



ORIGINAL ARTICLE

Outcome of Patch Test on Crack Sole among Bangladeshi Population

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Abstract

Background: Crack sole may produce significant morbidity among the physical labourer. **Objective:** The purpose of this study was to find out the patch test result in crack sole which was due to allergic contactants. **Methodology:** This test was conducted in the Department at Dermatology and Venereology of Bangabandhu Sheikh Mujib Medical University (BSMMU), Dhaka, Bangladesh from July 2001 to June 2002 for a period of one year. Patients with crack sole were selected as study population. All patients were asked about the details clinical history. Patch test was done by individually prepared aluminium Finn Chamber mounted on scanpore tape. **Result:** A total number of 15 patients were recruited for this study after fulfilling the inclusion and exclusion criteria. The age range was 8 years to 70 years. Among 15 patients 3 patients were patch test positive remaining 12 patients were patch test negative. Two patient were female and one was male. **Conclusion:** In conclusion patch test is positive among the crack sole patients. [*Journal of Current and Advance Medical Research, July 2020;7(2):64-67*]

Keywords: Outcome; Patch Test; Crack Sole; Bangladeshi Population

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Introduction

Crack sole or fissure is defined as a cleft through the epidermis or dermis caused by various diseases or injury¹. The crack may be single or multiple. It may vary from being cracks to deep clefts, few millimeter to few centimeter in length with sharply

defined margins². They be dry, moist, or oozy, clefts may be different shapes. It may be straight curved, irregular, branched or reticulated color of the cracks varies may be red brown black gray or flesh colour³. Crack sole or fissured sole is a common problem in dermatology⁴. A great number of peoples in our country are suffering' from

hyperkeratosis that may lead to fissure.

As the sole of the foot plays an important role in walking and protecting underlying structures, cracking of the sole produces various kinds of disturbances in the daily activities of an individual⁵. Most of the patients do not give due attention to the cracks unless it becomes painful. Hyperkeratosis of the palms and soles produce a high degree of unsightliness as to render the unfortunate victims a social outcast. The horny plaques, thick skin, pain, tearing and fissuring seriously interfere even prohibit⁶.

Palmoplantar keratoderma PPKs comprise a heterogeneous group of disorder of keratinization which could be subdivided into hereditary and acquired form. The most classification are based on morphology distribution associated symptoms and mode of inheritance⁷. Crack sole may develops unilateral or bilateral with localize or diffuse scale and hyperkeratosis.

Fissure of the sole may be superficial or deep seated. Some patient report with secondary infection and inflammation of the foot, painful fissures, scalling and a moist white appearance when comes in contact with water are the common features of the disease⁸. Hyperkeratosis of the palms and soles is the most common accompanying symptoms. The hyperkeratosis of the palms and soles may persist throughout life but spontaneous remission may occur⁹. Crack sole is not life threatening disease. Sometimes affects the quality of life especially those who develop painful fissure. It has high social impact and very much embarrassing to the individual cosmetically especially in young females.

Majority of the patients with crack sole do not seek medical treatment even after developing painful crack as they pay less important to their sole health care¹⁰. As it is very difficult to find out the cause of the crack sole most of the patients without confirming the exact cause are being treated by keratolytic agents, which relieves temporarily¹¹.

Careful history taking, physical examination, histological examination of the skin, Patch test and confirmation of the associated cutaneous and systemic disease factor initiating or aggravating the crack sole may help to find out the exact cause of the crack sole. This present study was undertaken to find out the patch test result in crack sole which was due to allergic contestants.

Methodology

This test was conducted in the department at Dermatology and Venereology of Bangabandhu Sheikh Mujib Medical University (BSMMU) former IPGM&R, Dhaka, Bangladesh from July 2001 to May 2002. A total of 15 (fifteen) patients of crack sole attended in the department of Dermatology and Venereology patch test room of BSMMU. Thorough history was taken from all 15 crack sole patients attended to Department of Dermatology and Venereology of BSMMU. All patients were asked regarding his/ her symptoms, duration of lesion, aggravating factors, nature of footwear, walking habit, occupation, family history, mental status any seasonal variation, menstrual and menopausal history (in case of female) sexual contact history had also been asked. Patch test was done by individually prepared aluminium Finn Chamber mounted on scanpore tape and fixed on upper back of patients. Reading was taken after 48 hours and 96 hours.

Result

A total number of 15 patients were recruited for this study after fulfilling the inclusion and exclusion criteria. The age range was 8 years to 70 years Median duration of the disease was 2 years. Patients were students, school teacher, housewife and service holder (Table 1).

Table 1: Age and Gender Distribution of Study Population (n=15)

Age Group	Frequency	Percent
Less than 20 Years	5	33.3
20 to 40 Years	4	26.7
40 to 60 Years	4	26.7
More Than 60 Years	2	13.3
Total	15	100.0

Among the total 15 patients male and female ratio were approximately same. Males were 8 and females were 7 (Table 2).

