



ACNE, ROSACEA, AND RELATED DISORDERS (INCLUDING HIDRADENITIS SUPPURATIVA)

MICRORNAS AS BIOMARKERS OF ATROPHIC SCARRING IN ACNE; ANALYSIS IN 41 PATIENTS

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Introduction: Acne is the most common inflammatory dermatosis seen worldwide. Atrophic scarring is a common sequela of acne, it is difficult to treat, and may have a profound impact on patient's quality of life. MicroRNAs (MiRNAs) are small, endogenous non-coding RNA molecules that modulate gene expression, largely through inhibition or degradation of target messenger RNA. Differential expression of miRNA in various disease states allows for a unique miRNA "signature" to be established for specific pathologies. MiRNA expression patterns have been identified in a number of dermatological diseases including eczema, psoriasis, and hidradenitis suppurativa

Objective: to establish miRNA expression profiles in acne and acne-associated atrophic scarring, and to determine if circulating miRNA levels reflect tissue miRNA profiles

Materials and Methods: Forty-one patients with acne, with or without scarring, were sequentially recruited to this study. All patients had acne and atrophic scarring severity graded. Plasma miRNA was extracted from all patients and quantified using quantitative reverse transcriptase PCR (qRT-PCR). Whole mRNAome tissue profiling was undertaken on 9 patients from lesional, normal, and where present, acne induced atrophic scars, with results expressed as a heat map. Independent validation of tissue miRNA levels were carried out using qRT-PCR on a further 8 patients.

Results: Three miRNAs, miR-21, miR-150, and miR-223, were statistically significantly elevated in acne lesional skin as well as in clinically normal skin in patients prone to acne scarring. Additionally, in this subgroup of patients, circulating levels of miR-21 and miR-150 were significantly raised.

Conclusions: Tissue expression of all three of the identified miRNA molecules is increased in patients prone to acne scarring, indicating a possible role for miRNAs in the development of atrophic acne scarring. Additionally, the presence of elevated levels of circulating miRNA expression raises the possibility of a serum assay to determine those patients most at risk of scarring.

