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Rat bite as a cause of diabetic foot ulcer—a series of eight cases

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To the Editor: Rat bite is a not uncommon, but usually ignored, cause of foot ulcer in persons with diabetes. Severe neuropathy and poor glycaemic control predispose to rat bite, especially in rural patients.

Here, we report a series of eight foot ulcers caused by rat bite in patients with diabetes. Single case reports are available in earlier literature [1], but to date no series of rat bites in diabetic patients have been reported.

Our hospital serves a predominantly rural hinterland, and rats are a common rural as well as urban pest. Rat bite, however, rarely reaches tertiary centres, and medical professionals, especially diabetes care providers, do not have much exposure to the morbidity caused by rats. Rat bite is usually seen in younger children, on the face or hands [2].

The eight diabetic patients described here were from a rural background and presented to us during the summer months with foot ulcers due to rat bite. The duration of diabetes ranged from 7 to 20 years. One patient presented twice, with fresh ulcers on the foot and hand, after 6 months.

The history was clear-cut: complaints of sudden-onset ulcer (onset within the past week, noticed on waking up in the morning). The ulcers were painless, without foul smell. There was no history of trauma or barefoot walking. Six patients complained of bleeding from toes or noticed that bedding was blood-stained.

Four patients were smokers. Two had a previous history of foot ulcers. Each patient had multiple ulcers, ranging from three to seven per person. They were Wagner grade I

or II, red/bloody linear or circular ulcers, with a diameter of 1 cm or less, without pus, local heat, discharge or tenderness. Five patients had involvement of dorsal aspect of toes, four suffered ulcers on the tips of toes, one on the dorsal aspect of foot and one on the sole of foot.

Biothesiometry revealed severe sensory neuropathy (vibration perception threshold >40 mV) in all eight patients. Peripheral Doppler showed impaired digital flow in two patients, while plain X-ray revealed no evidence of osteomyelitis in any subject.

All patients had poor glycaemic control (HbA_{1c} >8.0%), but none had ketosis or ketoacidosis.

The patients were treated as outpatients, with oral amoxicillin, oral metronidazole, sucralfate cream and tetanus toxoid. Good healing occurred in all patients, resolution being achieved in 1 to 2 weeks. Pest control measures were advised to all patients.

The term ‘diabetic foot ulcer’ encompasses a wide variety of clinical presentations. The pathogenetic factors are neuropathy, peripheral vascular disease and infection, working in tandem with each other.

Successful and efficient management of a foot ulcer entails finding the predominant pathology, treating it, and preventing its re-occurrence. It is important to identify rat bite for many reasons.

Rat bite can, for example, be fatal [3], and may be associated with rat bite fever [4], tetanus [5] and rabies [6]. The treatment is fairly simple, and does not require third-generation antibiotics. Tetanus prophylaxis is essential [2]. Rat bite occurs in patients with severe neuropathy, and does not correlate with peripheral vascular disease. Preventive measures, i.e. anti-rodent poisons, etc., are necessary in the homes of these patients.

This report serves to draw attention to a common, but commonly missed, cause of foot ulcer. The differential diagnosis includes vasculitis and traumatic ulcers.

A history of traumatic, painless, non-smelling ulcers in a setting of severe neuropathy, poor glycaemic control and rural residence should lead one to suspect rat bite as a possible cause.

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