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Case Report

TERRA FIRMA-FORME DERMATOSIS – A CASE REPORT WITH REVIEW OF LITERATURE

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ABSTRACT
Terra firma-forme dermatosis (TFFD) is an uncommon disorder of keratinization, in which patients present with dirt-like lesions resistant to washing, but disappearing almost when rubbed forcefully with 70% of ethyl alcohol. Here we present a patient with complaints of asymptomatic, brown, slightly elevated, dirt-like lesions on face with no response to washing with soap and water. All lesions completely disappeared after forced wiping with 70% of ethyl alcohol. We describe a case report of patient with this disorder and review the literature.

Keywords: *Terra Firma-forme Dermatosis, Duncan's Dirty Dermatosis*

INTRODUCTION
Terra firma-forme dermatosis (TFFD) is the appearance of a brown dirty lesion that cannot be washed off with soap, but can easily be removed with alcohol. It is usually encountered around the regions such as mainly necks, upper extremities and trunk in children, as well as seen in adults. Although posing no serious medical threat, TFFD is quite cosmetically distressing.
First described Duncan *et al.*, (1987) (hence, the alternative name: "*Duncan*'s dirty dermatosis"). TFFD is a benign condition, derived from the Latin "terra firma," meaning "dirty land" (Duncan *et al.*, 1987; Pavlovic *et al.*, 2008; O'Brien *et al.*, 1997). 12 more cases were reported by Guarnieri *et al.*, since the original description in 1987 by Duncan *et al.*, However, the true prevalence of TFFD is probably underestimated. TFFD affects a wide range of age groups, ranging from toddlers to the elderly (4-72 years with a mean age of 18 years) with an equal incidence in both sexes (Guarneri *et al.*, 2008; Akkash *et al.*, 2009; Poskitt *et al.*, 1995). Berk *et al.*, described a 4-month-old girl with TFFD as the youngest patient, suggesting that TFFD should be taken into account in the differential diagnosis of infants with characteristic brown lightly scaly plaques (Berk *et al.*, 2011). No case has been reported as to hereditary features of TFFD. On physical examination, such features present as asymptomatic, localized or extensive, sometimes symmetrical, clear-cut areas of brownish to black hyperpigmentation, variously characterized by palpable, papillomatous plaques and light scaling, involving most commonly neck and trunk regions, are usually witnessed as the widespread symptoms of TFFD. Other areas that may be involved are scalp, back, upper and lower extremities, axillary, umbilical and pubic areas. Lesions cannot be removed with water and/or soaps, but disappear almost completely when rubbed with 70% of ethyl alcohol (Pavlovic *et al.*, 2008; O'Brien *et al.*, 1997; Guarneri *et al.*, 2008).

CASES
A 21 year old male presented to the dermatology OPD with the complaints of asymptomatic brown dirt-like skin eruptions all over his face for two weeks duration with history of not clearing while bathing or washing face with soap or any other face washes. There was no history of itching over the lesions. History of burning sensation was present on sun exposure for which he was given treatment for photodermatitis by various doctors. But the face showed persistent dirty plaques (Figure I a, II a and III a) Examination revealed brown hyperpigmented plaques with a rough surface. Thick velvety, reticulated plaques were present over the face.
There was complete resolution of the lesions immediately following forceful swabbing of the lesions with 70% isopropyl alcohol soaked gauze pads (Figure I b, II b, III b). Biopsy was not attempted, since a 'wipe

test' with 70 % ethyl alcohol accomplished clearance of lesions. The patient was satisfied with the immediate clearance of the lesions and there was no recurrence of the lesions in 6 months follow-up.

DISCUSSION

TFFD is an idiopathic condition characterized by asymptomatic, dirt-like, thin papillomatous, hyperpigmented plaques that cannot be removed by washing with water and/or soaps. The lesions were easily wiped off with isopropyl or ethyl alcohol, confirming the diagnosis of TFFD (Berk *et al.,* 2011). This appears to be a type of cutaneous discolouration resembling dirt. The condition is seen in children and adults with normal washing habits, which excludes inadequate cleansing as the cause of the lesions, such as those seen in dermatosis neglecta (DN). In contrast to DN, normal washing with soap and water cannot remove the pigmentation but swabbing with isopropyl alcohol is very effective in wiping it off (Pavlovic *et al.,* 2008; Poskitt *et al.,* 1995).

