Terra Firma-Forme Dermatosis in Jordan: Clinical Insight from a Five-Year Case Series of 38 Patients

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ABSTRACT

Terra firma-forme dermatosis (TFFD), also known as Duncan's dirty dermatosis, is a benign cutaneous condition characterized by hyper pigmented patches that mimic dirt and resist routine washing but clear instantly with isopropyl alcohol. Although distinct in appearance, it is frequently misdiagnosed, especially in regions where it remains underreported. To describe the clinical presentation, lesion distribution, and diagnostic approach of TFFD in a cohort of patients from Jordan, where awareness of the condition is limited. A retrospective review was conducted of 38 patients diagnosed with TFFD between 2020 and 2025 at two healthcare centres in southern Jordan. Diagnosis was confirmed by alcohol swab test and supported by dermoscopic findings. Demographic data, lesion location, prior misdiagnoses, and treatment outcomes were analysed. Patients ranged in age from 1 year and 2 months to 55 years (mean= 27 years), with a male predominance of 90%. The most commonly affected areas were the neck, face, and scalp. All lesions were resistant to conventional cleansing but resolved immediately with isopropyl alcohol. Several patients had previously received unnecessary treatments before an accurate diagnosis. This study represents the first large case series of TFFD from Jordan. It highlights regional patterns of presentation, emphasizes the value of the alcohol swab test in diagnosis, and calls for increased clinician awareness to prevent misdiagnosis and avoid unnecessary interventions. Further research is recommended to assess the psychosocial impact and actual prevalence of TFFD in Middle Eastern populations.

Keywords: Terra firma-forme dermatosis, Jordan, pigmentation, alcohol swab test, skin discolouration, case series.

INTRODUCTION

Terra firma-forme dermatosis (TFD), also referred to as "Duncan's dirty dermatosis," is an acquired, benign dermatological condition characterized by asymptomatic brown-to-black plaques resembling dirt. These lesions persist despite routine washing but are readily removed with isopropyl alcohol swabbing—a distinctive feature that serves both diagnostic and therapeutic purposes[1].

First described by Duncan et al. in 1987[1], although terra firma-forme dermatosis (TFFD) presents with a characteristic clinical pattern and responds readily to isopropyl alcohol, it remains widely under recognized in clinical settings. Previous studies and case reviews have shown that it is often misdiagnosed as acanthosis nigricans, dermatosis neglecta, or superficial fungal infections, resulting in inappropriate treatments and delayed reassurance for patients. Dermoscopic evaluation may aid in differentiating TFFD from other mimickers, but the alcohol swab remains the most efficient diagnostic tool[2-4].

In addition to the alcohol swab test, dermoscopy can serve as a useful diagnostic adjunct by revealing distinct pigmented, polygonal, or network-like patterns that help differentiate terra firma-forme dermatosis from clinically similar conditions[3].

Although first described decades ago, terra firma-forme dermatosis remains largely under recognized in both clinical practice and dermatologic education. Several case series have highlighted not only its distinctive response to isopropyl alcohol but also the frequent misdiagnosis as tinea versicolor or poor hygiene[5]. In the Arab region, and particularly in Jordan, the condition is significantly underreported, with limited references in earlier literature[6]. This lack of data likely contributes to diagnostic uncertainty and limited awareness among healthcare providers.

This study presents a five-year retrospective analysis of 38 TFD cases diagnosed at two healthcare centers in southern Jordan. It aims to characterize the clinical presentation of TFD within this population, examine lesion distribution patterns, and emphasize the practical value of the alcohol swab test. By providing the first comprehensive documentation of TFD in Jordan, this study addresses a critical gap in regional dermatological knowledge. It encourages more accurate diagnosis and management across similar settings in the Middle East.

PATIENTS AND METHODS

This retrospective case series was conducted between January 2020 and December 2025 at two healthcare centers in southern Jordan: Mutah University Health Centre and Karak Governmental Teaching Hospital. A total of 38 patients clinically diagnosed with terra firma-forme dermatosis (TFD) were included in the study.

Inclusion criteria encompassed patients of all ages and genders who presented with dirt-like hyper pigmented patches resistant to routine hygiene, which resolved completely and immediately upon the application of isopropyl alcohol. Patients with active infections or systemic illnesses were excluded.

