CASE REPORT

Adermatoglyphia (Loss of Fingerprints) in Young Female Patient Having the Conditions of Hyperhidrosis and Atopic Dermatitis

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Abstract

This is a case of Adermatoglyphia or simply a loss of fingerprints in a young female patient in her 20s having a condition of hyperhidrosis and atopic dermatitis. At a young age, this condition can be very frustrating and give the patient a red flag in his/her carrier and during international travel. The patient faces problems in unlocking smartphones and electronic devices. The patient has to keep a medical certificate from a certified Dermatologist all the time for proof of this condition. Adermatoglyphia is not recognized as a problem in society and law enforcement agencies are not aware of this condition in detail, all over the world.

Keywords: *Adermatoglyphia, hyperhidrosis, atopic dermatitis, naegeli–franceschetti–jadassohn syndrome.*

INTRODUCTION

The patient in her 20s presented to us with the complaint of being unable to register her fingerprints using a biometric fingerprint scanner in order to register for her passport [1]. Two years back she registered her fingerprints for national identity card records without any problems but after 2 years she is facing the problem and also her pre-existing conditions of hyperhidrosis and atopic dermatitis getting worse after non-compliance of medicine for her former mentioned diseases. There are many conditions or diseases that can cause or enhance the chances of adermatoglyphia *e.g.* hyperhidrosis, atopic dermatitis, naegeli–franceschetti–jadassohn syndrome, dermatographia pigmentosa reticularis, trauma, surgery, burn, etc. We are reporting this case to draw the attention of medical societies and law enforcement agencies to start considering this condition as a problem in which the patient has no control. For identity, the patient has to carry the medical certificate issued by the registered dermatologist and in addition, the patient can prove his/her identity *via* retinal or facial scanning, but in many underdeveloped countries these advanced scanning services are not available and the patient has to rely on a medical certificate from the registered dermatologist.

CASE PRESENTATION

A female patient in her mid-20s reported to us with a complaint of being unable to register her fingerprints (Fig. 1) on a biometric scanner in order to apply for her passport for international traveling [1]. She was very disturbed and anxious. However, she reported that when she was 18 years old, she had successfully registered her fingerprints using the same kind of biometric scanner for registering herself in a national identity database without facing any problem.

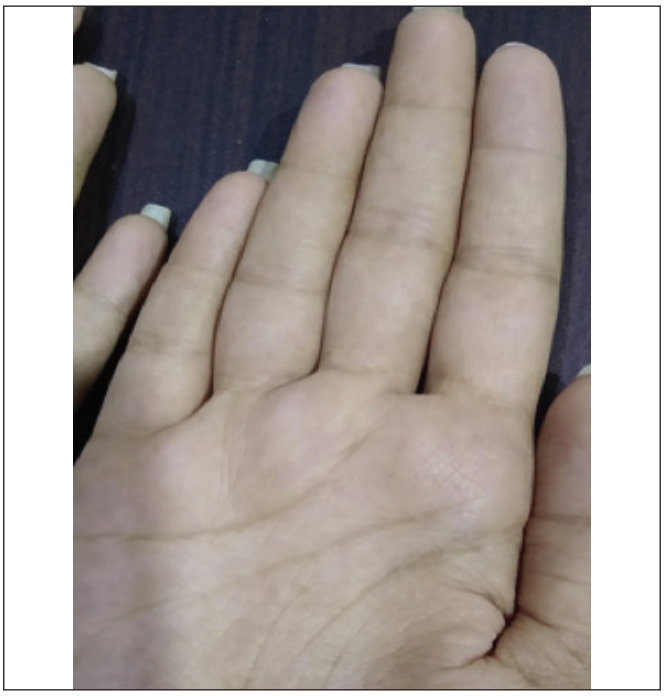

Fig. (1): Loss of fingerprints.

During the examination of her palm, we noticed that her palms were excessively wet and upon further inquiry, she admitted to having excessive sweating only in her palms and soles for the last 5 years. After detailed history and exclusion of signs and symptoms of hyperthyroidism and any other chronic illness, she

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informed us about her diagnosis of hyperhidrosis and atopic dermatitis for 5 years but for the last 2 years she was noncompliant with her medicines.

DISCUSSION

There are two different kinds of human skin (hair-bearing skin and non-hairy skin). Non-hairy skin (glabrous skin) is found on the soles and palms and has a prominent surface with alternating ridges and sulci giving rise to dermatoglyphics (fingerprints). Non-hairy skin has the compact stratum corneum which may be up to 10 times thicker compared to other body sites such as flexures, where the epidermis is thinnest.

SMARCAD1 gene mutation is a cause of adermatoglyphia [2]. This gene mutation passes down in an autosomal dominant pattern. SMARCAD1 gene makes 2 versions of protein a) Full-Length Version, b) Shorter–Length Version [2].

Full-Length version protein expresses in multiple tissues of the body and Shorter-Length version protein plays a critical role in dermatoglyphics formation. Dermatoglyphics develop Intra-uterine during fetal development and does not change the whole life ahead [1].

Shorter-length version protein is very important for human identity as this protein provides a unique identity to each human on this planet and the product of this protein is very useful in forensic medicine too.

Adermatoglyphia is a very common problem in old age when collagen gets disrupted and a person lost his/her fingerprints. But in young patients, this condition is very rare. Adermatoglyphia can be associated with many conditions *e.g.* hyperhidrosis, atopic dermatitis, trauma, surgery, or burn.

This condition can be very frustrating for young people as they have to face difficulty while making passports [3], during international traveling, making driving license, opening a bank account, unlocking smartphone and electronic devices as now the whole world has become digitalize [4, 5]. The worst part of this condition is that in our society it is not taken as a problem, society and law enforcement agencies all over the world are not aware of this condition very much [6].

A medical certificate from a registered practicing dermatologist is required but this is a temporary solution in addition to this retinal scanning and face scanning can be the alternative options for the identity of the patient.

It has been evident that hyperhidrosis and dry skin affect the glabrous skin and make the glabrous skin thin and the alternating ridges and sulci which makes dermatoglyphics less prominent and patients start losing fingerprints at a young age. Few scarce syndromes under the classification of ectodermal dysplasia *e.g.* naegeli-franceschetti-jadassohn syndrome and dermatographia pigmentosa reticularis have features of adermatoglyphia.

Adermatoglyphia is a very rare condition in young persons [1]. This condition can be by birth or it can be acquired by *e.g.* burn, trauma, self-induced, etc.

CONCLUSION

Any disease that can affect the sweat glands, hair follicles, ridges can affect fingerprints. Adermatoglyphia can be inherited by the deficiency of the SMARCAD1 gene that has been passed down in an autosomal dominant pattern and can be acquired *e.g.* in hyperhidrosis, trauma, burn, self-induced, atopic dermatitis patients and in some rare diseases. Adermatoglyphia is a very concerning problem for proving self-identification *e.g.* in making national identity documents and passports and during international traveling while giving fingerprint identification abroad during immigration. The patient has to carry a certified medical certificate to prove that the patient either lost or doesn't have fingerprints. Awareness should be provided on national and international forums about this condition as in our society and law enforcement agencies are not very much aware and don’t take this problem very seriously.

CONFLICT OF INTEREST

The authors declare no conflict of interest.

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Declared none.

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