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A CASE REPORT OF RARE DERMATOLOGIC CONDITION: TERRA FIRMA-FORME

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ABSTRACT
Background: Terra firma-forme dermatosis (TFFD) is a benign cutaneous condition characterized by persistent brown skin discoloration that is resistant to conventional washing but resolves with isopropyl alcohol. Due to its resemblance to other dermatological or systemic conditions, it is often misdiagnosed, leading to unnecessary treatments and patient anxiety.
Case Presentation: We report the case of Mariyah, a 17-year-old medically free Saudi female referred from an endocrinology clinic for persistent brown skin eruptions affecting her neck, axillae, inner thighs, abdomen, and chest for five years. The lesions, initially suspected to be an atypical presentation of acanthosis nigricans, were unresponsive to multiple topical whitening creams prescribed by various dermatologists. Upon presentation to our clinic, the affected areas were gently rubbed with gauze soaked in 70% isopropyl alcohol, resulting in almost complete clearance of the discoloration. This immediate resolution confirmed the diagnosis of TFFD. The patient was counseled on the benign nature of the condition and advised to use isopropyl alcohol to manage potential recurrences.
Conclusion: This case underscores the importance of recognizing TFFD as a differential diagnosis for persistent skin discoloration. The rapid diagnostic and therapeutic response to isopropyl alcohol demonstrates the simplicity of managing this condition and highlights the need for awareness among clinicians to prevent unnecessary treatments and investigations.

KEYWORDS: Terra firma-forme dermatosis, skin discoloration, isopropyl alcohol, differential diagnosis, acanthosis nigricans.

INTRODUCTION

In 1987, Duncan, Tschen, and Knox were the first to report terra firma-forme dermatosis (TFFD), a benign condition [1]. Common names for the condition include Duncan's filthy dermatosis. The name "terra firma" comes from Latin and means "dry land" in English. This is because the material has a unique clinical look that is reminiscent of sun-dried soil [2]. The widespread underestimating of the illness is exacerbated by the frequent misdiagnosis as dermatitis neglecta (DN).
A retrospective research that followed children under the age of 18 for a year found an estimated prevalence of TFFD of 2.19% [3]. For TFFD, neither a gender preference nor a hereditary predisposition have been identified. The occurrence peaks at two different times during life: first in the first ten years and again between the ages of sixty and eighty-five [4,5,6]. Asians, African-Americans, Hispanics, Middle Easterners, and Caucasians are among the many ethnic groups that have reported TFFD [5,6,7,8].
In an effort to decipher the intricate pathophysiology, several writers have put forward competing hypotheses. Some researchers have hypothesized that retention hyperkeratosis, which is caused by delayed keratinocyte development and leads to defective desquamation and the buildup of debris and sebum, is the nidus of TFFS [9,10]. But according to Berk et al., TFFD is mostly a papillomatous condition that may trap sebum, dirt, or other environmental debris due to acanthosis and orthohyperkeratosis [11]. Retention hyperkeratosis and corneocyte clumping are caused by a suppression of epidermal keratinoplastic activities, which hinders keratinocyte detachment [12].

Case Presentation

Mariyah, a 17-year-old medically free Saudi female, was referred to our dermatology clinic by the endocrinology department for further evaluation of persistent brown skin eruptions. These lesions, which first appeared five years ago, involved multiple areas, including the neck, axillae, inner thighs, abdomen, and chest. The eruptions were initially suspected to be an atypical presentation of acanthosis nigricans, raising concerns regarding possible underlying metabolic conditions (Figure 1).

