Oral Abstracts

6B-01

ANALYSIS OF THE EFFICACY OF TAIWAN FREEZE NEUROTOXIC ANTIVENOM AGAINST SOUTHEAST ASIA COBRA VENOMS THROUGH ANIMAL MODEL AND PROTEOMICS APPROACHES

Chih-Chuan Lin[1], Chien-Chun Liu[3], and Jau-Song Yu [2,3]

[1] Department of Emergency Medicine, Chang Gung Memorial Hospital, Linkou, Tao-Yuan, Taiwan.
[2] Graduate Institute of Biomedical Sciences, and [3]Department of Cell and Molecular Biology, College of Medicine, Chang Gung University, Tao-Yuan, Taiwan.

Objectives: According to WHO's estimation, Southeast Asia is one of the highest burdened regions of snakebites envenomation.In Southeast Asia, there are 4 clinical significant cobras envenoming: Ophiophagushannah (OH), Najakaouthia (NK), Najasiamensis (NS), and Najaatra (NA).Antivenom, the rational and most effective treatment modality, is either unavailable or/unaffordable in many affected regions. Snakes belonging to the same species have the similar composition of venom between each other owing to the evolution process. Therefore, either monovalent or polyvalent antivenoms may offer paraspecific protection against several snakes envenoming. In Taiwan, we have freeze neurotoxic antivenom (FN-AV) to against Bungarusmulticinctus and Najaatrasnakebites. This FN-AV is effective and safe antivenom to treat Taiwan cobra snakebites.Based on the above phenomena, we, therefore, aim to evaluate the neutralizing ability of FN-AV against the other 3 kinds of Southeast Asia cobras in this study. Besides, we also aim to explore the toxic proteins of these 3 Asia cobras.

Methods: First, we applied WHO-recommended pre-clinical tests to evaluate the neutralizing ability of FN-AV against the 3 heterologous venoms of Southeast Asia cobras, *Ophiophagushannah*, *Najakaouthia* and *Najasiamensis*. Second, we used mass spectrometry (MS)-based proteomic technologies to characterize venom proteomes and identify FN antivenom-recognizable antigens in the venoms of these 3 Asia cobras.

Results: Neutralization study in mice model (WHO-recommended pre-clinical tests) showed that FN-AV was able to neutralize the lethality of NK and NS venoms effectively, but not OH venom. According to MS-analysis, FN-AV antivenom-recognizable antigens, i.e. potential major toxic proteins of the venoms of NK and NS were identified. Although the OH venom cannot be neutralized by FN-AV, however, the major candidate toxic proteins of OH venom were also identified by MS-analysis.

Conclusion: FN-AV has potential application in the treatment of NK and NS envenomation. The identification of FN antivenom-recognizable antigens represents a solid basis to further develop more effective antivenom by blocking the toxicity from these major toxic proteins, in the hope of achieving broadly therapeutic effects of cobra snakebite in Southeast Asia region.