Unusual association of diseases/symptoms

A fatal mongoose bite

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Summary

Animal bite is a bite wound from a pet, farm or wild animal. Dog bites make up 80–85% of all reported incidents. Cats amount for about 10% of reported bites and other animals such as rodents, rabbits, horses, raccoons, bats and monkeys amount to 5–10%. Bites by mongoose are uncommon. Here, we present a case of fatal mongoose bite to an elderly woman who died as a complication of streptococcal infection at the bite site.

BACKGROUND

Till now, all the cases of mongoose bite-related deaths were caused by rabies transmitted by the mongoose bite.^{1 2}

There is no published report in the literature describing bite by mongoose and subsequent death by streptococcal infection to the best of our knowledge. This highlights the importance for presenting the case.

CASE PRESENTATION

On the evening of 15 June 2010, the patient, a 55-year-old woman, was washing utensils in her kitchen wash basin. During that period she felt that something had bitten her right leg. She sighted a grey mongoose running below and biting her leg. The kitchen had a garden in its vicinity where mongooses were regular visitors. About 10 min later a painful swelling appeared in the region of bite and on closer inspection it revealed a 'U'-shaped bite mark.

She felt uneasy and was admitted to hospital 2 h after the incident. She complained of pain and swelling on her right leg near the ankle, and restlessness since then. Local examination showed a 'U'-shaped bite mark on the lower end of the right leg with bleeding.

Local swelling was seen at the time of admission while bullae formation was noted the next day about 24 h after admission; the patient had a known history of hypertension and type II diabetes mellitus and was on treatment for the same.

INVESTIGATIONS

Her blood pressure was 190/100 mm Hg, pulse 88/min. Peripheral blood showed haemoglobin 10.3 gm/dl, total leucocyte count 25 900/mm³, neutrophils 85%, lymphocytes 12%, eosinophils 2%, monocytes 1%, packed cell volume 33.5%, mean corpuscular volume 81.9 fl, mean corpuscular hemoglobin 27.5 pg, mean corpuscular hemoglobin concentration 33.6 g/dl, platelet count 3.08 lac/mm³, prothrombin time (PT) (patient) 18.6 s, PT control 12.8 s, prothrombin index 68.0%, PT international normalised ratio (INR) 1.4, partial thromboplastin time with kaolin (PTTK) (patient) 29.3 s, PTTK control 28.5 s, blood urea 25 mg/dl, blood

creatinine 1.7 mg/dl and blood sugar 392 mg/dl. Tests were negative for infection with hepatitis A and B viruses. The given laboratory data were recorded 24 h after the bite except for data on sugar, urea and creatinine which were recorded within 12 h after admission.

DIFFERENTIAL DIAGNOSIS

A case of snake bite was first thought of but the patient herself gave her history to the treating doctor that a grey mongoose had bitten her right leg.

TREATMENT

Her medication history consisted of tab atenolol and ramipril for hypertension and H insulin for diabetes mellitus. She was given cefoperazone+sulbactam and metronidazole in injectible form for infection. The patient developed cardiorespiratory arrest on the day of admission and was revived and kept on ventilator support. However, she remained comatose throughout her stay. EEG showed generalised slowing. Supportive care was given. She had irreversible hypoxic brain damage and she again landed in cardiorespiratory arrest on 5th day of her stay in hospital and declared dead.

OUTCOME AND FOLLOW-UP

Autopsy

Autopsy was performed on the same day of her death at our hospital. The body was well nourished and having multiple ecchymoses ranging from 0.2 to 0.5 cm in diameter over back and shoulders. A 'U'-shaped bite mark was present over the lateral aspect of the right leg, lower one-third of size 1.8×0.3 cm with two ends 1.3 cm apart on the concave side. Puncture wounds caused by the canines and incisors of upper jaw of mongoose were evident. There was swelling surrounding the bite mark which extended up to the toes along with bullae formation and brownish black discolouration of the skin (figures 1 and 2). On the cut section, extravasation of blood was present below the bite mark with yellowish fluid in the surrounding area.

Figure 1 'U'-shaped bite mark over lateral aspect of right leg, lower one-third was seen. Evidence of swelling surrounding the bite mark up to toes along with bullae formation with brownish black discoloration of skin.

On internal examination the brain showed congestion and oedema. Both lungs showed multiple petechial haemorrhages with moderately consolidated posterior portions. The kidneys were congested and tense. The capsule stripped easily revealing a smooth, congested surface. A few small haemorrhages were found on the surface, pelvis and calyces of both kidneys. Stomach mucosa was haemorrhagic and oedematous.

