians can assume that the bacteriology of the wound will more closely reflect the normal flora of the animal rather than the normal human skin flora.⁵ General wound care techniques should be followed, as well as routine tetanus prophylaxis. Rabies is not a concern in reptilian bites.

Although the normal flora of most reptiles has not been formally studied, all reptiles have been associated with unusual subtypes of *Salmonella* since 1944.⁶ Iguanas have been shown to harbor salmonella as a result of farming practices and the natural instincts of the iguana. Iguana farmers and wholesalers report frequent prophylactic treatment of the iguanas to prevent disease and enhance coloration. On the farm, as many as 500 iguanas are kept in holding pens 10 feet by 10 feet in size, which may enhance the transmission of salmonella and increase carriage rates. In an instinctive desire to establish normal intestinal flora for hindgut fermentation, hatching lizards eat the feces of adult iguanas.² The iguanas are then flown to southern US and distributed to wholesalers. Although the US Fish and Wildlife Service inspects the importation of iguanas to ensure that the species is as stated on a valid import permit, they do not inspect the animals for disease. *Salmonella* carriage rates in these lizards may range from 36% to 77%.⁶

The increased importation of iguanas into the US has already caused localized outbreaks of patients infected with unusual stereotypes of *Salmonella*.⁷ This trend of iguana-associated salmonellosis may be analogous to the public

health concern of the late 1960s and 1970s presented by pet turtles, which prompted the Food and Drug Administration in 1972 to require all turtles offered for sale to be certified as salmonella-free.⁶ Unfortunately, reptiles may excrete salmonella intermittently and many animals do not appear ill despite salmonella-positive cultures, which makes identification of potential disease-spreading animals difficult.^{2,6} In 1975, the interstate shipment of turtles was banned by The Food and Drug Administration. From 1970 to 1976 the total number of turtle-associated salmonella isolates decreased by 77%, which led to a decrease of 18% in the total number of salmonella isolates from children 1 to 9 years old, or an estimated 100,000 cases.⁶

Iguana-associated salmonellosis can be projected to increase, although not to the extent of the turtle-associated salmonellosis of the 1970s. Lizards are less attractive than baby turtles as children's pets, but still appeal to the adolescent. Owners of iguanas should be aware of the lizard's potential to transmit salmonella and cause illness, especially in young children, pregnant women, the elderly, and immunosuppressed individuals.^{2,4,7} The primary caretakers of these pets should be reminded of proper hygiene after handling them,² and to prevent contamination of food preparation areas, in particular the kitchen sink, which should not be used to bathe reptiles or to wash reptile dishes, cages, or aquariums.

Although there are many reports in the medical literature of bites from various venomous reptiles such as gila monsters (*Heloderma suspectum*), Mexican bearded lizards (*Heloderma horridum*), and many types of venomous snakes, as well as mammalian bites, there is only one reported case of an iguana bite.¹ Prophylactic antibiotics are usually not required, but the wound needs to be monitored for signs of infection as it heals. Because of the strong association of iguanas (and all reptiles) with salmonella infection, wounds that are at risk for infection or appear infected should be treated with antibiotics that cover *Salmonella* species.

Emergency physicians need to be aware of the current popular culture, because these practices (or pets) may lead a patient to seek emergency treatment. With the growing popularity of *Iguana iguana*, and the steady presence of snakes and other exotics in today's pet marketplace, the emergency physician should consider inquiring about the pet-keeping habits of their patients when unique or unusual illness presents.

REFERENCES

- Teitel AD: B(N)ite of the iguana. *Am J Emerg Med* 1990;8:567-568 (letter)
- Dalton C, Hoffman R, Pape J: Iguana-associated salmonellosis in children. *Pediatr Infect Dis J* 1995;14:319-320
- Ramus E: Why Breed Reptiles. *Reptile and Amphibian Magazine Online* 1996;Oct
- Weil BJ, Martens PB, Harte JS: Iguana-associated salmonellosis in a young adult. *J Adolesc Health* 1995;17:120-122
- Wahl RP, Eggleston J, Edlich R: Puncture wounds and animal bites. In Tintinalli JE, Ruiz E, Krome RL (eds): *Emergency Medicine: A Comprehensive Study Guide*. (ed 4). New York, NY, McGraw-Hill, 1985, pp 317-322
- Chidoini RJ, Sundberg JP: Salmonellosis in reptiles: A review. *Am J Epidemiol* 1981;113:494-499
- Iguana-associated salmonellosis—Indiana, 1990. *MMWR Morb Mortal Wkly Rep* 1992;41:38-39