

# Acanthosis nigricans: usefulness of dermoscopy in differential diagnosis

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## ABSTRACT

Acanthosis nigricans is a skin disease characterized by hyperpigmented plaques, typically located in axillae, groins, inframammary region, neck, and flexor surface of the skin. Numerous systemic disorders may lead to the development of acanthosis nigricans. Here a case of a patient with acanthosis nigricans and tissue resistance to insulin is presented. Moreover, the usefulness of dermoscopy as an additional tool that can help to establish a proper diagnosis is discussed.

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**Key words:** acanthosis nigricans, dermoscopy, insulin resistance

## INTRODUCTION

Acanthosis nigricans (AN) is a skin disorder characterized by dark, velvety thickening plaques, typically located in axillae, groins, inframammary region, neck, and flexor surface of the skin. The exact aetiology remains unknown, although many underlying diseases are suggested to contribute to the development of AN, including systemic disorders, endocrinological conditions, as well as obesity [1–5]. Moreover, the strong connection between AN and visceral malignancies has been described across the literature [6].

Here, a patient with AN and insulin resistance is presented. The utility of dermoscopy in distinguishing AN from other acquired pigmentary disorders is also discussed.

## CASE REPORT

A 20-year-old man presented to the Department of Dermatology in Rzeszow with a 1-year history of numerous, confluent, hyperpigmented papules, involving the neck, flexor surface of upper extremities, torso, and axillae. The first skin lesions were asymptomatic, and, in the beginning, located only on the flexor surface of upper extremities. Subsequently, it turned out that the lesions tended to spread rapidly involving other body areas. The dermatological investigation found multiple, generalized hyperpigmented and hyperkeratotic grouped papules (Fig. 1). Videodermoscopy evaluation (Canfield Scientific, D200EVO,

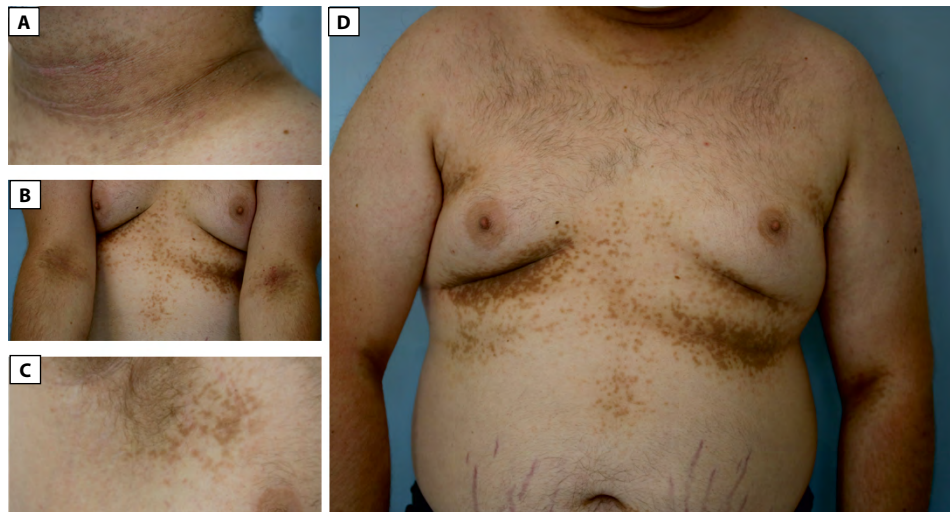
Canfield Scientific GmbH, Bielefeld, Germany) showed irregular white, homogenous areas, and light brown polygonal, papillary globules with dotted vessels (Fig. 2). Moreover, the pattern of sulci and gyri that reflects depressions and elevations due to papillomatosis (Fig. 2) was identified. As the diagnosis was unclear, an incisional biopsy was taken from hyperpigmented lesions. Histopathological evaluation showed hyperkeratosis and papillomatosis. Additional laboratory investigations revealed serum elevated levels of fasting blood glucose and fasting insulin levels, 113.0 mg/dL (70.0–99.0 mg/dL) and 277.0 μU/mL (2.60–24.90 μU/mL), respectively. The homeostasis assessment index for insulin resistance (HOMA-IR) is the outcome of the fasting insulin (mIU/mL) × glucose (mg/dL)/405. The calculated HOMA-IR value was above norms as it was equal to 77.29 (1–2.5), which indicated insulin resistance.