Physical examination usually reveals asymptomatic, localized or extensive, sometimes symmetrical, clear-cut areas of brownish to black hyperpigmentation, variously characterized by palpable, papillomatous plaques and light scaling, involving most commonly the neck and trunk, but also the scalp, back, limbs, axillary, umbilical, and pubic areas (Guarneri *et al.,* 2008). A series of cases involving different sites of the body (neck, arm, back, axillary line and scalp) was reported (Akkash *et al.,* 2009).

The cause is unknown. There is no familial predominance or genetic predisposition. Some reports are focused on sunlight exposure as a triggering factor as such mentioned in our case (Pavlovic *et al.,* 2008; O'Brien *et al.,* 2008; Guarneri *et al.,* 2008). Literature also shows that TFFD is a disorder of abnormal and delayed keratinization and incriminates incomplete keratinocyte maturation, melanin retention.

It is also believed that TFFD also arises from failure to rinse oil soaps or liquid cleansers during bath. Application of humectants such as urea-containing emollients on dry or eczematous skin may also be responsible. Remnant cleansers, soaps, emollients and pathological scaling in diseased skin may impart the skin adhesive and keratoplastic properties at some sites, preventing normal keratinocyte shedding and accumulating scales, dirt and sebum leading to this dirty dermatoses or TFFD (Erkek *et al.,* 2012).

Speculation into the pathophysiology of this condition includes altered maturation of keratinocytes with retention of melanin, and initial inadequate cleansing with the build up and compaction of scale and dirt (Guarneri *et al.,* 2008). Histopathologic examination of TTFD displays prominent lamellar hyperkeratosis with focal areas of compact orthokeratosis in whorls. Toluidine blue stains show scattered keratin globules throughout the thickened stratum corneum (Pavlovic *et al.,* 2008; Akkash *et al.,* 2009). The most commonly identified yeast is *Malassezia furfur* (Akkash *et al.,* 2009). Electron microscopic changes indicated a disordered and delayed keratinization (Pavlovic *et al.,* 2008; O'Brien *et al.,* 2008).

TFFD must be distinguished from pityriasis versicolor, Gougerot and Carteaud's reticular and confluent papillomatosis, acanthosis nigricans, pseudoacanthosis nigricans, atopic dermatitis with post-inflammatory hyperpigmentation, epidermolytic hyperkeratosis of the nipple and areola, frictional asymptomatic darkening of the extensor surfaces, idiopathic deciduous skin, and DN (Pavlovic *et al.,* 2008; Guarneri *et al.,* 2008; Akkash *et al.,* 2009). Histopathologically DN can be differentiated from TFFD by the absence of the whorled hyperkeratosis which is seen in TFFD (Berk, 2012).

The diagnosis of TFFD is confirmed by rubbing forcefully with a gauze pad immersed into 70% of isopropyl alcohol or ethyl alcohol. This diagnostic test prevents unnecessary laboratory work-up or biopsy (Duncan *et al.,* 1987; Pavlovic *et al.,* 2008; Guarneri *et al.,* 2008; Browning e*t al.,* 2005; Erkek *et al.,* 2012; Oztürk *et al.,* 2010; Tavlı *et al.,* 2012). Biopsy of such cases were recorded in the literature as it shows prominent lamellar hyperkeratosis with whorls, keratotic plugging of follicular orifices, scattered keratin globules in the stratum corneum (Toluidiene blue), papillomatosis, edema in the papillary dermis, pigment-laden macrophages, focal perivascular lymphocytic infiltration in the papillary dermis with erythrocyte extravasation and also lymphocytic liquefaction of basal layer. A Fontana-Masson stain showed focally increased melanin pigment in the basal layer of the epidermis (Erkek *et al.,* 2012).

After removal of pigmentation with isopropyl alcohol, discolouration usually does not recur. Prophylactic weekly application of alcohol has been recommended for resistant or recurrent cases (Erkek *et al.,* 2012).

