


# Dermoscopy and Histopathology of Hyperkeratosis of Nipple and Areola: A Case Report

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**Abstract:** We describe a case involving a 19-year-old female with who presented with bilateral nipple-areola brown patches persisting for five years. The diagnosis of hyperkeratosis of the nipple and areola (HNA) was established through dermoscopy and histopathology. The findings highlight the value of dermoscopy in the diagnosis and differentiation of HNA.

**Keywords:** dermoscopy, histopathology, hyperkeratosis of the nipple and areola

## Introduction

Hyperkeratosis of the nipple and areola (HNA) is a rare benign skin disease that occurs in the breast clinically characterized by hyperkeratosis of the nipples and/or areolas and dark brown pigmentation. A previous study reported greater hazard ratios in women with HNA between the ages of 20–30s.<sup>1</sup> It affects self-confidence in these patients and needs to be distinguished from cutaneous dirt-adherent disease, breast eczema, and acanthosis nigricans. In this report, we present a case of HNA diagnosed using dermoscopy and histopathology.

## Case Presentation

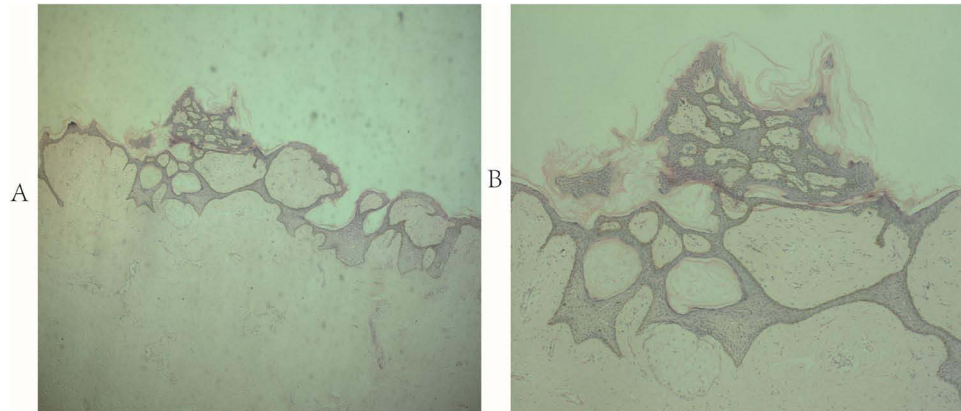
A 19-year-old female was admitted to our hospital on August 3, 2017, due to bilateral nipple-areola brown patches persisting for 5 years. Initially, the color of the bilateral nipple-areola deepened gradually without a clear origin, and the patient did not seek any treatment. Three years ago, she developed dark brown papules ranging from needle-tip to grain size on the surface of the bilateral areolas, some of which merged into plaques. She experienced slight itching and was initially diagnosed with breast eczema at a local hospital. She used an external ointment (details unknown), which alleviated the itching, but did not resolve the skin lesions. Seeking further treatment, she came to our hospital outpatient department. She had no significant past medical history and was unmarried and nulliparous.

Dermatological examination revealed densely distributed dark brown keratotic papules of needle-tip to grain size on the surface of bilateral nipple-areola. Dermatoglyphics were deepened and widened, and the skin lesions had a clear boundary without erythema or erosion (Figure 1A, B, and C).

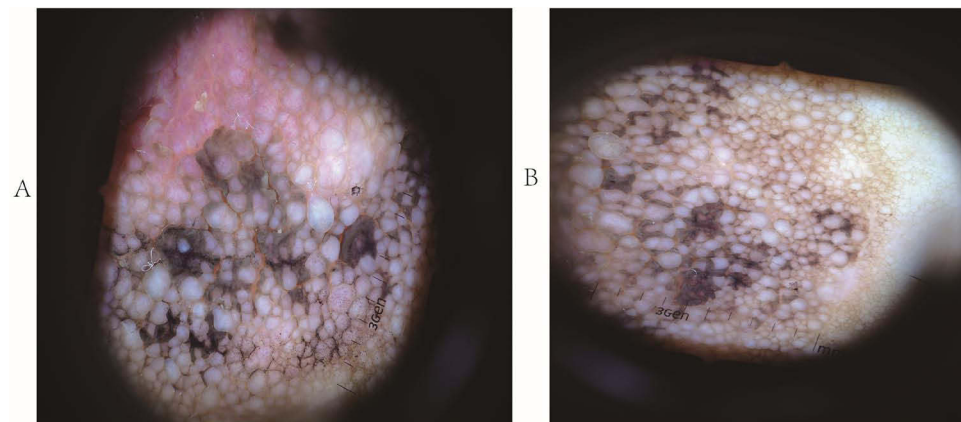
Laboratory tests, including routine blood examination, routine urine and stool tests, and liver and kidney functions showed normal results.



