

A Novel Topical Therapy for Pyoderma Gangrenosum using Compounded Hydrolyzed Type I Bovine Collagen

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Objectives

Objective 1: Ability to identify the classic clinical pyoderma gangrenosum (PG) presentation in comparison to other lower extremity ulcers, and how they differ from inflammatory manifestations of other typical disease processes such as venous stasis ulceration.

Objective 2: Understand the rationale for the use of compounded topical collagen as a scaffolding reservoir as an alternative to infusion therapy or other variable treatments currently used for PG.

Objective 3: Understand the role of compression and bolster bandaging of the wound in combination with the topical compound in order to decrease the likelihood of pathergy-induced inflammatory insult to the wound bed.

Introduction

PG is a rare and painful ulcerative skin disease associated with autoimmune disorders. A majority of PG lesions present in the lower extremity commonly in a pre-tibial distribution. Its full etiology has not been elucidated but research suggests it is associated with errors in neutrophil chemotaxis. The lesion is often difficult to diagnose without knowledge of its clinical associations and usual presentation.

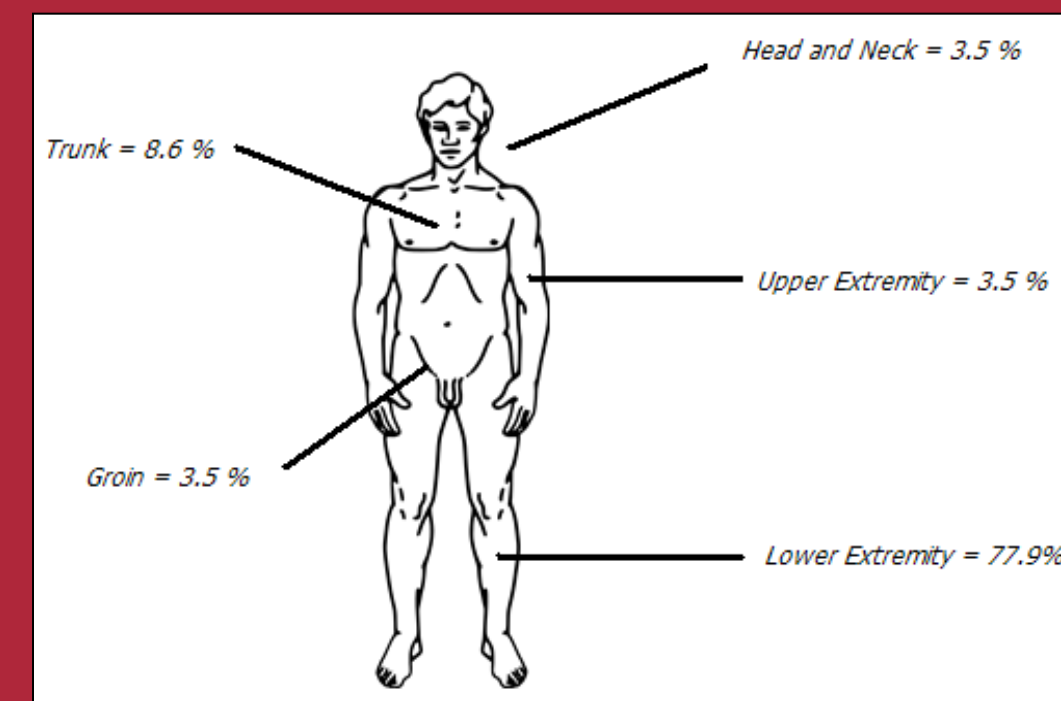


Figure 1: Distribution of PG ulcers across the body

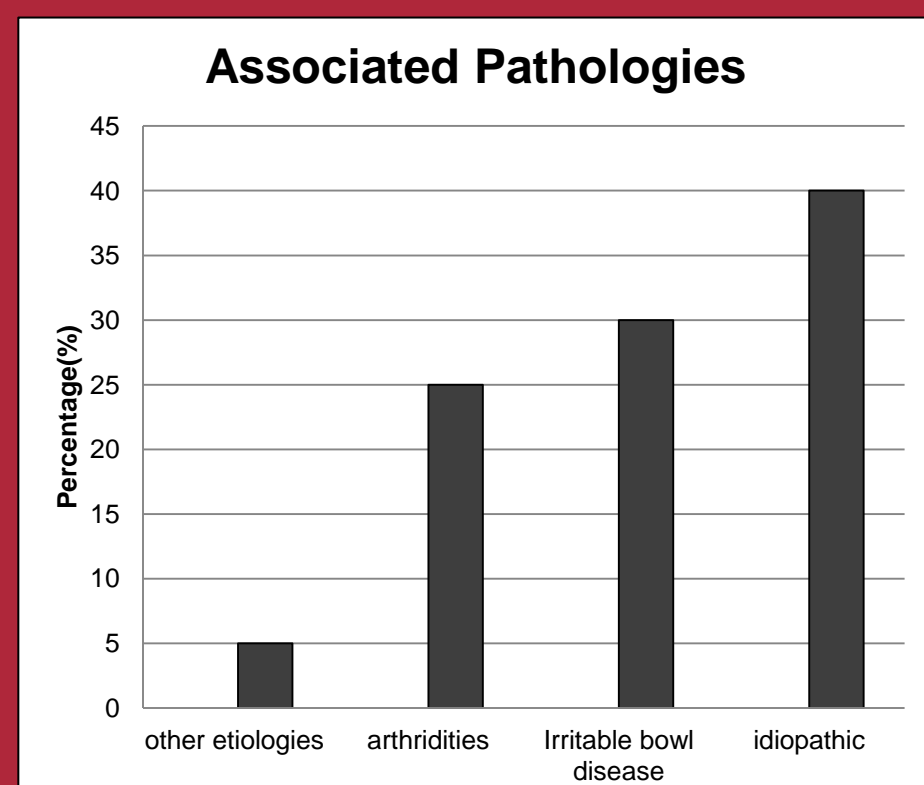


Figure 2: Percentage of PG patients with other inflammatory co-morbidities

As a result of the underlying inflammatory processes of the lesion, many standard wound care therapies cannot be used for treatment, and some accepted therapies may exacerbate the lesion. Current therapeutic options are focused on systemic immunomodulators, which are costly and require careful medical management. This calls for development of new cost effective and less medically complex treatment options for PG wounds.

F.C. Powell, et. al., "Pyoderma Gangrenosum: A Review of 86 Patients," *Quarterly Journal of Medicine* 55 (1985): 173-186.
P. Von den Driesch, "Pyoderma Gangrenosum: a report of 44 cases with follow up," *British Journal of Dermatology* 137 (1997): 1000-1005.
