What Are These Brown Plaques on This 16-Year-Old Girl's Back?

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A 16-year-old girl presented to our clinic with a 5-month history of hyperpigmented brown plaques on her back. The plaques had enlarged over time and worsened over the last few months. She reported the areas to be nonpruritic and nonpainful. Her medical history was not remarkable, and she was not taking any medications at the time. Her body mass index (BMI) was within the normal range. As shown in **Figures 1 and 2**, the plaques appeared in the middle region of her back extending down the side of her spine. The plaques were not found anywhere else on the patient's body.

What is causing this patient's plaques?

A. Acanthosis nigricans
B. Becker nevus syndrome
C. Confluent and reticulated papillomatosis
D. Lichen planus
E. Terra firma-forme dermatosis

Answer: E. Terra firma-forme dermatosis

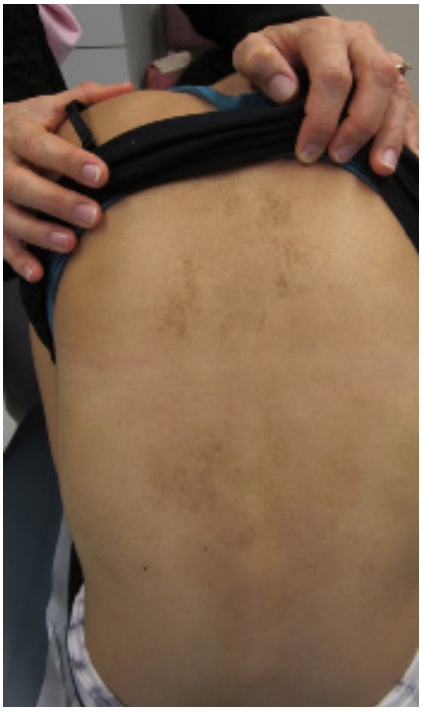

Figure 1. Hyperpigmented plaques on our patient prior to treatment.

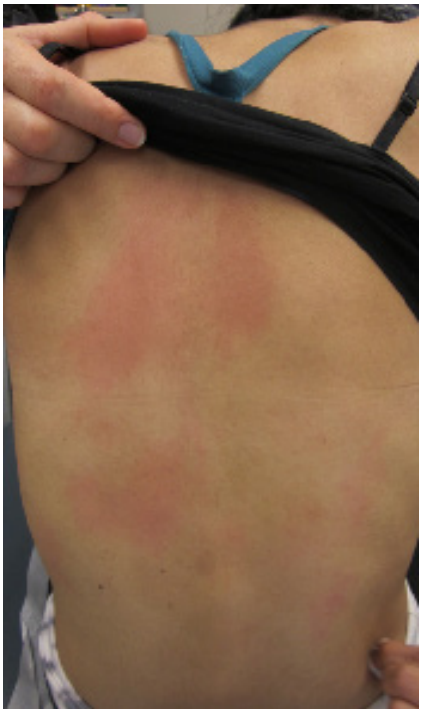

Figure 2. Our patient posttreatment with isopropyl alcohol.

Discussion

Terra firma-forme dermatosis (TFFD) presents as a brown, asymptomatic, dirt-like area on the patient's skin. The condition is most frequently found in young children and adolescents.[1] Etiology of TFFD is most likely linked to abnormal differentiation and maturation of keratinocytes, characterized as keratinocyte retention.[2] Plaques can be found on any region of the body, but the trunk, as seen in our patient, is a common area affected. An association with atopy is found in some patients.[2] Patients typically report using soap and water without improvements of the lesions, and patients with normal hygiene routines can still present with these lesions.[3] Dermoscopic examination can show hyperpigmented polygonal scaling in a mosaic pattern.[4] Histologic evaluation is not necessary for the diagnosis, but if it is done, lamellar hyper-

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keratosis, acanthosis, and papillomatosis can be seen.[5]

Treatment and management

Rubbing with 70% isopropyl alcohol to clear the lesion is both diagnostic and therapeutic for TFFD.[3] As seen with our patient, using 70% isopropyl alcohol wipes cleared the hyperpigmented areas, thereby confirming our diagnosis. TFFD has a good prognosis. If recurrence occurs, the use of isopropyl alcohol will remove it again. Similar cases were reported by Arif,[6] with 3 patients of similar age and presentations to ours. They reported the patients presented with the plaques despite good hygiene habits and found therapeutic relief with the use of 70% isopropyl alcohol wipes.