## DISCUSSION

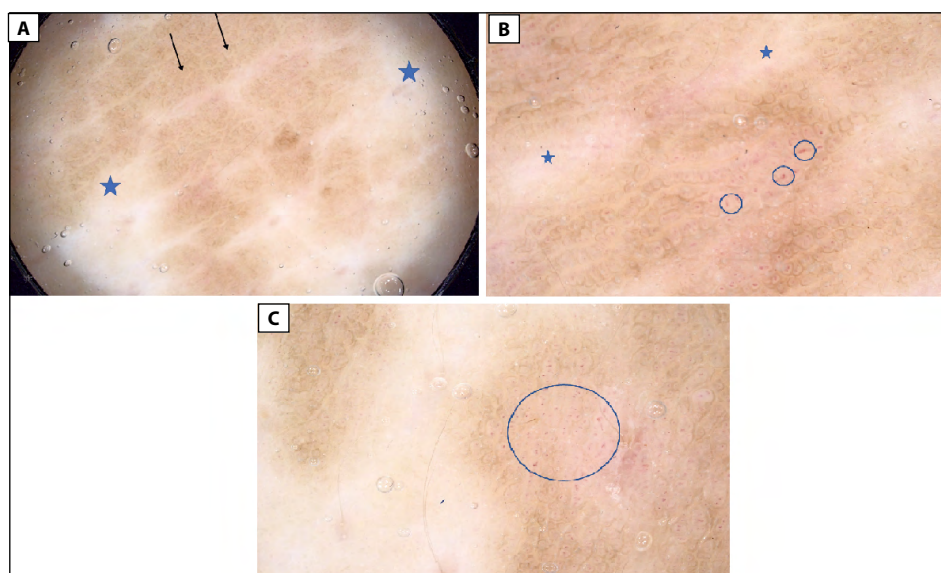
Considering demonstrated skin lesions, several cutaneous diseases can have a similar clinical presentation, and thus, it is believed that dermoscopy evaluation can help in differentiation. Dermoscopy is a non-invasive technique that allows the visualization of various patterns of skin lesions. It is widely used to exclude malignancies and gained popularity also in the evaluation of acquired pigmentary disorders. There are very few descriptions of the dermato-

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**Figure 1.** Clinical presentation of a patient with acanthosis nigricans (on left, from top to bottom **A–D**); Multiple hyperpigmented papules, involving the neck, flexor surface of upper extremities, axillae, and torso



**Figure 2.** Dermoscopic presentation of the patient with acanthosis nigricans (on left, from top to bottom **A–C**); Light brown polygonal, papillary globules with dotted vessels (black arrows, blue circles); A pattern of sulci and gyri (black arrows); White, homogenous areas (blue stars)

scopic patterns characteristic of AN in the literature [7, 8]. Nevertheless, some patterns similar to those in previous studies were observed. Other reported dermoscopic features for AN include cristae, sulci, milia-like cysts, crypts, and black blotches. In differential diagnosis, one should include confluent and reticulated papillomatosis (Gougerot-Carteaud syndrome). Dermoscopic examination typically shows brown polygonal globules separated by whitish striae, creating a so-called cobblestone pattern. Both confluent and reticulated papillomatosis and AN exhibit a dermoscopic sulci and gyri pattern. Moreover, the cerebriform pattern can also be seen in seborrheic keratoses. Whereas verrucous epidermal nevus feature dermoscopic patterns of exophytic

papillary structures. In the future, dermoscopy might prove to be a valuable tool in the diagnosis of acquired pigmentary disorders [9].

Currently, multiple treatment options are available for AN [10]. The most important thing in the diagnostic process is to find out the cause of the skin lesions. There is no therapy of choice, as the treatment strongly depends on underlying diseases. Many cases of AN are associated with obesity, and weight loss should therefore be recommended. In addition, a balanced diet, moderate exercise, and behavioural modification should be implemented [11]. Another important factor contributing to the development of AN is hyperinsulinemia. Oral metformin and combinations of

other insulin-mediating medications are effective in insulin resistance [12]. To improve the additional cosmetic problem, topical retinoids are considered the first-line treatment [13]. This type of treatment often requires a long period of use to improve hyperkeratosis, but the therapy may be complicated with skin irritation and reddening. Other topical treatments include salicylic acid, urea, and calcipotriol. Nevertheless, complete remission of skin lesions is difficult to achieve. In more severe cases, oral retinoids such as isotretinoin or acitretin may be tried [14, 15]. However, improvement requires prolonged treatment, and the occurrence of relapses is described in the literature.

## CONCLUSIONS

In summary, the management of AN requires extensive diagnosis to detect the underlying disease, followed by personalized treatment. The dermoscopy may serve as an adjunctive tool that can help to establish a proper diagnose.

## Conflict of interests

The authors declare no conflict of interest.

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