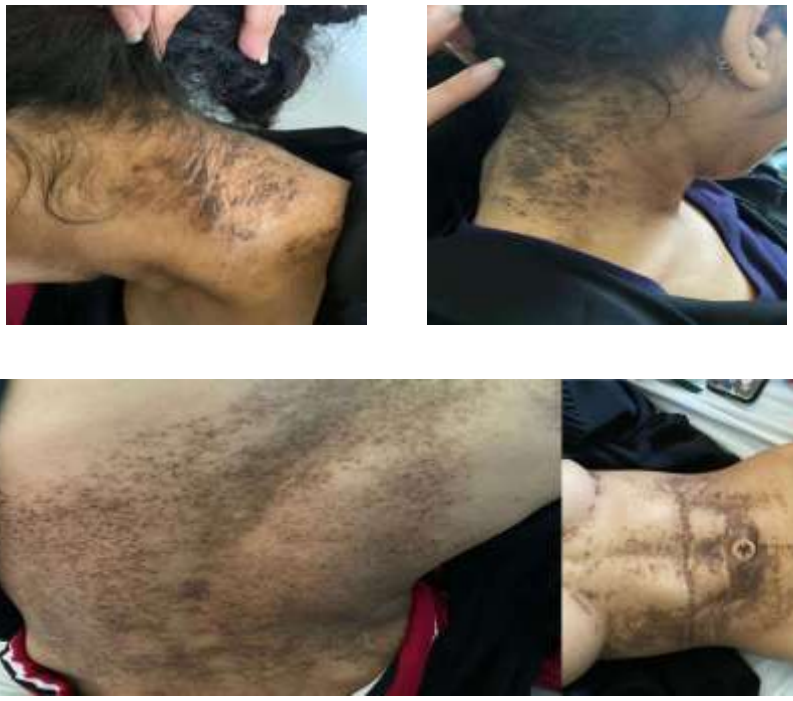

Figure 1: Skin features before treatment

The patient reported a lack of response to various topical whitening creams prescribed by several dermatologists over the years. Despite multiple treatments, the lesions persisted, prompting her eventual referral to our clinic.

Upon examination, the affected areas were assessed using gauze immersed in 70% isopropyl alcohol. Remarkably, the brownish discoloration resolved almost completely following gentle rubbing, confirming a diagnosis of terra firma-forme dermatosis (TFFD). The immediate and d

ramatic resolution upon cleaning with isopropyl alcohol is a hallmark feature of TFFD and helped distinguish it from other dermatological conditions.

The patient was counseled on the benign nature of this condition and advised to use 70% isopropyl alcohol to manage recurrences effectively. Skin condition after treatment is illustrated in figure 2. Educational measures were also provided to alleviate any misconceptions or concerns regarding the condition.

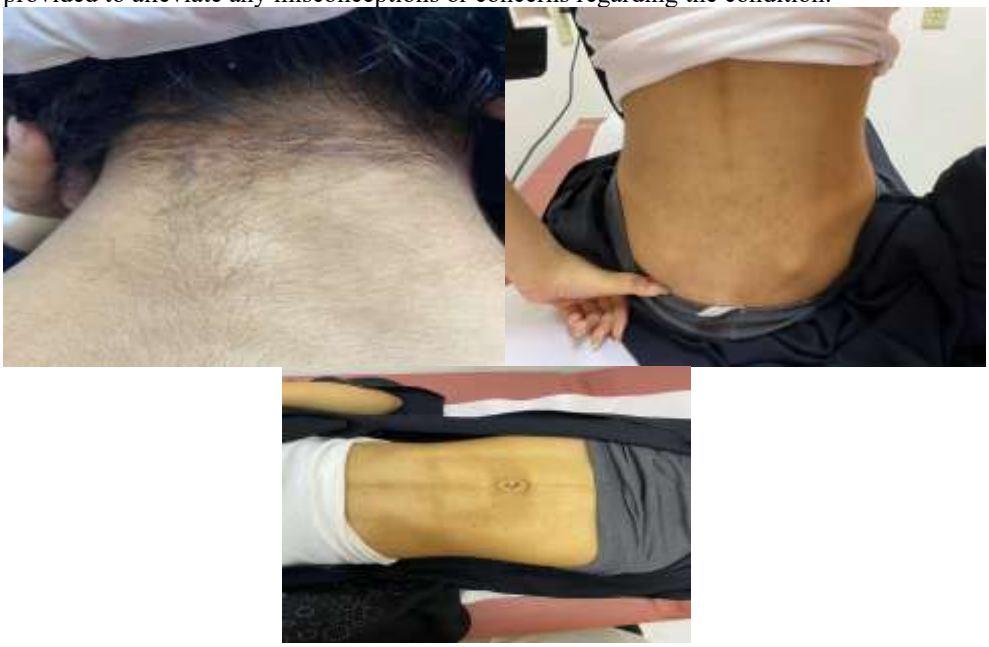

Figure 2: Skin condition after treatment

DISCUSSION

This case emphasizes the diagnostic challenge posed by terra firma-forme dermatosis (TFFD), often misdiagnosed as more complex dermatological conditions such as acanthosis nigricans. The characteristic response to cleansing with isopropyl alcohol is a distinguishing feature that clinicians should consider, especially in cases refractory to conventional therapies. Early recognition of TFFD is critical to avoiding unnecessary treatments and ensuring patient reassurance. This highlights the value of simple diagnostic interventions in differentiating benign conditions from potentially serious dermatological or systemic disorders.

