



Letters to the Editor

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Harnessing new technology – the future of neuropathic foot ulcers

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Dear Editor,

With the growing advances in science and technology, no prospering nation would want to be left behind in the race of accomplishments. While many of the world's novel scientific discoveries may have taken place in the developed nations but some of the developing nations are not far behind in the race. India is one such country which has consistently brought forth new scientific inventions and discoveries to the world since time immemorial. Many of these have gone on to becoming among the most popular and 'science-changing' facts.

Among the latest ones, there have been innovations like the Quantum Magnetic Resonance therapy as treatment for Osteoarthritis¹ and most recently the device *Nebula*.² The 'Nebula' as it has been so named, is a device which aims to accurately predict in a timely manner the occurrence of neuropathic foot ulcers, especially in diabetics prone to complications. It is a novel concept based on the theory of chaotic movement of the foci in the sole of the foot. The technology would best be described as a diagnostic tool for measuring the progression of any neuropathy (not limited to diabetes) and predicting plantar ulcer development. The device allows the physician to exactly pinpoint the locations on the feet to be assessed. The automatic sensors are then able to detect micro movements in the feet with very fine precision and locate the areas at higher risk to develop an ulcer.³

There is impaired redistribution of plantar pressure points in individuals with diabetes without signs of Clinical neuropathy. This can be attributed to loss of chaos generating mechanisms in diabetics. "Redistribution of pressure points may be essential in the prevention of trophic ulcers in susceptible individuals, which may develop due

clinical neuropathy. This can be attributed to loss of chaos generating mechanisms in diabetics. "Redistribution of pressure points may be essential in the prevention of trophic ulcers in susceptible individuals, which may develop due to constant capillary blanching. Since, the pressure required to occlude the capillary lumen is less than 30 mm Hg, any pressure greater than this is likely to cause an ulcer." Therefore, the new theory proposes that it is the prolonged sustenance of pressure at particular points causing unremitting tissue anoxia at these points rather than its magnitude as the prime cause for plantar pressure ulcers and therefore challenges the existing diagnostic principles that aim to identify highest pressure bearing points as those that are most likely to develop into an ulcer. A paper highlighting this concept was published in one of the recent issues of the Australasian Medical Journal.³

The Nebula, which is a result of 6 years of research on the concept of chaos science and neuropathy has recently won the Gold medal awarded jointly by the Department of Science and Technology, Government of India and the Lockheed Martin corporation USA & the IC 2 Institute, University of Texas, Austin, USA in 2010; The technology and its novel yet simple concept has also been awarded the Philips Best Innovation award in 2009 and Best Research Paper Award at the 2nd Diabetes India International conference at Jaipur, India in 2005.

With this invention, the team, comprising of Dr. C Jairaj Kumar, the Chief Investigator, along with Dr. Devesh V Oberoi, the Associate Researcher in the project has taken the Indian healthcare innovation sector to the next higher level. The other team members include Dr. Arunachalam Kumar and Dr. Sidney C D'Souza as academic mentors and the KS Hegde Medical Academy, Mangalore and the Manipal BoP as the clinical & academic partners. The device has created immense interest among the academic and business camps in different regions and is set for its International launch.

Sincerely,

Kanupriya M Agarwal, MBBS

The author is a medical graduate from Pad. Dr. D Y Patil Medical College and Hospital, Pune, India and is currently a visiting researcher at Joslin Diabetes Center, Harvard Medical School, USA.



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Snake bites

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Dear Editor,

One hundred and seventy households in Ernakulum district situated in Kerala state, South India were visited over the study period in 2008. One adult member aged above 18 years from each household was interviewed using a piloted semi structured questionnaire. Data analysis was done using SPSS Inc. Illinois, USA version 11.5. Among the total 170 participants majority 116 (68.2%) were females and house wives 93(54.7%). Of the total, 166(97.6%) were literates and most were educated up to high school 63(37.1%). As many as 80% of participants knew Cobra and Viper to be poisonous but very few, 20(11.8%) and 5(2.9%) knew about Sea snakes and Krait. Most respondents 97(57.1%) said that snake bites are commonest during rainy season and farming as the riskiest occupation 72(42.4%) for bites. Even though 144(84.7%) respondents knew that bites are not always fatal only 26(15.3%) knew how to distinguish bites as poisonous or not based on bite marks. This was in contrast to the findings of a Kenyan study where most participants thought all snake bites to be fatal.¹ Commonest signs and symptoms of snake bites as told by participants was cyanosis 84(49.4%), loss of consciousness 57(33.5%), frothing 42(24.7%), paralysis 30(17.6%), bleeding tendencies 15(8.8%) and swelling 8(4.7%) at the site of bite.

Regarding first aid measures, only 36(21.2%) participants knew about wound washing. Majority 139(81.8%) knew of tourniquet application which is no longer recommended. Twenty five (14.7%) participants did not know of any first aid measures for snake bites. Fifty nine (34.7%) felt ayurveda to be the best treatment option for snake bites. Hardly any respondents, 8%, knew that the deployment of torch light in

the dark and wearing foot wear are effective means for avoiding bites. Awareness level of preventive measures against snake bites was better in Sindh study where it was 49%.² Although 157(92.4%) considered snakes to be a common problem in their locality, 68(40%) respondents opposed killing of snakes due to cultural reasons such as snake worship. Of 32 participants who reported history of snake bites in their households over the past 10 years, correct first aid practices like wound washing and part immobilization was practiced only in few cases (Table 1). Most victims were managed by ayurvedic treatment (Table 2). Allopathic treatment was sought only in 6 cases of which anti snake venom (ASV) was administered in 3 cases. In another Indian study about 65% snake bite victims went to traditional healers and only 22% victims received hospital treatment.³ Consultation of a traditional healer is a classic cause of delay and exposes the patient to useless or dangerous interventions.

TABLES

Table 1. First aid measures practiced in snake bite victims.

First aid measures	No.	%
Tourniquet application	24	75
Incision	6	18.8
Wound washing	5	15.6
Immobilizing the bitten part	3	9.4
Suction of wound	1	3.1

(n=32)

Table 2. Treatment taken by victims following snake bite.

Type of treatment	No.	%
Ayurveda	16	50
Allopathy	6	18.8
Home based remedies*	11	34.4
Others**	7	21.9

(n=32)

* applying pepper, garlic, deprivation of food & sleep
 **Others – snake charmers, traditional healers, snake stones application

To conclude the knowledge, attitude and practices towards snake bite management among participants were not found to be satisfactory in spite of a good literacy status in the study area. This calls for education of people

Sincerely,

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