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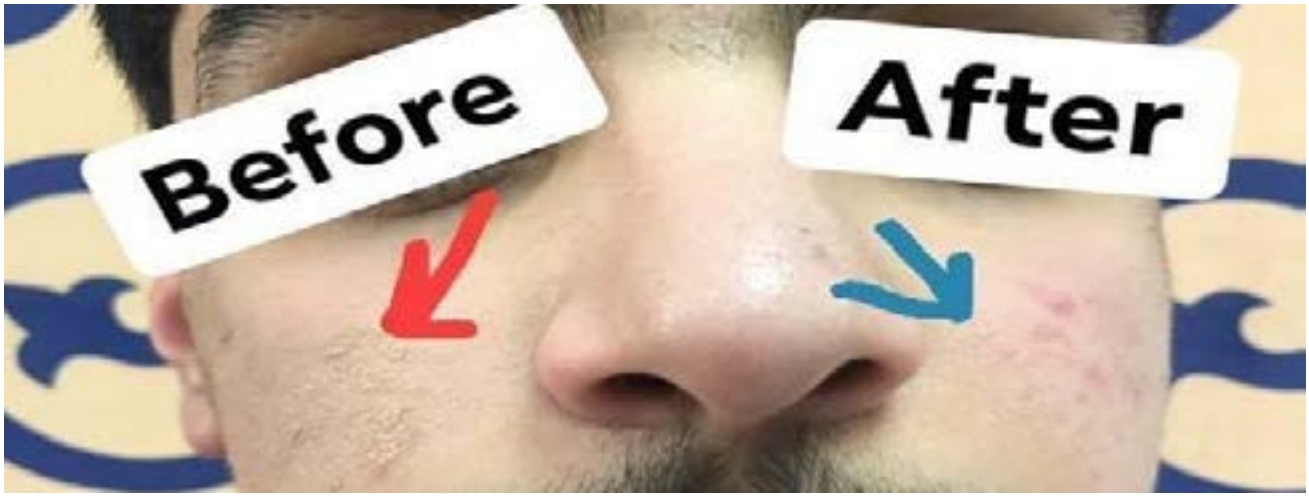

Figure 1.a Comparative image showing the same patient before (left) and after (right) the application of isopropyl alcohol swab. Complete and immediate resolution of the pigmentation confirms the diagnosis of TFD. The "before" side displays the characteristic hyperpigmented, dirt-like lesions, while the "after" side reveals clear, unaffected skin following simple swabbing, highlighting the diagnostic and therapeutic utility of this bedside test.

Data were extracted from medical records, including information on age, gender, lesion location, clinical characteristics, duration, prior misdiagnoses (e.g., fungal infections, acanthosis nigricans), previous treatments, and relevant dermatological history.

All patients underwent standardized clinical examinations. The diagnostic procedure involved rubbing the lesion with a 70% isopropyl alcohol-soaked cotton pad; immediate clearance confirmed the diagnosis of TFD.

High-resolution clinical photographs were taken before and after alcohol swabbing to document lesion removal and to provide reassurance to patients. In a subset of uncertain cases, potassium hydroxide (KOH) testing was performed to rule out superficial fungal infections.

Ethical approval for this study was obtained in accordance with institutional guidelines. The ethics committee approved the use of verbal informed consent, which was obtained from all patients for clinical examination and anonymized use of images for academic purposes.

RESULTS

Over the five-year study period, 38 patients were diagnosed with terra firma-forme dermatosis (TFD). The patients' ages ranged from 1 year and 2 months to 55 years, with a mean age of 27 years. There was a pronounced male predominance, with 34 patients (89.5%) being male and 4 (10.5%) being female. Lesions were predominantly located in sun-exposed or friction-prone areas. The most common sites included the neck (12 cases, 31.6%), face (7 cases, 18.4%), scalp (3 cases, 7.9%)—notably observed only in bald male patients—back and thighs (8 cases, 21.1%), abdomen (2 cases, 5.3%), and multiple or atypical sites (6 cases, 15.8%). The distribution showed no significant variation based on age.

All lesions appeared as brown-to-black patches that were resistant to water and soap but entirely resolved with a single application of isopropyl alcohol. In all 38 patients (100%), the alcohol swab test was both diagnostic and therapeutic, resulting in immediate clearance of pigmentation. Twelve patients (31.6%) had been previously misdiagnosed and received ineffective treatments, including antifungal agents, topical corticosteroids, and skin lightening creams. Common misdiagnoses included tinea versicolor, post-inflammatory hyperpigmentation, and acanthosis nigricans.