E. Ruocco, et. al., "Pyoderma Gangrenosum: an updated review," *Journal of the European Academy of Dermatology and Venereology* 23 (2009) 1008-1017.

Abstract

Case Presentation

Case presentation of a patient with a classic painful pre-tibial PG lesion treated with a new combination therapy. The patient's lesion had been present for over two years and its size had either remained stable or increased with each visit. At this time the treatment regime was restricted to local wound care. The lesion exhibited a classic pre-tibial presentation with a violaceous border, granular base, copious exudate, and pain.



Figure 3: Picture of initial wound, left anterior leg

Methods

A topical mixture of hydrolyzed bovine type I collagen powder with equal volumes of 4mg/ml dexamethasone phosphate liquid, and 40mg/ml gentamycin liquid compounded to a paste consistency was applied to the wound, with additional application of a compression dressing once a week



Figure 4: Wound assessment, acetate tracing, application of hydrolyzed bovine type 1 collagen/dexamethasone phosphate/gentamycin paste, application of an absorbent dressing and triple compression dressing.

Results

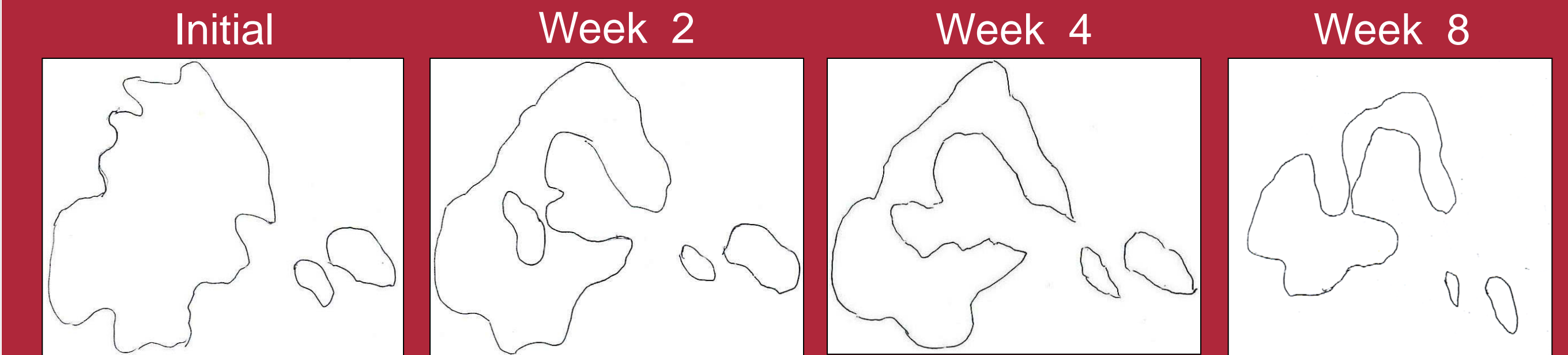


Figure 5: Acetate tracings of wound progression

The lesion progressed from initial presentation to closure in 4 months. Each visit was documented via photography, acetate tracing, wound measurement, and analog pain scale. The combination therapy resulted in decreased signs of inflammation of the wound base, reduction of exudate, decreased erythema, and diminished symptoms of pain as per an analog pain scale.

Conclusion



Figure 6: Final picture of healed wound, left anterior leg

From the study we concluded that the use of a topical hydrolyzed type I bovine collagen product is an acceptable adjunct therapy for the treatment of PG lesions. The collagen provides an appropriate scaffold for granulation and epithelialization and acts as an absorbable reservoir for anti-inflammatory and anti-microbial agents. The addition of the compounded antibiotic and anti-inflammatory agents along with type I collagen provided an effective topical treatment for this challenging wound.

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