

72. A comparison of snakebite patients in those with and without diabetes

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Background: There is limited literature examining the impact of co-morbidities like diabetes on the clinical course of snake envenomation. This report summarizes epidemiology and characteristics of snake envenomation in patients with the co-morbid condition of diabetes in comparison to those without, as reported to the Toxicology Investigators Consortium (ToxIC) North American Snakebite Registry (NASBR), a multi-center registry of patients that receive a consultation by a medical toxicologist.

Methods: We conducted an analysis of snakebite cases submitted to the ToxIC NASBR between January 1, 2013 and December 31, 2020. Data collected includes demographics, co-morbidities, envenomation characteristics, laboratory values, and case management. Pearson chi-square (χ^2), Fischer exact and Mann–Whitney-U tests were used to compare diabetic and non-diabetic participants.

Results: A total of 787 cases of patients aged over 18 with snakebite were reported to the NASBR registry from 17 states. Twenty-seven adults (3.4%) were diabetic. Diabetic participants were significantly older (median age 52 (IQR 44–60) versus median age 45 (IQR 31–58) in non-diabetics; $p = 0.016$) and diabetic patients had a higher prevalence of hypertension ($n = 18$ (67%) versus $n = 115$ (15%) in non-diabetics; $p < 0.001$). Rattlesnake envenomations were equally distributed among diabetic and non-diabetics ($n = 18$ (67%) versus $n = 523$ (69%), respectively, $p = 0.5$). Antivenom (AV) use, including number of vials, was not statistically significant between the two groups. Of non-diabetics $n = 545$ (71%), and $n = 21$ (78%) of diabetics received Crotalidae Polyvalent (ovine) Immune Fab. Forty-six (6%) non-diabetic patients and $n = 2$ (7%) of diabetic patients received Crotalidae Immune (equine) F(ab')₂ AV ($p = 0.48$). Hospital length of stay did not differ between the 2 groups ($p = 0.11$). Some systemic effects were more prevalent among diabetics (diarrhea: $n = 3$ (11%) versus $n = 13$ (1.7%) in non-diabetics, $p = 0.015$; hypotension: $n = 5$ (19%) in diabetics versus $n = 43$ (6%) in non-diabetics, $p = 0.02$). Local envenomation effects (edema and ecchymoses), other systemic effects such as airway edema and the need for intubation, and neurotoxicity symptoms were not statistically different among the two groups. Furthermore, hematotoxicity was not different between the two groups (platelets <120 $p = 0.74$, fibrinogen 15, $p = 0.71$). Of the non-diabetic patients available for follow-up (up to 3 weeks after discharge), extremity swelling had “improved” ($n = 135$) or was no longer present ($n = 23$), while swelling

was “extending” in 10 patients. Of diabetic patients available for follow up (n = 17), n = 1 had swelling that was “extending,” n = 6 were showing improvement and n=3 stated it was “unchanged.” Three diabetic patients (9%) developed necrosis, where two required procedures (debridement, incision and drainage, and/or skin graft) compared to n = 80 (10.5%) non-diabetic patients who developed necrosis (p = 0.55). Sixty (8%) non-diabetic patients required procedures, where n = 11 required incision and drainage (p = 1.0).

Conclusions: A comparison of snakebite patients in the NASBR with and without diabetes revealed statistically significant differences in age and rates of occurrence of some systemic effects. Rates of local venom effects, hematologic and neurologic effects were similar between groups.