A chi-square analysis was conducted to examine the association between gender and lesion location (neck, face, scalp, or other sites). While there was a trend towards neck and scalp involvement among males, the association did not reach statistical significance. However, the male predominance remains a noteworthy pattern requiring further investigation in larger studies. Two cases were diagnosed incidentally during routine examinations. Several patients expressed psychological discomfort due to the visible nature of the lesions, particularly those located on the face and neck.

Photographic documentation (Figure 1.a, and Figure 1.b) confirmed the hallmark response to alcohol swabbing. In four uncertain cases, potassium hydroxide (KOH) testing was performed to exclude fungal infections; all yielded negative results, supporting the clinical diagnosis of TFD.

DISCUSSION

Despite its characteristic appearance and simple diagnostic method, terra firma-forme dermatosis (TFFD) continues to be frequently misdiagnosed in clinical practice. Since its initial recognition by Duncan in 1987, the condition has often been mistaken for other dermatoses such as acanthosis nigricans, tinea versicolor, or dermatosis neglecta[1-4]. This diagnostic confusion persists even though the hallmark feature of TFFD—the immediate resolution of lesions with isopropyl alcohol—offers a straightforward and non-invasive means of confirmation.

The clinical findings observed in our cohort strongly align with previous reports in the literature. As seen in studies by Ashique et al. and Akkash et al.[5,6], most lesions appeared in friction-prone or sun-exposed areas such as the neck, face, and upper trunk. In our series, scalp involvement was noted exclusively in bald male patients, a detail not commonly highlighted in earlier reports. While the male predominance (89.5%) in our study was striking, it did not reach statistical significance in terms of lesion location, echoing the findings of Wang and Chen[7], who reported no consistent gender predisposition but acknowledged similar clinical patterns.

Lesion distribution in TFFD commonly involves the neck, upper chest, back, and retro auricular regions—areas susceptible to friction, sweat accumulation, or reduced cleansing[6-9]. Al Ali et al. highlighted the

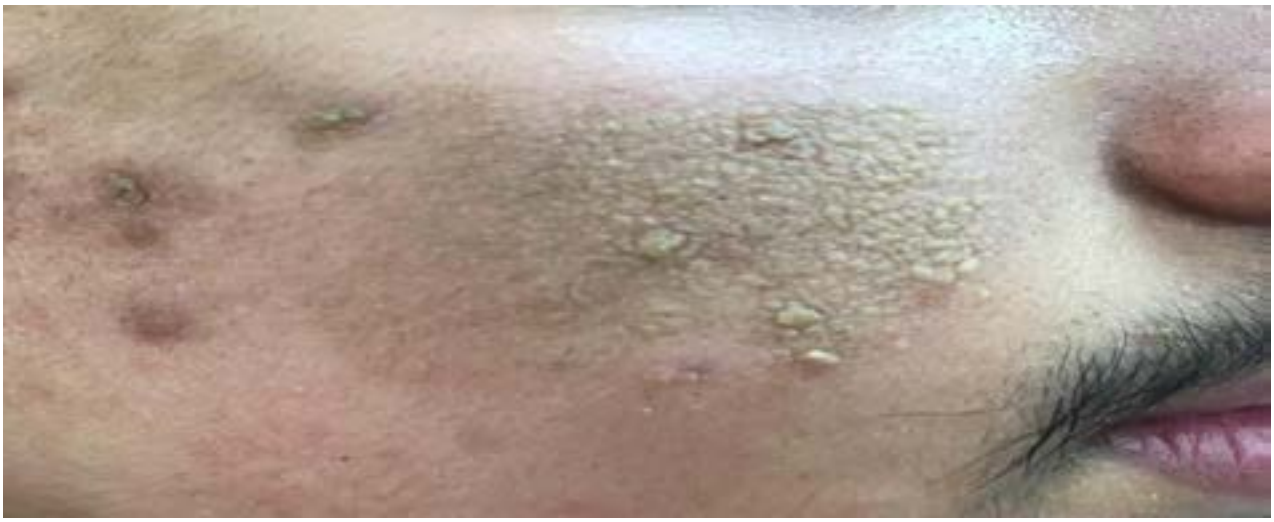

Figure 1.b Close-up view of the right cheek in a young male showing multiple yellow-brown, hyperkeratotic papules and plaques resembling dirt or seborrheic changes. The lesions are clustered and appear adherent, with a rough, granular texture. This typical presentation was resistant to regular washing and led to initial misdiagnosis as comedonal acne or seborrheic dermatitis.

role of keratinocyte buildup in these regions[8], while Wang and Chen similarly observed predominant involvement of the neck and torso[7]. Our findings were consistent, with the neck and face most frequently affected. Notably, scalp lesions appeared only in bald male patients—a finding that may warrant further investigation in future studies.

