Angiotensin Type 1 Receptor Autoantibody in Wound Healing

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Technology description

Unmet Need:
Chronic wounds are among the most common, painful, debilitating and costly conditions in diabetics and in older adults, and are an important portal for bacterial infections that often lead to amputations, sepsis and mortality. In diabetic and aging skin, chronic inflammation commonly accompanies poor wound healing and increases the risk for chronic non healing wounds. In diabetic and aged skin, the angiotensin system is dysregulated with aberrant angiotensin AT1 receptors (AT_1R) signaling that increases inflammatory burden leading to thinning of epidermis, degeneration of collagen, fracture of dermal layer, and atrophy of subcutaneous fat. The reason for the activation of the angiotensin receptors is not known, but stimulatory AT_1R autoantibodies (AT_1R_{aAb}) increase AT_1R signaling, and likely thereby impair wound healing by irreversibly activating AT1R.

Technology Overview:
JHU investigators have developed a topical Angiotensin Receptor blocker treatment that effectively treats chronic wounds in preclinical studies, but the effects of this topical treatment with angiotensin receptor blockers (ARBs) in older individuals may depend on levels of AT1RaAb since AT1RaAb may compete with ARBs for receptor occupancy. This technology is aimed at specifically determining the levels of these autoantibodies in older and diabetic patients with chronic wounds. It utilizes the level of the antibody as a serum biomarker to identify a subset group of patients with elevated AT1RaAb associated with chronically delayed wound healing that will likely respond to topical treatment with angiotensin receptor blockers.

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