Fatality in a Case of Envenomation by *Crotalus adamanteus* Initially Successfully Treated with Polyvalent Ovine Antivenom Followed by Recurrence of Defibrinogenation Syndrome

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ABSTRACT

Introduction: Recurrences of clinical or laboratory manifestations of North American pit viper envenomation may happen despite control of the envenomation syndrome by prompt and adequate antivenom therapy. Recurrences of coagulopathy in victims of Eastern diamondback rattlesnake envenomation are generally regarded as benign. The vast majority suffer no actual bleeding despite florid coagulation laboratory abnormalities due to selective defibrinogenation.

Case Report: We report what we believe to be the first fatality following successful control of the envenomation syndrome following ovine antivenom treatment resulting from envenomation by a bite from the Eastern diamondback rattlesnake. This case raises the question of whether such recurrences are in fact benign, causal, or coincidental. This patient sustained significant brain hemorrhage and death ensued due to generalized cerebral edema. Defibrinogenation occurred 4 days after treatment with ovine antivenom.

Discussion: Coagulation abnormalities following Eastern diamondback rattlesnake envenomation are due to selective defibrinogenation. This is separate from disseminated intravascular coagulation (DIC). Thrombin generation, thus hemostasis, are generally considered normal. This case may cause reexamination of this belief.

INTRODUCTION

The development of treatment of envenomation by American pit vipers has progressed from initially a nonmedical issue to a vibrant study involving clinical medicine and toxicology, producing improvements in understanding of this complex poisoning as well as improved outcome and safety [1].

Alterations in the coagulation system both in vitro and in vivo have been observed in victims of snakebite for many years [2–5]. Both hemorrhagic and thrombotic events have been described with or without accompanying laboratory perturbations. Most of these coagulation abnormalities are thought to be due to specific enzymes that vary among species that activate an array of procoagulant and/or anticoagulant aspects of hemostasis.

Local hemorrhage is characteristic of American pit viper envenomation and due in large part to local action of venom constituents that disrupt capillaries and supporting structure of the microcirculation [6,7]. In such anatomic lesions, hemostatic defects play a minimal role. Hemorrhage remote from the bite site, while reported, is unusual and apparently not a function of

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