Table 2: Gender Distribution of Study Population (n=15)

Gender	Frequency	Percent
Male	7	46.7
Female	8	53.3
Total	15	100.0

Among 15 patients 3 patients were patch test

positive remaining 12 patients were patch test negative. Two patient were female and one was male (Table 3).

Table 3: Patch Test Result among Study Population (n=15)

Result	Frequency	Percent
Positive	3	20.0
Negative	12	80.0
Total	15	100

Discussion

Crack sole is prevalent worldwide but is more common in third world countries may be due to malnutrition walking habit and working in the field in barefoot, crack sole is more common among farmers, road construction workers, rickshaw pullers beggars and vagabonds¹¹. Cracks sole may develop at any ages and a both sexes but it is more common in old ages especially in females after menopause¹².

Exact cause of crack sole is unknown. It may a familial due to genetic abnormalities or may be associated with many cutaneous and systemic disease¹³. Little is known about etiology and pathogenesis of different types of inherited and acquired palmoplantar keratoderma⁷.

A total number of 15 patients were recruited for this study after fulfilling the inclusion and exclusion criteria. The age range was 8 years to 70 years Median duration of the disease was 2 years. Patients were students, school teacher, housewife and service holder.

The patch test is used to detect hypersensitivity to a substance that is in contact with the skin so that the allergen may be determined and corrective measures taken¹⁴. There are so many allergens causing allergic contact dermatitis that is impossible to test a person for all of them. In addition a good history and observation of the dermatitis, its localization on the body and its state of activity are all helpful in determining the cause¹¹. The patch test is confirmatory and diagnostic but only within the frame work of the history and physical findings it is rarely helpful if it must stand alone.

Among the total 15 patients male and female ratio were approximately same. Males were 8 and females were 7. Among 15 patients 3 patients were patch test positive remaining 12 patients were patch

test negative. Two patient were female and one was male. Pain, itching and bleeding are the predominant symptoms. Pain, developed due to trauma and secondary infection. Itching is more common in Tinea pedis, JPD and discoloid, eczema, bleeding is more common in psoriasis.

Shape of the crack sometimes is an important diagnostic tool⁵. Usually infection diseases like tinea pedis, TVC and LL produced irregular shaped cracks chronic disease with prolonged course produced thick skin and linear cracks¹⁵. Linear cracks due to familial keratoderma, ichthyosis keratoderma elimactericum, PRP and NUL. Chronic arsenicosis and JPD produced reticulated shaped cracks distribution of cracks on the sole is not uniform. It has been previously described that involvement of the instep of soles is characteristics of Tinea Pedis and JPD. Keratoderma elimacterium, psoriasis and PRP produced cracks at the sides of the sole. In chronic arsenicosis crack developed in the pressure area, sides of the sole and heel. Number of cracks takes an important role in the diagnosis of the cause. In the Tinea pedis, psoriasis, familial keratoderma & JPD cases the number of cracks are few (2-10) whereas in chronic arsenicosis the number of cracks are numerous (>20).

From the present study, it is very clear that crack sole may develop from hypersensitivity to a substances that is contact with the skin. Two female and one male patient were Patch test positive. Three positive Patch test patients were due to Tixocortol-21-pivalate, 2-hydroxy-4 methoxy benzophenon, Isopropyl myristate used as emollient in cosmetics and pharmaceutical bases. Though crack sole is not a disease but a manifestation of many cutaneous and systemic diseases which may be acquired or hereditary. The patch test consists, of application to the intact un-inflamed skin in non-irritating concentration of substances suspected to be causes of the contact dermatitis. Patch testing may be administered by the thin layer rapid use epicutaneous (TRUE) test or by individually prepared aluminium (Finn) chambers mounted on scanpore tape¹⁶. The TRUE test has resulted in more screening for allergic contact dermatitis than in the past. However if this test does not reveal the allergen for a highly suspect dermatitis.

Strong patch test reactions may induce a state of hyperirritability (angry back) in which negative tests appear as weakly positive⁹. Because the phenomenon is not limited to the back. Darling et al¹¹ have suggested that it be called the excited skin syndrome. They concluded that weakly positive test

results in this presence of strong ones do not prove sensitivity. There is wide variation in the ability of the skin and mucous membrane to react to antigens. The oral, mucosa is more resistant to primary irritants and is less liable to be involved in allergic reactions¹¹. This may be because the keratin layer of the skin more readily combine with haptens to form allergens. Also the oral mucosa is bathed in saliva, which cleanses and buffers the area and dilutes irritants, However, investigation such as those of Holden and Gawkrödger¹⁵ demonstrate the utility of patch testing for various types of oral signs and symptoms such as swelling, lingling and burning, perioral dermatitis and the appearance of oral lichen planus.

Conclusion

From the present study, it is concluded that crack sole may develop from hypersensitivity to a substances that is contact with the skin. The positive Patch test patients are due to Tixocortol-21-pivalate, 2-hydroxy-4 methoxy benzophenon, Isopropyl myristate are used as emollient in cosmetics and pharmaceutical bases. Though crack sole is not a disease but a manifestation of many cutaneous and systemic diseases may be acquired or hereditary.

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