Oral Abstracts

6B-05

VENOMOUS SNAKES OF MEDICAL RELEVANCE IN NEPAL: STUDY ON SPECIES, EPIDEMIOLOGY OF ENVENOMINGAND AN ASSESSMENT OF RISK FACTORS OF ENVENOMING AND DEATH

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Objectives: To provide an evidence-based list of the medically relevant snake species and describe circumstances, socio-economic condition and prehospital interventions used for proven krait and Russell's Viper bites.

Methods: In a cross-sectional study I taxonomically identified 349 preserved snake specimens brought by patients bitten or their attendants to nine snakebite treatment centres in southern Nepal over a period from 2010 through 2014. I analyzed the eco-epidemiology and patients' demographic and socio-economic characteristics and the pre-hospital history of proven 46 krait and 10 Russell's Viper bites using mixed research methods and face-to-face interviews of the patients at the site of bite during November 18, 2011 through December 31, 2014.

Results: Of 349 snakes involved in bites, 199 (57%) specimens were found to be medically relevant venomous snakes that included 11 species.Among them, Najanaja (n = 76, 22%), *Bungaruscaeruleus* (n = 65, 19%) and *Trimeresusursalbolabris* (n = 10, 3%) were the most widely distributed snakes. *Daboiarusselii* (n = 10, 3%) was found to be restricted to the southwestern part of Nepal. For B. *walli*, a previously poorly known species, 13 voucher specimens represent the first country records of this species.

Indoor at night (61%) while sleeping during the rainy season was the main risk for krait and day hours while engaged in agricultural activities in rural areas for Russell's Viper bites. Unlike Russell's Vipers, kraits pose a risk of bite to people living in rural to urban areas, in all types of houses, and having higher socio-economic status, too. This suggests krait bites to be no longer a disease of the poor in Nepal. These snakes predominantly affected farmers. The case fatality rate due to krait bite envenoming was 17%. There was no death due to Russell's Viper bites. The overall case fatality rate was calculated to be 10%.

Conclusion: The results of this study strongly emphasize that snake bite is an important public health issue in Nepal. Bungaruswalliand Daboiarusselii bites represent the first proven envenoming in Nepal. Since Indian antivenoms for treating envenoming are scarce and exhibit unproven cross-reactivity with venoms from Nepalese snake species, there is an urgent need to improve the knowledge of people on snakes and to try changing their attitudes towards these reptiles, in addition to documenting the biodiversity and distribution of medically relevant snakes, the epidemiology and circumstances of their bites.

Keywords: snake bite, krait bite, Russell's Viper, Daboiarusselii, Bungarus, eco-epidemiology