NeutroPhase® with Sorbact® Dramatically Enhances the Speed of Wound Healing

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Abstract

NeutroPhase® with Sorbact® appears to accelerate the healing of chronic non-healing wounds in a clinical setting. In this report we examined factors restraining wound healing such as the influence of infections, biofilms, maceration, ischemia, pressure, debridement, and access to appropriate treatment. In particular, biofilm associated with infected wounds can severely delay or inhibit proper wound healing thus contributing to the patient's morbidity. NeutroPhase, the only pure 100% hypochlorous acid solution, has been reported to be a broad-spectrum, fast-acting, non-toxic antimicrobial irrigant and is capable of destroying biofilms associated with infections. Sorbact is a new hydrophobic mesh capable of trapping bacteria, yet prevents maceration of the adjacent skin. In our clinical setting, the combination can be enhanced with negative pressure wound therapy (NPWT) with an irrigation technique of 10 minutes twice daily effectively reducing the bacterial load and impacting bacteria in biofilm. Sorbact acts as an effective fluid transfer for NeutroPhase into the wound without maceration of adjacent skin by residual fluid. We have used this combination on 26 patients without complications in a feasibility case study and feel there is a significant improvement in wound healing of all wounds (including biological graft placement) with or without NPWT.

Introduction

Chronic non-healing wounds have many factors contributing to the impairment of healing such as the presence of foreign bodies, tissue maceration, ischemia, infection, and biofilms. The clinical picture can be further complicated by systemic factors such as diabetes, malnutrition, renal disease, and advanced age. Therefore, chronic non-healing wounds are a clinical problem that for some is a serious unmet medical need. NeutroPhase (NVC-101) has been shown to be an effective topical antimicrobial and has potential application as an antimicrobial wound irrigation using a well-established chronic granulating wound rat model.[1,2] Using Sorbact as the wound mesh dressing in combination with NeutroPhase as the antibacterial irrigation solution showed a marked increased speed of wound healing; and a 0.01% concentration of NeutroPhase is antimicrobial without being toxic to living tissues.

Materials & Methods

A combination of 0.01% NeutroPhase as the antibacterial irrigation and Sorbact (Abigo Medical AB, Askim, Sweden) as the wound mesh dressing was used to treat 26 patients with chronic non-healing wounds. Before treatment, the wound area was cleansed and the wound was debrided, then the skin was dried. Then Sorbact mesh was sized and placed in the wound. A Blake drain was placed on and in the Sorbact mesh. The adhesive drape was attached and placed over the entire area including the Sorbact mesh. The area around the tubing was sealed with Stomahesive. The tubing was connected to a three-way stopcock and a one-way valve was added. The VAC was then turned on and adjusted from 50 mm to 125 mm suction. The pre-determined amount of NeutroPhase was injected through the three-way stopcock and allowed to stay in the wound for 15 minutes before it was vacuumed out. This was subsequently changed to a separate inflow tube (Blake drain) and irrigation while the VAC was kept on.

Results

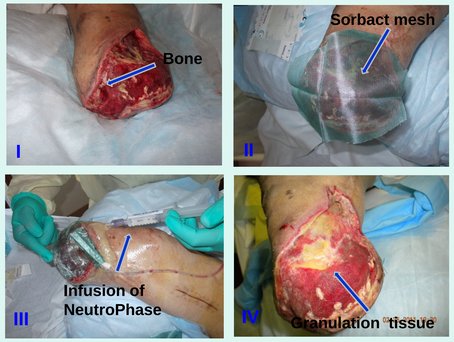

Figure 1. This patient lost a flap to MRSA 2 weeks after BK amputation. (I) The bone is exposed; (II) Treatment with Sorbact (III) NeutroPhase irrigation along with NPWT, systemic antibiotics, careful debridment, biologicals and protection is allowing healing and covering of the (IV) Exposed tibia after sterilizing the wound with NeutroPhase.

Figure 3. This is the result of 2 1/2 weeks of treatment resolving a chronic venous girdle ulcer to a very healable granulating ulcer along with a smaller venous ulcer on the right leg (IX & XI) Before treatment; (X & XII) After treatment.

Figure 2. This is a traumatic venous ulcer in a chronic venous insufficient leg and required 3 months of therapy for healing. The topical dressing was Sorbact with irrigation of 0.01% NeutroPhase solution. (V) Before treatment; (VI& VII) During treatment; (VIII) Healing.

Figure 4. (XIII) This is a failed flap due to MRSA created for radical excision of a squamous cell cancer with exposed cranial bone and no granulation. (XIV) Treated with instill vac and Sorbact dressing with direct 0.01% NeutroPhase irrigation at home by syringe through a Blake drain at the base. (XV) Debridement and a biological graft were also used. (XVI) Healing took 5 1/2 months.

Discussion

Chronic non-healing wounds have many factors contributing to the impairment of healing such as the presence of foreign bodies, tissue maceration, ischemia, infection, pressure and biofilm. The clinical picture can be further complicated by systemic factors such as diabetes, malnutrition, renal disease, and advanced age. Therefore, chronic non-healing wounds impact the patient's morbidity and are a serious unmet medical need. In our studies using Sorbact as the wound mesh dressing in combination with NeutroPhase as the antibacterial irrigation solution we show a marked increased speed of wound healing. Our 0.01% concentration of NeutroPhase is antimicrobial without being toxic to living tissues. Sorbact is a hydrophobic mesh that traps bacteria yet decreases maceration of the adjacent skin next to the wound. Appropriate wound care remains essential with debridement, offloading, antibiotics and appropriate follow up care in the outpatient setting. NeutroPhase is a fast-acting, broad-spectrum, non-antibiotic antimicrobial solution. The treatment can be maximized with the use of negative pressure wound treatment (NPWT) as well as by instillation irrigation and aspiration twice daily with Neutrophase. In this treatment with the appropriate instillation procedure we used Sorbact mesh as the sponge which does not leave macerating fluids on the skin. Overall this simplifies the vacuum instillation procedure significantly.

Conclusions

- The results demonstrate that Neutrophase safely destroys biofilm in the wound and is an effective topical antimicrobial which improves wound healing.
- Sorbact helps reduce tissue maceration.
- Neutrophase in combination with Sorbact as the wound mesh dressing utilizing negative pressure wound therapy dramatically enhances the speed of wound healing.
- These case studies show NeutroPhase® in combination with Sorbact® has the potential to be a very effective wound care product for use in wound healing.

References

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