Differential diagnoses

Acanthosis nigricans presents as hyperpigmented brown patches with a velvet-like appearance. It commonly appears in intertriginous areas, such as the neck and axilla.[7] It is often associated with insulin resistance, obesity, polycystic ovarian syndrome, and, in rare cases, internal malignancy. Increased insulin can lead to increased circulating insulin-like growth factor that can lead to keratinocyte proliferation.[7] When associated with malignancy, increased transforming growth factor will act on epidermal growth factor receptors, increasing proliferation.[7] TFFD is a benign condition independent of the comorbidities seen with acanthosis nigricans, making acanthosis nigricans an unlikely diagnosis in our healthy 16-year-old patient with a normal BMI.

Confluent and reticulated papillomatosis (CRP) may appear similar to TFFD, with asymptomatic hyperpigmentation on the trunk of patients similar in age to ours.[8] The etiology of CRP is unknown.[8] It may be caused by infection with bacteria or fungi, endocrine abnormalities, abnormal keratinization, or it may be hereditary.[8] The diagnosis is clinical, but the treatment does help distinguish CRP from TFFD: CRP will not resolve with wiping with alcohol; first-line treatment for CRP is minocycline.[8]

Lichen planus is a chronic inflammatory condition that can affect the skin, hair, nails, and mucus membranes. Classically lichen planus consists of papules or plaques that can be pink or purple, and often leave footprints of long-lasting brown-gray hyperpigmentation. They most commonly present as small pruritic purple papules on the flexural surfaces of extremities, especially the wrists and ankles. Lichen planus is treated with corticosteroids.[9] We were able to rule out this possibility from our differential diagnosis due to the nonpruritic nature of our patient's rash, the brown removable plaques, the absence of postinflammatory hyperpigmentation patches, and the eruption being limited to our patient's torso. **Figure 3** shows an up-close image of our patient's lesions to appreciate the brown plaques.

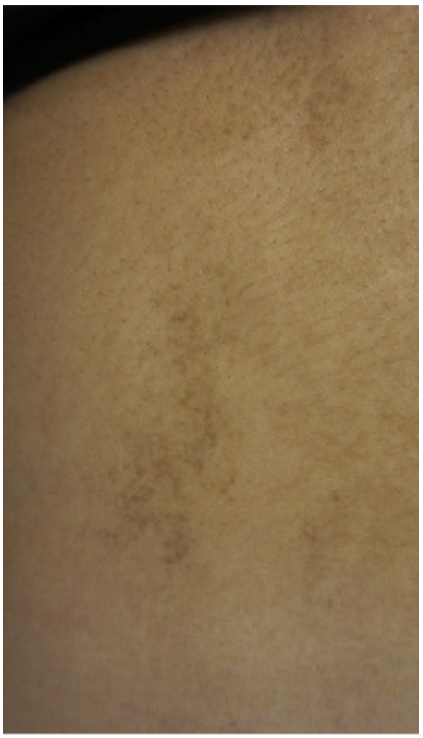

Figure 3. Close-up image of our patients' lesion prior to treatment.

Becker nevus syndrome (BNS) occurs most often during adolescence because of androgen stimulation. It is characterized by hyperpigmentation and hypertrichosis, with flat brown patches, as opposed to plaques. Female patients with BNS may also present with breast hypoplasia.[10] Our patient did not report excessive hair growth or changes in breast size, helping us rule out BNS.

Conclusion

Our case highlights the importance of having a broad differential diagnosis with each patient case. Including TFFD in your differential diagnosis of brown plaques may help prevent unnecessary diagnostic procedures and testing. The simple act of rubbing the area with an alcohol wipe may save you and your patient from biopsies, blood tests, and other invasive and costly diagnostic testing.

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