

# Acanthosis nigricans or terra firma-forme dermatosis? Three adolescent cases

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## ABSTRACT

Terra firma-forme dermatosis (TFFD), also known as Duncan' dirty dermatosis, is a keratinization disorder that is characterized by velvety, dark brown-blackish patches, and plaques and is not associated with systemic diseases. The lesions rarely show a verrucous or reticulate appearance. Especially, in children and adolescents, neck, face, torso, and ankles are the most frequently affected areas. TFFD is a condition that should be suspected in children and adolescents that cannot be cleaned with soap, especially if the neck area looks dirty. In this article, we report 3 cases with a diagnosis of TFFD resembling acanthosis nigricans. TFFD should be included in the differential diagnosis of adolescent cases presenting with hyperpigmented patches and plaques, especially in intertriginous areas such as the neck.

*Keywords:* Acanthosis nigricans; dermatology; keratinization disorder.

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Terra firma-forme dermatosis (TFFD) is a keratinization disorder with unknown etiology. The adhesion between keratinocytes is prolonged by the retention of melanin, sebum, and 3 microorganisms and causes the formation of hyperpigmented plaque [1]. While these velvety, brownish patches and plaques that settle on intertriginous areas such as the neck cannot be removed by washing with water and soap, it disappears by wiping with 70% isopropyl or ethyl alcohol [2]. Especially when it is located in intertriginous areas such as the neck can be confused with, acanthosis nigricans and thus unnecessary tests and invasive procedures can be applied for the patient [3]. Clinicians, before approaching the diagnosis in localized hyperpigmented plaque lesions in adolescents, first they should go to the advanced examination stage after a simple alcohol wipe.

## CASE REPORTS

### Case 1

A 14-year-old girl presented with a complaint of darkening of the skin on the back of both ears, which gradually increased for about a year. The patient who gains the habit of washing himself late, stated that she takes a bath once a week and the lesions it is not healing with washing. There was no feature in her medical history. Dermatological examination revealed dark brown hyperpigmented plaque, extending to the back of both ears were noted (Fig. 1A, B). TFFD was suspected and was wiped with a gauze cloth soaked in 70% isopropyl alcohol for diagnostic purposes. It was observed that the lesions completely disappeared after this procedure (Fig. 1C), and the patient was diagnosed with TFFD.



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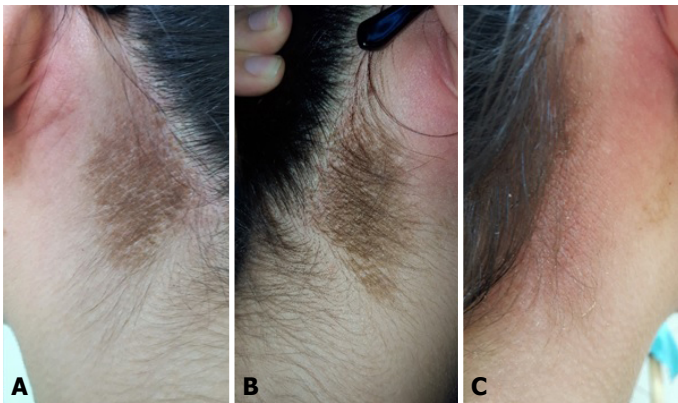
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**FIGURE 1. (A, B)** Dark brown hyperpigmented plaque behind left and right ear. **(C)** Lesion after wiping with 70% Isopropyl alcohol.

Informed consent form was obtained from the parent of the patient.

### Case 2

A 12-year-old girl presented with the complaint of a stain on the neck area for about 2 years, which increased over time and did not removed by washing. She did not have any systemic disease. She had applied to many clinics before, topical treatments were given for fungal infection, and the lesions did not regress. Dermatological examination showed irt-like, partially reticular, brown-black hyperpigmented plaques on the anterior part of the neck (Fig. 2A). With suspicion of TFFD, the lesions disappeared after wiping with 70% isopropyl alcohol and the patient was diagnosed with TFFD (Fig. 2B).

