

Use of Viable Cryopreserved Placental Tissue for the Treatment of a Diabetic Foot Wound secondary to Stingray Envenomation.



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Introduction

Stingrays (Myliobatoidei) are a group of cartilaginous fish related to sharks and have a flat body structure with a tail that contains one or more barbed spines. While injuries from stingrays are relatively common, to date, there is little literature on lower extremity stingray envenomation especially in the setting of diabetes. Clark et al described the process whereby the stinger and sheath of a stingray can become embedded in the soft tissue of the victim and the venom injected into the wound (1,2,3). Often, the stingray barb can also be found in the wound site, which can prolong the release of venom. The exact mechanism of toxicity remains uncertain (4,5). Recent evidence shows the venom is a heat sensitive protein which can cause local and systemic effects ranging from severe pain to edema, cyanosis, erythema, ulceration, syncope, nausea, vomiting diarrhea, diaphoresis, hypotension, shock and, rarely death (6). The treatment guidelines remain questionable and ranges from hot water immersion to prophylactic antibiotics for concerns of bacterial contamination in these puncture wounds and antitoxic administration (7). Literature reveals that the most common bacterial species cultured from a stingray envenomation are *Staphylococci* and *Streptococci* with other bacteria specific to water environments, namely *Vibrio* species in saltwater

Case Presentation

Case study of a 70-year male with history of diabetes with peripheral neuropathy, hyperlipidemia and hypertension, who was stung by a stingray on his left foot in Mexico. The patient underwent an I&D with removal of the barbed stinger in Mexico before returning to the U.S. for further wound management. He presented to the Palo Alto VA ED where he was found to be febrile, tachycardic, hyperglycemic, and hemodynamically stable with leukocytosis of 18,000, predominantly neutrophils. Initial imaging, including X-Ray and ultrasound, showed absence of any foreign body remaining from the stingray and any signs of bony infection. The patient was admitted under Podiatry service for urgent I/D, IV antibiotics, and insulin management. Cultures were obtained, and basic and advanced imaging were ordered to rule out underlying purulence and for surgical planning. MRI did not show signs of deep tissue abscess or osteomyelitis.

Methods and Results

After admission to Podiatry service, the wound was managed surgically and with a wound vac for 1 week, prior to application of cryopreserved placental tissue. Wound measurements and pictures were taken while in the hospital and every 1-2 weeks during follow up appointments to monitor progress. In between the application of vCUT* and application of vCPM* 2 months later, the only other wound care products used were daily hydrogel and periodic Mesalt dressings for control of exuberant granulation. The patient remained non-weight bearing during treatment in a post-op shoe. The patient was placed on IV Ceftriaxone prior to surgical debridement and transitioned to Keflex for 7 days post-op per Infectious Disease team. Our results after 4 months demonstrated full re-epithelialization of the initial wound, which had measured 9.0 x 4.0 cm with exposed muscle and tendon. The wound healed over 4 months without any secondary infection or complication.



5/23/17: Initial Stingray sting



5/24/17: The following day



5/29/17: s/p surgery in Mexico



5/31/17: Initial VAPA ER presentation



6/2/17: s/p second OR debridement



6/9/17: vCUT application



5/16/17: 1 week s/p cVUT



5/22/17: 2 week s/p cVUT



5/29/17: 3 week s/p cVUT



6/6/17: 4 week s/p cVUT



6/20/17: 6 week s/p cVUT



7/27/17: vCPM application



8/31/17



9/28/17: Healed at 4 months



11/16/17: 6 months later

Conclusions

To our knowledge, this is the first case study that looks at how effective viable cryopreserved human placental tissue is at healing a diabetic foot wound secondary to tissue necrosis from stingray envenomation. Future studies will be helpful to further evaluate the use of cryopreserved human placental tissue for treatment of diabetic foot wounds.

*vCPM (viable Cryopreserved Placental Tissue)

*vCUT (viable Cryopreserved Umbilical Tissue)

References

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