

# A mouse-nibbled toe in a case of diabetic peripheral neuropathy

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**Citation:** Shankhdhar LK, Shankhdhar K, Shankhdhar U, Shankhdhar S (2016) A mouse-nibbled toe in a case of diabetic peripheral neuropathy. *The Diabetic Foot Journal* 19: 100–1

## Article points

1. The menace of rodents is widespread in India and this article focuses on a mouse-nibbled toe in a case of diabetic peripheral neuropathy (DPN).
2. Advanced DPN is known to put feet at high risk of complications so clinicians advise patients with advanced DPN to wear shoes while sleeping, besides administering rodent eradicating and repelling measures, such as pesticides and repellants.

## Key words

- Diabetic peripheral neuropathy  
- Rodents

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**Diabetic peripheral neuropathy (DPN) is one of the most common complications of diabetes, both type 1 and type 2. DPN renders feet insensitive and prone to a variety of injuries, potentially resulting in ulceration and might even end in an amputation. This case report focuses on a somewhat rarer hazard of DPN, involving a mouse nibbling away the toe of a woman while she slept. Due to advanced DPN, there was total anaesthesia, so the woman was insensitive to any pain or discomfort. The case report intends to emphasise that good glycemic control might prevent DPN, but that once it develops, many preventive measures/precautions are to be advised to patients.**

India currently has 69.2 million people living with diabetes and this is expected to rise to 123.5 million by 2040 (International Diabetes Federation, 2015). Sixty-six percent of patients with type 1 and 59% of patients with type 2 diabetes mellitus have some type of neuropathy (Dyck et al, 1999; Tracy and Dyck, 2008). Although there are several types of neuropathy, distal symmetrical sensory neuropathy is the most common (Thomas and Tomlinson, 1993); more than 90% of people with DPN are unaware of the fact they have it (Bongaerts et al, 2013). Patients with type 1 or type 2 diabetes with prolonged hyperglycaemia are at greatest risk of developing DPN. In addition to hyperglycaemia, patients with existing comorbidities, such as dyslipidemia, hypertension and cardiovascular disease, are also at increased risk (Tsfaye et al, 2005).

DPN may lead to the implantation of different foreign bodies in the sole of the foot. For example, Woolfrey and Kirby (1998) reported about a case where a portion of a hypodermic needle had implanted itself in the sole of a person, after the individual had walked barefeet into the room where a used needle had fallen on the carpet, instead of landing in a dust bin. In other case studies, various household objects, including a nail and a spring, were reported having been implanted in the soles

of patients with DPN after walking barefeet (Blitz, 2013). DPN predisposes the feet to trauma and ulceration which, when infected and/or associated with PVD, may lead to amputation. This case report focuses on an amputation due to the nibbling of a toe by a rodent.

## Patient's history

A fifty-five-year-old woman (Mrs A) with type 2 diabetes, was a resident of a suburban area, called Orai, some 150 kilometres from Lucknow, the capital of Uttar Pradesh, India. She had had diabetes for 11 years and had grade 2 chronic kidney disease and dyslipidemia, as well as advanced DPN. Her podiatric check up in the authors' clinic revealed that she had advanced distal, symmetrical sensory DPN: 10-point, 10-g Semmes-Weinstein monofilament testing to gauge protective sensation revealed a score of zero; thermal sensation, as tested with thermo tip, was totally absent; biothesiometric assessment revealed a vibration perception threshold >50 on both sides and both ankle and knee jerks were absent bilaterally. Power of different muscle groups was tested clinically in which the examiner regards his/her power as normal and then assesses/compares the power of the muscles of the patient. It is a common bedside clinical testing procedure in India. In this case, muscle power was found to be normal.

### What happened that night?

One night, Mrs A's husband returned late to the house and found a mouse jumping out of the bed on which Mrs A was sleeping. There were blood spots on the bed sheet and the husband noticed that the third toe of her right foot had been nibbled by the mouse and there were also smaller wounds on the foot present (Figure 1). She received first aid by a local doctor and visited the authors' clinic the next morning.

### Discussion

The menace of rodents is widespread in India. They frequently harm the human population in both rural and suburban areas of India. The factors underlying this include, leaving food portions out in the open, allowing feeding of rodents and open storage of grain in rural and suburban regions. In terms of the latter, India wastes a quantity of wheat equivalent to the entire production of Australia every year (The Times of India, 2013). Meanwhile, the use of poor quality pesticides and repellents, as better quality products are largely unaffordable, could well be responsible for the failure of eradicating rodents or at least containing the problem.

Advanced DPN is known to put feet at high risk of complications and all patients at the authors' clinic are educated to avoid walking barefoot, or using unchecked hot water in a bath, for instance. They are also advised to keep feet warm by wearing two pairs of socks in the winter. Many instances can be found in the literature of people suffering from advanced DPN who have walked for days and even weeks with foreign objects lodged on their soles.

Underlining the threat of rodents in India, a unprecedented incident reportedly took place on an Air India flight enroute to London from New Delhi, when the pilot of the flight spotted a rat in the cockpit under the rudder pedal (Zee News, 2014). Furthermore, passengers travelling in a three-tier coach from Kerala to Thane faced a harrowing time after rodents damaged their luggage and food packets (Badgeri, 2015). A goods train carrying cement bags derailed after the tracks caved in 'due to a maze of holes dug out by rodents' (Gulf News India, 2015). According to a conservative estimate about 5–6% of the total food grains being produced in India



Figure 1. Third toe of right foot of a diabetic patient with DPN nibbled by a mouse during sleep.

are lost annually at the pre-harvest stage due to rodents (Parshad, 1992).

### Conclusion

The nibbling of a toe by a mouse might have been sparingly reported in clinical literature but the problems of rodents is not uncommon. The authors advise patients with advanced DPN to wear shoes while sleeping, besides administering rodent eradicating and repelling measures, such as pesticides and repellants. Another useful measure to keep feet safe during the night is keeping cat. ■

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### Acknowledgement

Special thanks to Sanjay Katiyar who helped with computer-related work.