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Incidence of early adverse reactions from snake antivenom in Ramathibodi Poison Center, Thailand.

Charuwan Sriapha[1], Panee Rittilert[1], Satariya Trakulsrichai[1,2], Winai Wananukul[1,3]
[1]Ramathibodi Poison Center, Faculty of Medicine Ramathibodi Hospital, Mahidol University, Thailand
[2]Department of Emergency Medicine, Faculty of Medicine Ramathibodi Hospital, Mahidol University, Thailand;
[3]Department of Medicine, Faculty of Medicine Ramathibodi Hospital, Mahidol University, Thailand

Objective: To investigate and report the incidence of adverse reactions associated with the use of snake $F(ab')_2$ antivenoms produced by Queen Saovabha Memorial Institute, Thailand.

Methods: A retrospective cohort study was performed by reviewing patients with snake envenoming who were referred to the Ramathibodi Poison Center (RPC), Bangkok, Thailand from January 2016 to June 2017. Demographic information, identifity of the snake, and clinical manifestations were recorded. Early adverse reactions (EARs) to the antivenom were defined according to the Brown Grading system.

Results: Of the 690 venomous snakebite patients, only 456 patients were treated, with 771 doses (varied from 1-20 vials per dose, 1-8 doses per patient) of 7 different monovalent and 2 different polyvalent antivenoms. One hundred and twelve cases (24.56%) developed EARs after receiving 130 doses of antivenom. These patients were bitten by Malayan pit viper (MPV, 32.1%), green pit viper (GPV, 29.5%), cobra (23.2%), malayan krait (MK, 2.7%), king cobra (KC, 2.6%), and Russell's viper (RV, 1.8%). For neurotoxin antivenoms, the incidences of EARs in patients administered monovalent antivenom against KC, cobra, MK, banded krait (BK) and polyvalent antivenom were 28.6%, 18.2%, 7.1%, 25% and 18.9% of the total doses, respectively. For hematoxin antivenoms, the incidences of EARs in patients administered monovalent antivenom of MPV, GPV, RV, and polyvalent antivenom were 27.1%, 16.0%, 9.7%, and 16.5% of the total doses, respectively.

The most common EARs were rash (75%), chest tightness (25%), nausea/vomiting (21.4%) and hypotension (15.2%). The grading of EARs can be classified as mild 61.7%, moderate 30.1%, and severe 8.3% with no fatalities recorded. Among patients with EARs, severe reactions occurred with antivenom of MPV (7/38 cases), GPV (1/31 cases), KC (2/2 cases), RV (1/3 cases), polyvalent neurotoxin (1/10 cases), polyvalent hematoxin (4/11 cases) and cobra (1/26 cases). We did not observe severe reactions from BK and MK antivenom. Treatments included parenteral antihistamine (73.2%), steroids (53.3%), adrenaline (33%) and intravenous fluid.

Conclusion: EARs following F(ab')2 antivenom administration are common, particularly with the use of KC and MPV antivenoms. Some of them developed severe reactions. Thus, patients who receive any types of antivenoms, but particularly for KC and MPV, should be closely monitored during administration.