

# Acanthosis Nigricans

Acanthosis nigricans is a dermatological condition characterized by the development of velvety, hyperpigmented plaques that typically appear in body folds, such as the neck, axillae (under the arms), and inguinal regions (groin). These lesions can range in color from light brown to black and are frequently observed in individuals with obesity. Acanthosis nigricans can occur at any age, with the onset often occurring during childhood or adolescence, particularly in association with obesity.

The condition is most commonly seen in individuals with insulin resistance, a pathophysiological state often linked to metabolic syndrome and type 2 diabetes. Insulin resistance results in hyperinsulinemia, which leads to increased insulin levels circulating in the bloodstream. Elevated insulin levels in turn stimulate insulin receptors in the skin, triggering abnormal growth of skin cells and the characteristic thickening and darkening of the affected areas. Insulin's role in skin cell proliferation is thought to involve the activation of insulin-like growth factor pathways, which contribute to the hyperkeratosis and acanthosis seen in affected tissues.

In individuals without obesity, the onset of acanthosis nigricans warrants a thorough medical evaluation. Although most cases are benign, paraneoplastic acanthosis nigricans can occur in association with internal malignancies, particularly gastric or gastrointestinal tumors. In these cases, acanthosis nigricans can appear more widespread and may affect regions such as the lips or hands, and it may be more severe compared to cases seen in obese individuals. Acanthosis nigricans is also sometimes congenital or associated with various endocrine disorders, including polycystic ovary syndrome and hypothyroidism.

## **Clinical Associations and Risk Factors**

The development of acanthosis nigricans is most frequently linked to obesity and insulin resistance. Excessive dietary intake of starches and sugars contributes to the pathogenesis of insulin resistance, which in turn results in elevated insulin levels. The relationship between acanthosis nigricans and insulin resistance underscores the importance of metabolic health in the pathogenesis of this condition. However, in non-obese individuals, acanthosis nigricans may serve as a clinical sign of an underlying condition, such as malignancy or an endocrine disorder, which necessitates further investigation.

Rarely, acanthosis nigricans may present as a congenital disorder or be associated with other glandular dysfunctions. It can also be observed as a paraneoplastic syndrome, particularly in patients with gastric cancer, and it may appear alongside other dermatologic changes such as

acrokeratosis. The hallmark of paraneoplastic acanthosis nigricans includes more extensive and severe involvement of areas such as the lips and hands, with rapid progression of lesions.

### **Management of Acanthosis Nigricans**

Management of acanthosis nigricans is primarily focused on addressing the underlying insulin resistance and improving cosmetic appearance. For most individuals, weight loss through dietary modifications and exercise is effective in reducing insulin levels, which can result in improvement of the skin lesions. In patients who are unable to achieve adequate control of insulin levels through lifestyle modifications alone, pharmacological interventions such as metformin may be considered to improve insulin sensitivity and alleviate skin manifestations.

For cosmetic management, various topical treatments can be employed to improve the appearance of the skin. These include tretinoin, which promotes cellular turnover and can help reduce hyperkeratosis; 20% urea creams, which act as moisturizers and keratolytics; and alpha hydroxy acids, which help exfoliate the skin. Additionally, salicylic acid and lactic acid may be used to gently exfoliate and smooth the affected areas. However, it is important to note that while these treatments can improve the appearance of the skin, they do not address the underlying metabolic disturbances that contribute to the condition.

### **Conclusion**

Acanthosis nigricans is a dermatologic manifestation commonly associated with obesity and insulin resistance, but it may also signal the presence of underlying systemic conditions, such as endocrine disorders or malignancy. Although the primary treatment approach focuses on managing insulin levels and metabolic health, a variety of topical therapies can be used to improve the appearance of the affected skin. Early identification and intervention, especially in non-obese individuals, are crucial for detecting potential underlying conditions and ensuring appropriate management.

### **References**

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