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178. Compartment syndrome and rattlesnake envenomation: a review of the NASBR subregistry 2013-2020

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Background: Compartment syndrome (CS) after North American Rattlesnake envenomation (RSE) is rare, often misdiagnosed and frequently mismanaged. Standard of care is to check intracompartmental pressures (ICPs) prior to performing fasciotomies after RSE, and antivenom (AV) is the first line treatment for suspected CS. Rate of adherence to these standard practices amongst physicians caring for patients with RSE is not well documented. Data describing incidence of CS and risk factors for its development after RSE is also limited.

Methods: This is a review of prospectively collected data from the North American Snakebite Registry (NASBR), a Subregistry of the Toxicology Investigators Consortium (ToxIC) Registry. Inclusion criteria were cases in which there was a documented concern for CS entered into the Registry between January 1, 2013 and December 31, 2020. Data collected included demographics, clinical envenomation features, management, and outcome.

Results: Over 8 years, 20 cases (1.4% of NASBR cases) of possible compartment syndrome were reported in 10 US states. Arizona was the most common location (N = 8, 40%). Snake species included 13 Rattlesnakes, 6 Copperheads, and 1 unknown pit viper. Median age was 34 years (range 2-59); 17 (85%) were male. 14 (70%) envenomations occurred in upper extremities, most commonly on the hand (N = 7, 50%). Median time from bite to first antivenom administration was 2.25 hours (IQR 1.7- 4.3). Time from bite to health care presentation was 1 hour (IQR 0.65-1). Crofab® was administered in all cases; one case received both Crofab® and Anavip®. Median total vials AV was 19 (IQR 10- 25). Loss of mobility in hand or foot was reported in 7 (35%) of cases. ICPs were obtained in only 5 cases (25%) in which compartment syndrome was suspected. In one case the ICP was low (8 mm Hg), and fasciotomy was avoided. There were 8 fasciotomies performed (0.6% of NASBR cases). Compartment pressures were only measured in 4 (50%) of these cases. 5 (63%) were in upper extremities. Snake type was predominantly Rattlesnake (7, 88%) In these cases, median time to presentation was 1.25 hours (IQR 0.9-2); time to AV was 3.25 hours (IQR 2.3-4.3). Median number of vials of AV was 19 (IQR 16-22).

Conclusions: Suspected cases of CS were rare in the NASBR Subregistry. When CS was suspected, ICP measurements were rarely performed. Despite the fact that it is standard of care to obtain ICPs prior to fasciotomy in cases of RSE, half of fasciotomies were performed without ICP measurements. Educational efforts regarding best practices in the management of suspected CS after RSE may be needed.