INTRODUCTION AND BACKGROUND

- An estimated 8,000 individuals in the United States are bitten by venomous snakes annually.
- Five species of venomous snake inhabit Nevada, all belonging to family Viperidae: sidewinder, Mohave, speckled, western diamondback, and Great Basin rattlesnake.
- Pit vipers venom may contain anywhere from 10-100 proteolytic enzymes and nuclease system-inhibiting proteins. Injected quantity varies based on species and snake size, ranging from 10 to 100 mg.
- Field care of venomous snake bites has previously focused on hindering the progression of venom from the site of inoculation and includes immobilization, tourniquet placement and suction at the bite site in an attempt to withdraw the toxic substance from the body.
- First aid recognizes two methods of suction previously employed for this purpose: oral and mechanical with aid of a negative pressure extraction apparatus such as the Extractor Pump Kit manufactured by Sawyer Products which claims trialed effectiveness for some snake bites.
- Much debate exists over the efficacy of suction for snakebite treatment.

LITERATURE SEARCH

A literature search was performed using PubMed’s MeSH Database. The initial search looked for “snake bite” with the subheading of “therapy.” We advanced our search to focus on “suction and extraction” and found 122 results under our search to focus on “suction and therapy.” We advanced our search based off relevance and level of evidence. Other articles were found in database articles. Studies were chosen focusing on hindering the progression of venom from the site of inoculation and includes immobilization, tourniquet placement and suction at the bite site in an attempt to withdraw the toxic substance from the body.

REFERENCES

- Alberts M.B., Shaltit D., LoGalbo F. (2001). Randomized controlled trial involving 8 adult male volunteers evaluating the effectiveness of the Sawyer Extractor Pump in the removal of a mock venom injection. In conclusion the authors found that venom extraction was able to remove an average of 3.6% of venom injected, necessitating a removal of over 3.6% of body fluid to reach clinical effectiveness.
- A low sample size (n=8) implies a low power to the study however authors are confident that results would prove similarly with a larger study population. Utilization of mock venom and standardized injection sites limits application of results.
- Kanaan N.C., et al. (2004). Expert panel convened by the Wilderness Medical Society. The panel used a modified Delphi consensus approach to develop recommendations of supporting evidence as reviewed from database articles.
- Neither oral nor mechanical suction should be employed as a field treatment for pit viper envenomation. Suction attempts may lead to further bacterial inoculation and abscess formation leading to further tissue destruction.
- Expert panels are inherently low quality evidence than randomized clinical trials or reviews. Panelists admit that their findings may not be easily extrapolated to envenomation by other species of snake.

STUDY DESIGN

Kanaan, Nicholas C., et al. “Wilderness Medical Society Practice Guidelines for the treatment of pitviper envenomations in the external validity due to low power and did not individualize treatment techniques between the control and experimental groups.” The Wilderness Medical Society recommends against venom extraction as a field treatment for pit viper envenomation, and these studies support that recommendation. These studies demonstrate as a whole that extraction devices are ineffective at removing venom from the bite wound and may increase injury following their use. None of these studies assessed large sample sizes; therefore, further research with more powerful study designs is necessary to accurately assess the effectiveness of extraction devices. Future research should also include more diverse demographic groups to ensure external validity of the results and subsequent application as field treatment recommendations in the case of snakebite victims.

Efficacy Of Venom Extraction In Adult Snake Bite Victims

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