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"Local Control of Pyoderma Gangrenosum"

Background: Pyoderma gangrenosum (PG) is a rare, chronic, ulcerative disease characterized by nonhealing wounds that worsen with debridement (i.e. pathergy). Its histopathology is classically marked by neutrophil infiltration, there is often no evidence of underlying infection. No consensus exists regarding pathogenesis, diagnosis, or treatment. In a small case series, we previously showed that applying dehydrated human amniotic-chorionic membrane (dHACM) after excisional debridement allows for normal wound healing and successfully closure through skin grafting. We present a case study outlining the treatment used for PG in this trial and methodology for gene analysis. We hypothesize that biomarker identification will predict which PG wounds will respond to dHACM and will identify candidate targets for novel, rationally designed PG treatments.

Objective: The purpose of this study is to characterize and compare the pre- and post-treatment transcriptomes of PG wounds.

Methods: PG specimen are banked in triplicates from wounds pre- and post-dHACM treatment. Total RNA will be isolated from each of the specimen and then processed using RNA sequencing (RNASeq). Differentially expressed genes will be identified. The expression of genes of particular interest will be further quantified through real-time quantitative reverse transcription polymerase chain reaction (qRT-PCR). Furthermore, gene enrichment analysis, pathway analysis, and functional annotation will be performed to understand the networks and pathways that are altered following successful dHACM treatment.

Results: As of October 2021, two patients were screened for the study while one was enrolled. PG specimens were collected intra-operatively for the treated patient. Each patient receives an initial assessment, surgical treatments, and post-operative follow-ups over a 6-month period over the course of the trial.

Future Directions: Additional patient enrollment, post-operative follow-up visits, and transcriptome analysis are needed to make conclusions on PG etiology, pathogenesis, and treatment options.