A systematic review found that there was a female:male ratio of 1:37 and 256 individuals with an average age of 18.34 years were evaluated. A critical review of TFFD's pathophysiology, dermoscopy, therapy methods, clinical outcome, and related comorbidities is presented in this paper [13].

While some case reports have hinted to a hereditary component to TFFD, research on the subject of how it is passed down across generations remains mixed [4,6]. Patients between the ages of 0 and 10 may have a hereditary condition known as delayed keratinization, which would explain the initial peak of TFFD. Fillagrin gene mutation also has a small impact, even though there is no racial bias [14,15].

Asymptomatic black or brown dirt-like plaques are the typical presentation of terra firma-forme dermatosis [16-25]. Papillomatous, verrucous, or reticulate features are also possible [26]. Even though lesions may affect any part of the body, they most often appear on the ankles, trunk, face, and neck [16, 17, 19, 20, 22, 23, 24]. Terra firmaforme dermatosis tends to affect heavier people with concave skin patches, according to one research [27]. This description fits most of our patients. Terra firma-forme dermatosis may have a variety of distributions, including bilateral, unilateral, regional, or global [19, 22–24]. Patients who otherwise practice good hygiene may develop lesions that are difficult, if not impossible, to remove with mild soap and water [16–17]. Researchers have also shown that terra firma-forme dermatosis tends to manifest in the summer [18–19].

Traditional methods for diagnosing terra firma-forme dermatosis relied on the patient's symptoms and the speed with which the lesions healed after being treated with 70% isopropyl alcohol [17]. It may be necessary to massage vigorously with 70% isopropyl alcohol pads in order to generate enough shearing forces to completely remove pigmentation [2]. It is uncommon to do biopsies. Lamellar hyperkeratosis with compact orthokeratotic whorls and no parakeratosis, acanthosis, papillomatosis, keratotic material between the papillae, or melanin deposition in the basal layer or hyperkeratotic areas can be seen with hematoxylin and eosin staining if tissue is obtained [16-21, 23, 25, 26]. Toluidine blue staining also makes it possible to see many keratin globules all across the stratum corneum [16, 17, 20].

Terra firma-forme dermatosis has a number of possible causes and symptoms that can be ruled out as possible diagnoses, such as acanthosis nigricans, ischthyosis, dermatosis neglecta, granular parakeratosis, idiopathic deciduous skin, omphalith, pseudoacanthosis nigricans, seborrheic keratosis, tinea versicolor, and granular parakeratosis [1620, 23, 26].

It is not known what causes terra firma-forme dermatosis [16–20, 26]. There is a widespread belief that this disease is caused by keratinocytes and melanin being retained inside the epidermis due to delayed keratinocyte maturation [18, 19, 21, 23, 25]. The hyperkeratosis and hyperpigmentation seen in terra firma-forme dermatosis may be explained, in part, by the disorderly accumulation of keratinocytes and their compaction with the surrounding dirt and sebum [18, 23, 25].

Applying 70% isopropyl alcohol is the diagnostic and therapeutic method for terra firma-forme dermatosis [16–18, 20, 25–26]. Even after a full laser removal of hyperpigmentation, certain lesions may return; for example, one patient experienced the recurrence of previously treated lesions on his subclavicular chest within three months after the first laser treatment [28]. It is advised to use isopropyl alcohol for extra wiping in this case [17, 23]. For prophylactic or resolution-maintaining purposes, certain patients may need to use isopropyl alcohol once a week [17, 23]. To avoid xerosis, it is crucial to moisturize the affected skin regularly after isopropyl alcohol treatments.

CONCLUSION

In conclusion, this case highlights the importance of considering terra firma-forme dermatosis (TFFD) as a differential diagnosis for persistent brown skin eruptions, especially when traditional treatments fail. The rapid resolution of the lesions with 70% isopropyl alcohol not only confirms the diagnosis but also underscores the simplicity and efficacy of this diagnostic and therapeutic approach. Proper recognition of TFFD can prevent unnecessary investigations and treatments, providing reassurance to patients about the benign and manageable nature of this condition.

Acknowledgments

The authors confirm that all authors are aware of and approve the submission of this manuscript. All authors have reviewed and agree with the manuscript's content, the authorship, and the order of authorship.

Ethical consideration

Photos present in this case report figures are used after permission from the patient and no identifications are being used.

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