Pre-treatment

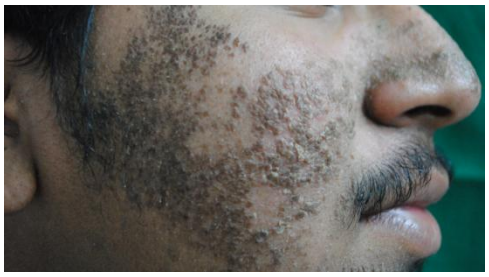

Figure Ia: Right cheek

Post-treatment

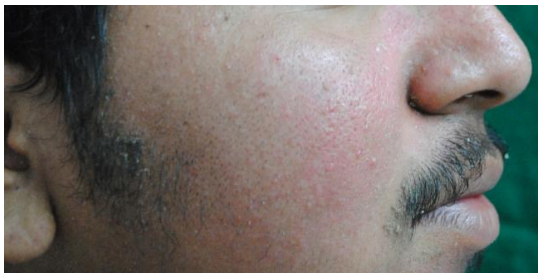

Figure Ib: Right cheek

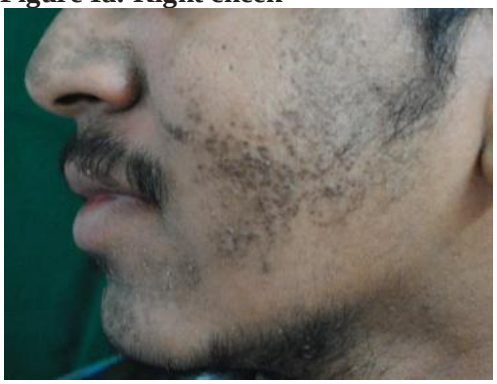

Figure IIa: Left cheek

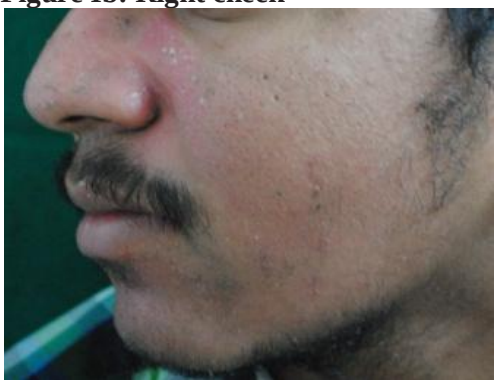

Figure IIb: Left cheek

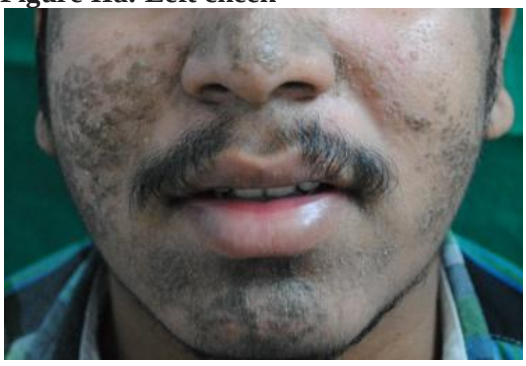

Figure IIIa: Face

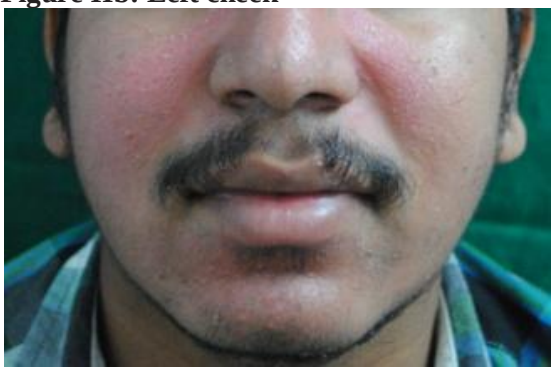

Figure IIIb: Face

Indeed, TFFD may be considered a common, but mostly ignored ailment, and so, we speculate that cases related to TFFD are often misdiagnosed. If unrecognized, may cause anxiety and lead to unnecessary endocrinological investigations (O'Brien *et al.*, 2008; Browning *et al.*, 2005; Oztürk *et al.*, 2010; Tavlı *et al.*, 2012). By training patients with TFFD or their family members on how to clean the bodily lesions at home using ethyl alcohol or increasing the awareness and time spent for treatment modalities may be saved. Recrudescence is exceptionally rare, even though individuals do not alter their cutaneous habits or exogenous exposures in any way. In the uncommon event of recurrence, the application of ethyl alcohol once a week will suffice as prophylaxis. In summary, TFFD is a recently described entity of unknown etiology that seems more common than one might expect after browsing through the rare reports in the medical literature. Dermatologist should be aware of this relatively common skin condition.

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