Microscopic examination of the skin near the bite mark showed a stratified squamous epithelial lining and intraepidermal subcorneal multilocular blisters with thin strands of keratinocytes bridging the bullae. The bullae also showed polymorphs and eosinophils (figure 3). Dermis and subcutaneous tissue show perivascular lymphocytic infiltrate. Sections from lungs showed features of pneumonitis with patches of red and grey hepatisation. Kidneys showed features of acute tubular necrosis. Liver showed periportal inflammatory infiltrates while the heart and spleen showed congestion. Fluid aspirated from bullae yielded streptococci on Gram staining. *Streptococcus pyogenes* were isolated on blood agar and Mac Conkey medium which

Figure 2 The side arrows showing puncture wounds of canines while the middle arrow is of incisors.

Figure 3 Skin near bite mark showing stratified squamous epithelial lining with intraepidermal subcorneal multilocular blisters with thin strands of keratinocytes bridging the bullae. Bullae also show polymorphs and eosinophils (10 $\times$).

were sensitive to imipenem, cefoperazone+sulbactam, linzolid, netilmycin, cephalexin, cephadroxil, ampicillin and ciprofloxacin. Toxicological analysis of the bite mark did not reveal any poisonous substance.

DISCUSSION

Animal bite is a major public health problem because of not only acquiring the risk of secondary infection but also for the possibility of contracting rabies.² The most common consequence of an animal bite is simple infection. However, at times it proves to be fatal as seen in the present case.

The saliva of these animals contains a wide variety of bacteria. Studies showed that bacteria and other pathogens constitute about 85% of bites. The consequences of infection range from mild discomfort to life threatening complication. The bacterial species most commonly found in bite wounds include *Pasteurella multocida*, *Staphylococcus aureus*, *Pseudomonas* and *Streptococcus*.¹⁻⁷ The oral bacterial flora varies with the species of mammal and also reflects what prey they have eaten. But as the mongoose that had bitten the lady was not captured, it is difficult to comment upon it.

Mongoose have needle-like incisors and carnassial teeth with the largest being canines that typically cause puncture wounds. These wounds appear innocuous on the surface, but the underlying injury goes deep. Therefore, the deep and narrow wound is difficult to clean. Mongoose teeth may inject bacteria into the bite site. Persons with impaired immunocompetence, for example, individuals with HIV infection, diabetes mellitus, etc are especially vulnerable to such type of infections by bites. The course of the infected wound is affected by a number of factors such as the type of wound inflicted, the location of the wound, pre-existing health conditions in the bitten person, extent of delay before treatment, patient compliance and the presence of foreign body in the wound. In the present case the woman was hypertensive and having diabetes mellitus type II with wound situated

Figure 4 The Indian grey mongoose (*Herpestes edwardsii*).

at an extremity favouring increased risk of infection and subsequent complications. In such cases early surgical consultation and early wound debridement may have altered the outcome. While managing such cases some essential points must be taken into consideration for fruitful outcome such as: rest and elevation of the part affected so as to reduce oedema, early culture and sensitivity from the wound swabs and administration of effective antibiotics as early as possible, when there is a failure of inflammatory swelling to subside after 48–72 h then wound debridement should be done.

The Indian grey mongoose (*Herpestes edwardsii*) is commonly found in open forest, scrub land and cultivated field, often close to human habitation (figure 4). They are prevalent in Southern Asia mainly India, Pakistan and Sri Lanka and commonly found in the central Indian habitat of Vidarbha. It is medium-sized tawny, or yellowish grey with lighter underside, darker feet and dark red tail. They have a reddish tint on their heads. Their tail length equals their body length. Body length: 36–45 cm, tail: 45 cm, weight: 0.89–1.7 kg. It lives in burrows, hedge-rows and thicket among groves of trees, taking shelter under rocks or bushes or even in drains. It preys on

rodents, snakes, bird eggs and hatchlings, lizards and varieties of invertebrates.⁸

Learning points

- ▶ Despite their fascinating reputation for attacking venomous snakes, mongooses are non-aggressive towards human beings.
- ▶ However, at times they may bite as in the present case.
- ▶ Such wounds can cause streptococcal sepsis.
- ▶ Early debridement of wound and early administration of broad spectrum antibiotics can be life saving.
- ▶ Considering the potential severity of such infection, good initial clinical care and knowledge of the consequences by bite of a mongoose are needed.

Competing interests None.

Patient consent Obtained.

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