



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

## **HYPERANDROGENISM AND ACNE**

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The skin is an endocrine organ with the expression of enzymes and hormone receptors. Acne is a common chronic disease of the pilosebaceous follicles clinically characterized by the presence of polymorphic cutaneous lesions—including comedones, papules, pustules, and nodules. The sebaceous gland is the main site of hormone biosynthesis, especially for androgens. In sebocytes, conversion of 17-hydroxyprogesterone directly to dihydrotestosterone by passing testosterone has been demonstrated. The androgen receptor-dependent genomic effect of dihydrotestosterone on sebocytes is confirmed. The PI3 K/Akt/FoxO1/mTOR pathway seems to play a key role between androgens, insulin, insulin-like growth factor, and hyperglycemic diet in the pathogenesis of acne. Studies show that regulation of the androgen receptor is an important factor in severe acne. In fact, androgens influence inflammation in acne.

Special attention should be paid to nonobese patients with polycystic ovarian syndrome. Although typically thought as a disease of youth, acne is increasingly being diagnosed in the adult population—especially among females. It is currently estimated that adult female acne (AFA) affects 12-22% of all women in westernized societies. AFA usually is localized in the cheek, jaw line, and lower third of the face. It represents a significant source of psychological distress and interpersonal difficulties and is considered a significant therapeutic challenge. Myoinositol (a precursor of inositol triphosphate) is capable of reducing systemic excess androgens and improving acne when given orally in young women with polycystic ovary syndrome. Trehalose—a naturally occurring nonreducing disaccharide—has recently emerged as a safe activator of autophagy and can successfully be delivered into the skin when encapsulated into liposomes.

Although in women the relationship between acne and insulin resistance is well known, in particular in women with PCOS, in males this relationship has been poorly investigated. Our experience reveals the importance of diet and insulin resistance in acne pathogenesis, and underlines the possible use of metformin and diet as possible adjuvant therapy for male patients with acne.