**Figure 1** Clinical appearance of the patient on admission. (A) bilateral nipple-areola. (B) left nipple-areola. (C) right nipple-areola.



**Figure 2** Histopathology shows hyperkeratosis, subepidermal protuberances fusing a network, epidermal spinous layer and basal layer hyperpigmentation, and perivascular sparse lymphocytic infiltrated in the papillary layer of the dermis. (A) Hematoxylin-eosin stain; original magnification $\times 10$ . (B) Hematoxylin-eosin stain; original magnification $\times 20$ .



**Figure 3** Dermoscopy images of the Bilateral nipples and areolas: color close to skin color, grayish-white cobblestone-like lesions, dark brown patches covered on the lesions, and no blood vessels. (A) right nipple-areola. (B) left nipple-areola.

Histopathological examination of the lesion revealed hyperkeratosis, subepidermal protuberances forming a network and surrounded by collagen, hyperpigmentation of the epidermal spinous layer and basal layer, and sparse perivascular lymphocytic infiltration in the papillary layer of the dermis. (Figure 2A and B).

Bilateral nipple and areola dermoscopy showed color close to the skin, grayish-white cobblestone-like lesions, and dark brown patches covering the lesions with no visible blood vessels (Figure 3A and B).

Based on the clinical presentation, histopathology, and diagnosis, she was diagnosed with HNA. As there is no specific treatment for HNA, she was prescribed oral acitretin capsules combined with supramolecular salicylic acid.

Before treatment, she was informed of the precautions for orally taking acitretin capsules, and was prescribed supramolecular salicylic acid for application to the nipple and areola, sealing it with plastic film once a day.

## Discussion

HNA is a rare skin disease characterized by dark brown patches in the nipple and areola with thickening and pigmentation, primarily affecting women during puberty or pregnancy.<sup>2</sup> Currently, the etiology of HNA is unknown, and may be closely related to factors such as estrogen, genetics, and infections. However, most experts believe that the disease is an independent entity.<sup>3</sup> According to Levy-Franke I classification, HNA can be categorized into three types: Type I is caused by extension of the epidermal nevus to the areola and nipple, which usually occurs unilaterally. Type II is often associated with ichthyosis and can manifest bilaterally. Type III is congenital or nevoid without ichthyosis, seborrheic keratosis, epidermal nevus, or other skin diseases, and is the most common type.<sup>4</sup> Based on our patient's medical history, past medical history, and the results of histopathology and dermatoscopy, she was diagnosed with congenital HNA. Her onset of puberty occurred at the age of 15, which is a critical period for physical development in children. Various hormonal changes, including estradiol secretion from mature ovarian follicles, play a crucial role in promoting and regulating the development of female organs and sexual characteristics. We hypothesize that the patient's genetic background may be related to estrogen stimulation. Clinically, It is important to distinguish allergic diseases (such as eczema, cutaneous dir-tadherent disease, and acanthosis nigricans) and benign and malignant skin tumors (such as extramammary Paget's disease and mycosis fungoides), with the definitive diagnosis relying on the pathological examination of skin tissue biopsy.<sup>5</sup>

Currently, there is no universally effective treatment plan for HNA. Various therapeutic drugs including topical ointments such as keratolytics, corticosteroids, calcipotriol, and vitamin A have been employed. Physical treatments such as cryotherapy, surgical resection, radiofrequency ablation, and CO<sub>2</sub> laser are also used with varying degrees of efficacy.<sup>6,7</sup> Given the lack of a specific treatment, we administered oral acitretin capsules combined with supramolecular salicylic acid in this case.

## Conclusion

Skin biopsy remains an accurate diagnostic method for HNA. In the present case, all pathologies were successfully diagnosed through dermoscopy. Therefore, dermatoscopy holds significant value in the diagnosis and treatment of HNA, providing a novel approach to clinical diagnosis and treatment.

## Ethics Statement

The patient provided written informed consent to publish not only the details of the case but also any accompanying images. The informed consent form clearly states that the institution has agreed to publish relevant information about this case.

## Acknowledgments

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## Disclosure

The authors report no conflicts of interest in this work.

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