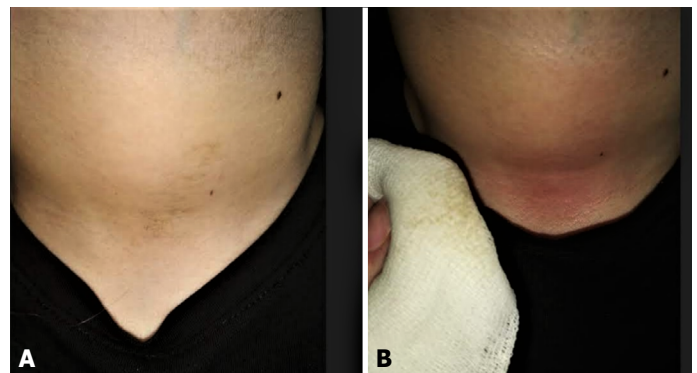
Informed consent form was obtained from the parent of the patient.

### Case 3

A 15-year-old girl presented with a 2-month history of asymptomatic brownish-colored skin eruption on her anterior neck (Fig. 3A). The patient was healthy, non-atopic and was not receiving any medication. In medical history, it was learned that the spot on the anterior neck did not disappeared for about 1 months, although it was scrubbed. Despite having good hygiene, including showers and washing with medicated washing gel at least 3 times per week, the patient showed no improvement in the skin lesions. Given the appearance and distribution of skin lesions, TFFD was considered and swabbing with cotton pads soaked in 70% isopropyl alcohol was performed that completely removed the lesions confirming the diagnosis of TFFD (Fig. 3B).



**FIGURE 2. (A)** Reticular, brownish plaques surrounding the neck with borders. **(B)** Lesions after wiping with isopropyl alcohol.



**FIGURE 3. (A)** Brown-black hyperpigmented, partially reticular, dirt like plaque with well-defined borders. **(B)** Lesions disappeared after wiping with 70% isopropyl alcohol.

Informed consent form was obtained from the parent of the patient.

## DISCUSSION

Terra Firma-Forme dermatosis was first defined by Duncan et al. in 1987 and named as “Duncan’s dirty dermatosis”. The name TFF derives from the Latin word “terra firma” means solid land/dirty [4]. The incidence is equal in both genders. The highest prevalence was found among prepubertal children (88.6%) with an average age of onset of  $10.4 \pm 7.5$  years, ranging from 3 years to 72 years [5]. Although many factors such as genetic predisposition, sun exposure, not washing habit, or incomplete keratinization disorder have been suggested, the cause is not fully understood [6]. Although few many cases have been reported in the literature, it is estimated that there are more cases with TFF [7]. Especially the soap and

liquid cleaners used in the bathroom cannot be rinsed sufficiently, the residues of moisturizers containing urea and oily pomades applied to dry and eczematized skin, may prevent normal keratinocytes shedding, which can be result in a dirt-like appearance [1].

Both of our patients had normal washing habits, but they gained self-washing skills late. For this reason, we thought they were insufficient to do their self-care. Terra Firma-Forme dermatosis may cause psychosocial consequences in patients by creating anxiety and embarrassment. If neglected, it becomes even more pronounced and undergoes differential diagnosis with other pigmentation disorders [6]. These pigmentation disorders include acanthosis nigricans, dermatosis neglecta, confluent and reticulated papillomatosis, symmetrical acrokeratoderma, tinea versicolor, ichthyosis, neurodermatitis, and dirty necksyndrome of atopic dermatitis. When it is unknown, unneeded invasive procedures patient can undergo [3].

In diagnosis, before applying to invasive methods such as biopsy, it is sufficient to wipe the lesions with 70% isopropyl alcohol or ethyl alcohol and see them disappear. The fact that this procedure is non-invasive, painless and does not cause cosmetic concerns such as scar risk that is also a good advantage for diagnosis in the pediatric population. Typical appearance in dermoscopy and whitish reflex in wood examination are other methods that can be used in diagnosis [4]. In conclusion, clinicians should include TFFD in the differential diagnosis of localized hyperpigmented plaque lesions similar to acanthosis nig-

ricans, especially in fold areas such as the neck, in adolescence, this approach help avoiding from unneed biopsy and biochemical examinations.

**Informed Consent:** Written, informed consent was obtained from the patients' families for the publication of this case report and the accompanying images.

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