All patients in our cohort demonstrated immediate resolution of lesions with isopropyl alcohol, reinforcing both the diagnostic and therapeutic utility of the swab test. This supports the "TFFD diagnostic sign" proposed by Al Ali et al.[8] and aligns with prior observations by Sechi et al.[9], who associated the condition with friction-prone and sweat-retaining areas. Although none of our patients reported poor hygiene, some expressed feelings of embarrassment, particularly when lesions appeared in visible locations—an observation similarly noted by Sechi et al. and Nascimento et al.[9,10].

Importantly, TFFD does not spare the pediatric population. In our series, several children were diagnosed with TFFD, mirroring findings by Nascimento et al.[10], who reported eight pediatric cases in Brazil. The distinctive presentation and dramatic response to alcohol swabbing observed in both studies underscore the importance of including TFFD in the differential diagnosis of childhood dermatoses, where misidentification may lead to ineffective treatments and unnecessary concern.

Demographic studies of TFFD have generally concluded that the condition lacks gender-specific predisposition. Akkash et al.[6], in a Jordanian cohort, and Nascimento et al.[10], in a Brazilian pediatric population, both reported even gender distribution. Sechi et al.[9] also confirmed the absence of gender-based differences. Although our cohort demonstrated a notable male predominance, this was not statistically significant and may reflect behavioral or cultural factors unique to the study population.

The diagnostic simplicity of TFFD is often underestimated. Reports have documented cases misdiagnosed as conditions like nevoid acanthosis nigricans, where the true diagnosis became evident only after alcohol swabbing[11]. Other studies have emphasized that TFFD requires no laboratory testing and can be reliably identified through clinical observation and response to alcohol[12].

Building on this, recent studies have expanded the clinical context of TFFD. One report suggested a possible association with atopic dermatitis in children, emphasizing the importance of recognizing TFFD in pediatric settings where it may mimic or coexist with other dermatoses[13]. The alcohol swab remains a highly effective first-line tool, with recommendations to use it before resorting to invasive diagnostics[14]. Moreover, its role has been recognized as a practical, low-tech example of efficient clinical reasoning in dermatology[15].

To fully appreciate the impact of TFFD, one must also consider its psychosocial dimension. Visible skin conditions, even when benign, can carry social stigma and psychological burden. Germain et al.[16] proposed a model linking visible dermatological diseases to internalized stigma, emotional stress, and social withdrawal—especially when lesions affect exposed areas. Although TFFD is transient and non-contagious, its dirt-like appearance may provoke embarrassment or misinterpretation.

Mohta et al.[17] further illustrated this by showing that patients often feel misunderstood or judged due to the perceived association between the pigmentation and poor hygiene. Their findings underscore the need for clinician empathy and effective communication when diagnosing and managing TFFD.

In our cohort, several patients—particularly those with facial or neck involvement—reported psychological discomfort stemming from their appearance. These findings highlight the importance of a holistic approach to TFFD that addresses not only clinical resolution but also patient well-being.

Our case series underscores the clinical relevance of recognizing terra firma-forme dermatosis in routine dermatologic evaluation. While the condition is benign and easily managed, its under recognition continues to result in diagnostic delays and inappropriate interventions. The strength of this study lies in its systematic documentation of TFFD over five years in a region where the condition remains largely unreported. It also contributes region-specific data that may inform broader epidemiological understanding.

CONCLUSION

Importantly, the findings advocate for improved clinical training and inclusion of TFFD in differential diagnoses—particularly in primary care and pediatric settings. Doing so can reduce

diagnostic ambiguity and improve patient experience. Although our data were limited to a single geographic region, the consistent clinical patterns observed may reflect trends applicable to similar healthcare contexts. Further multicenter studies are needed to validate these findings and explore cultural or environmental variables that may influence disease recognition and presentation .

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Competing Interest: None

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