branes it may induce less acute phase reaction. This could play a critical part in preventing or diminishing reactions that favour polymerisation of β_2 microglobulin and generation of amyloid.

- 1 Bardin T, Zingraff J, Kuntz D, Drücke T. Dialysis-related amyloidosis. *Nephrol Dial Transplant* 1986;1:151-4.
- 2 Brown EA, Arnold IR, Gower PE. Dialysis arthropathy: a complication of long-term treatment with haemodialysis. *Br Med J* 1986;292:163-6.

- 3 Vandembroucke JM, Jadoul M, Maldague B, Huaux JP, Noel H, Van Ypersele de Strihou C. Possible role of dialysis membranes characteristics in amyloid osteoarthropathy. *Lancet* 1986;i:1210-1.
- 4 Chanard J, Lavaud S, Toupance O, Melin JP, Gillery P, Revillard JP. β_2 -Microglobulin associated amyloidosis in chronic haemodialysis patients. *Lancet* 1986;i:1212.
- 5 Ogawa H, Saito A, Oda O, Nakajima M, Chung TG. Detection of novel β_2 -microglobulin in the serum of hemodialysis patients and its amyloidogenic predisposition. *Clin Nephrol* 1988;30:158-63.

(Accepted 16 December 1988)

Rat bites and diabetic foot in the West Indies

P Cooles, H Paul

Princess Margaret
Hospital, Roseau,
Dominica, West Indies
P Cooles, MRCP, consultant
physician
H Paul, FRCS, consultant
surgeon

Correspondence to: Dr
Cooles.

Br Med J 1989;298:868

Diabetes mellitus, a disease associated with affluence, is an increasing problem in the West Indies.¹ Diabetic foot is an important cause of morbidity and is often complicated by rat bites. We present four cases of rat bites on a diabetic foot.

Case reports

The table summarises details of the cases.

Details of four cases of rat bites on a diabetic foot

Case No	Age (years)	Sex	Peripheral neuropathy	Foot pulses	Length of hospital stay (days)	Outcome for foot
1	36	M	Yes	Yes	23	Saved
2	70	F	Yes	No	30	Amputated
3	73	F	Yes	No	7	Saved
4	50	M	Yes	Weak	27	Saved

Case 1—An insulin dependent diabetic woke one morning to see a rat eating his left hallux and second toe. He could not feel the bites. Diabetes had been diagnosed four years earlier and peripheral neuropathy one year earlier on the basis of impaired sensation below the knees, absent ankle and knee jerks, and impotence. After two weeks of care by the village nurse he was referred to hospital. Culture of material from a wound swab grew a β haemolytic streptococcus. He was treated with oral cloxacillin and metronidazole, and the wound was cleaned daily. The wound healed satisfactorily, and he was discharged taking 80 units isophane insulin daily in two doses.

Case 2—A woman presented one week after waking with an extensive rat bite on her left hallux. She was not known to be diabetic but had noticed polyuria for several months. Her blood glucose concentration on admission was 19 mmol/l. Her toe was gangrenous, and there were no palpable foot pulses. Sensation in both feet was severely impaired, and both ankle and knee jerks were absent. Culture of material from a wound swab grew a proteus. Amputation below the knee was performed 10 days after admission, and she was discharged taking chlorpropamide 250 mg daily.

Case 3—A woman awoke with a large rat bite on her left hallux. She had had diabetes for 13 years, which

had been controlled with oral chlorpropamide. Amputation below the right knee had been performed two years earlier. After two weeks of care by the village nurse she was sent to hospital. Foot pulses and ankle and knee jerks were absent. Sensation was severely impaired below the knee. Material from a wound swab was sterile. When she was discharged the wound was healing satisfactorily with daily cleaning and chlorpropamide 250 mg daily.

Case 4—A man was referred two weeks after waking to find his feet bleeding from multiple painless rat bites. He had been diabetic for 13 years but had not attended a clinic for over a year. He had absent knee and ankle jerks, impaired sensation in his feet, and weak foot pulses. Material from wound swabs was sterile. His wounds healed with conservative management, and he was discharged taking 30 units insulin zinc suspension daily.

Comment

Rat bites can have serious consequences and even cause death.² Clinton estimated that there were at least 14 000 rat bites a year in the United States,² and Deoras reported 20 000 admissions for rat bites to hospitals in Bombay each year.³ Most bites occur during sleep, and victims usually wake and frighten the rat away, except in the case of small infants or the very infirm. People with peripheral neuropathy, however, do not feel the bites, and the rat can continue to feed undisturbed.

Five per cent of adult Dominicans are diabetic (R Fortune, unpublished data), and the ratio of rats to humans in Dominica may be as high as five to one (B Xavier, personal communication). Housing conditions are poor, largely owing to hurricane David, which in 1979 left three quarters of the people homeless. Diabetic foot is a well recognised problem.⁴ The combination of a high population of rats, poor housing, and a high prevalence of diabetes means that rat bites commonly cause lesions on diabetic feet. The incidence of such lesions is underestimated as patients may not volunteer or even realise that they have been caused by rats. We advise all of our diabetic patients to cover their feet while asleep and seek immediate medical help for any foot lesion.

- 1 Walrond EW, Jordan OW. Suggestions for a new approach to diabetes. *Cajanus* 1985;18:127-30 (Caribbean Food and Nutrition Institute, Jamaica).
- 2 Clinton JM. Rats in urban America. *Public Health Rep* 1969;84:1-7.
- 3 Deoras PJ. Some observations on the probable damage caused by rats in Bombay. *Indian Journal of Entomology* 1966;28:543-7.
- 4 Alberti KGGM, Hockaday TDR. Diabetic foot disease. In: Weatherall DJ, Ledingham JGG, Warrell DA, eds. *Oxford textbook of medicine*. Oxford: Oxford University Press, 1984:9.37-8.

(Accepted 15 September 1988)