

Case Study: *Revenant Venom* as Adjunctive Therapy During Cardiopulmonary Resuscitation

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Abstract:

The recent cardiovascular collapse and successful resuscitation of an 18 year female in Forks, Washington suggests that *Revenant Venom* may improve the efficacy of traditional cardiopulmonary resuscitation in cases of perinatal cardiac arrest due to a combination of hemorrhage (secondary to abruptio placentae), cachexia, and anemia.¹

Background:

The patient is an 18 year old female, *prima gravida*, with no significant gynecological or obstetrical history.² Gestational age of the fetus is unknown, but is assumed to be within the first trimester based on the patient's account of her pregnancy. Despite the limited gestational age, the fetus appears to be unusually well developed and might be considered an example of macrosomia due to idiopathic gestational acceleration. The father's medical history is unknown.

Early in her pregnancy, the patient experienced severe hyperemesis gravidarum resulting in dehydration, weight loss, alkalosis and hypokalemia with significant metabolic derangement.³ Although her physician made a recommendation in favor of a therapeutic abortion, the patient refused this course of treatment. Intravenous electrolyte replacement therapy was provided, but the patient's condition continued to deteriorate.

Spontaneous fractures of multiple bones in the axial skeleton were noted. These fractures include damage to the lumbar vertebrae, pelvic girdle, and lower ribcage. Although these were attributed to fetal movement by the patient, a more likely scenario posits that these fractures resulted from osteoporosis due to the aforementioned metabolic derangement.⁴

The patient was also found to have suffered from severe autoimmune hemolytic anemia. Her physician suggests that this was possibly due to an Rh or similar serological incompatibility with the fetus, but no direct nor indirect antiglobulin test (Coomb's Test) was performed. The patient did receive a somewhat unorthodox administration of O-Negative blood, but again failed to respond.⁵

Case Presentation:

On the date in question, the patient reported an acute onset of severe abdominal pain in both lower quadrants accompanied by vaginal bleeding, severe anxiety, tachycardia, and

respiratory distress. A cursory examination revealed profound fetal distress and suggested placental abruption (*abruptio placentae*) as the likely etiology.⁶ The patient was given a nominal dose of morphine sulfate for preoperative analgesia and an emergency Caesarean Section was performed using a low transverse incision technique. Remarkably, given the gestational age and circumstances of the procedure, a viable female infant was delivered that ultimately survived her complicated and unusual gestation and birth.

Immediately following parturition, the patient “coded” and was found to be in cardiac arrest. Cardiopulmonary resuscitation was immediately initiated with mouth-to-mouth ventilations and external chest compressions.⁷ In a radical departure from the accepted American Heart Association guidelines, the first medication administered was not 1 mg. epinephrine (adrenalin) but rather an intra-cardiac bolus of *Revenant Venom* estimated at 15 to 20 ml.⁸

Although the intra-cardiac bolus was not immediately successful, CPR continued and supplemental parenteral doses of *Revenant Venom* were administered by simply allowing the creature to inflict bites on the patient at several locations including the right carotid sinus, the radius, and at several points on the lower extremities. This technique was evidently quite effective in disseminating the venom systemically -- a filmed visualization depicts the rapid distribution of the substance through the vital organs within moments of administration.⁹

Return of spontaneous circulation (ROSC) was noted following the follow-up doses of *Revenant Venom* and CPR was discontinued. The patient remained unconscious but this was largely attributed to the sedative effects of Morphine Sulfate administered preoperatively. The patient’s skin color was noted to have dramatically improved within moments of ROSC and there was similar improvement in skin turgor, texture, and moisture. The patient no longer appeared as gaunt and emaciated as she did prior to suffering cardiac arrest.¹⁰

Despite the dramatic improvement in her overall condition following administration of the *Revenant Venom*, the patient’s cardiovascular and hemodynamic stability remained in question -- in particular, a progressive bradycardia was noted following resuscitation that ultimately led to a disturbing manifestation of sinus arrest. While somewhat unusual, this particular cardiac arrhythmia did not appear to have a negative impact on the patient’s progress. In fact, the patient regained consciousness immediately following its manifestation and was observed to spontaneously open her eyes.¹¹

Discussion:

Although the unusual cardiovascular effects of *Revenant Venom* have been known for more than a century, the inevitable teratogenic side effects have generally precluded study.¹²

In this particular instance, the therapeutic modality was selected by personnel with minimal medical qualification due to the absence of the attending physician. This presents a unique opportunity for retrospective study since ethical considerations would normally prevent a licensed physician from undertaking such an unorthodox course of treatment, even in the context of a resuscitation.¹³

While the long-term consequences of this therapy have yet to be determined, the apparent success of the resuscitation suggests that further study of *Revenant Venom* be undertaken in hopes of determining the precise mechanism of action, pharmacokinetics, and teratogenic risks associated with its use.

1 *The Twilight Saga: Breaking Dawn, Part 1*. Dir. Bill Condon. Summit Entertainment, 2011.
Theatrical Film.

2 *Ibid.*

3 *Ibid.*

4 Choe EY, Song JE, Park KH, Seok H, Lee EJ, Lim SK, Rhee Y. "Effect of teriparatide on pregnancy and lactation-associated osteoporosis with multiple vertebral fractures." *J Bone Miner Metab.* 2011 Nov 23. PMID: 22105654

5 *The Twilight Saga: Breaking Dawn, Part 1*. Dir. Bill Condon. Summit Entertainment, 2011.
Theatrical Film.

6 *Ibid.*

7 *Ibid.*

8 Field JM, Hazinski MF, Sayre MR, et al. (November 2010). "Part 1: executive summary: 2010 American Heart Association Guidelines for Cardiopulmonary Resuscitation and Emergency Cardiovascular Care". *Circulation* 122 (18 Suppl 3): S640–56.

9 *The Twilight Saga: Breaking Dawn, Part 1*. Dir. Bill Condon. Summit Entertainment, 2011.
Theatrical Film.

10 *Ibid.*

11 *Ibid.*

12 Stoker, Bram. *Dracula*. London: Archibald Constable and Company. 1897. Print.

13 Dick W, Ahnefeld FW, Encke A, Schuster HP. "Research and ethics in emergency medicine. Findings of a workshop." *Klinik für Anästhesiologie*, 1996. Johannes Gutenberg-Universität, Mainz. Print.