JETIR.ORG ISSN: 2349-5162 | ESTD Year : 2014 | Monthly Issue
JOURNAL OF EMERGING TECHNOLOGIES AND INNOVATIVE RESEARCH (JETIR)
An International Scholarly Open Access, Peer-reviewed, Refereed Journal

Review on Heel Fissure and Their Management

Tejaswini Deepak Sanap

Prof, Jyoti.R.Pawar

B,Pharmacy, Dr. Naikwadi College of Pharmacy, A/P- Jamgaon .Tal-Sinnar. Dist- Nashik-422103, Maharashtra, India.

***Corresponding author:**

Department of Pharmaceutics,

Dr. Naikwadi College of Pharmacy,

A/P- Jamgaon, Tal- Sinnar, Dist- Nashik-422103,

Maharashtra, India

Abstract:- Anhidrosis or xerosis can cause heel fissures, which are splits or fissures in the skin's surface that may or may not be accompanied by hyperkeratosis. When fissures pierce the dermis deeply, they may become painful. Callus formation usually happens on the heel's rim. Though it may have a thick callus that results in regions of discoloured skin, especially along the inside edge of the heel, that are yellow or dark brown in colour, the skin is usually dry. It not only indicates dehydration or excessive exposure, but it also points to improper foot care. Numerous non-surgical techniques, topical adhesives, DIY remedies, and cosmetic treatments for heel fissures are provided in this article. the prevalence of foot problems as well. several biophysical traits of the skin and the measurements that go along with them. The classification of the fissure according to the measurement of the xerosis assessment score is explained.

Key words:- Anhidrosis, callus, dry skin, emollient , hyperkeratosis, moisturizer , xerosis, hill fissure.

Introduction:-

Heel fissure disorders can be painful and uncomfortable, making them unsightly and ultimately lowering the quality of life for those who are affected. In addition, diabetics and older clients have other peripheral issues. Vascular disease makes the foot vulnerable to infection, ulceration, and amputation. Callus can affect a person's balance as they age, increasing their risk of falling. [1] The fissures are regarded as partial-thickness skin lesions and are more prone to infection. Full-thickness ulcers could develop as a result of the fissure's continued growth.

Fig:- Heel fissure feat

leaving an open wound that may lead to cellulitis and a more serious infection, especially in people with diabetes and peripheral vascular disease [2]. It is commonly observed in stressed skin regions, including the heel border, and is associated with hyperkeratosis and anhidrosis. One of the main complaints of the patients is pain. humiliation, suffering, and blood. Walking and bearing weight can become difficult due to uneasiness, and the embarrassment A person's mental health may be impacted by having deep, abrasive heel cracks [3].

I.Sign of the xerosis illness is redness:- Cracks in addition to dry scaling. The stratum corneum of xerotica skin is changed by the makeup of the keratinization abnormalities. pH, sebum, water metabolism, surface lipids, and proliferation [4].

In Ayurveda, cracked heels are called padadari . It is now recognized as one of the primary problems with the aesthetic well-being of both sexes. It is most likely to affect people who travel great distances. frequent lengthy walks, often without proper foot care. It immediately affects a person's everyday routine. Heel cracks are a sign that you have neglected to moisturize or care for your feet. In the medical field, fractured heels are also known as heel fissures. Cracks are regular, linear incisions on the epidermis. It may occasionally become painful and pierce the skin deeply. Too much As pressure is placed on the foot pads, the feet spread apart. The dryness of the skin on the sides of the feet causes it to crack, which results in cracked heels [5].

II. Foot Problem Prevalence in India: Not much research has been done in India on the efficacy of early therapy for foot problems in both diabetics and non-diabetics. not being diabetic. Ninety-three (42%) of the 224 participants in this poll reported having diabetes. Thirty people suffered from foot ulcers. Upon closer examination, diabetic participants reported foot issues. identified as risk factors for ulceration, including limb neuropathy in 23 participants (25%) and peripheral arterial disease in 29 people (31%) with fissures and 21 participants with corns and/or calluses. Ten patients (58% of the total) had ulcers.

None of the participants had diabetes. Similar to the diabetes group, the number of skin lesions found included cracks in 41 (31%), corns and/or calluses in 32 (24%), peripheral arterial disease in 12 persons (9%), and peripheral neuropathy in seven participants (5%), according to the analysis [6]. Neurosis is among the most common abnormalities. More than 40% of cases were discovered in diabetic foot, which promotes ulceration and hyperkeratosis [7].

III. Reasons for Heel Cracks: The thick stratum cornea that makes up heel skin is designed to support the body's weight. There are extremely few sebaceous glands and a large number of ermine and sweat glands on the bottoms of the feet. As a result, the skin's surface experiences significant water loss [8]. People who are poor and illiterate wear shoes incorrectly. It has been found that the development of heel fissures and hyperkeratosis in the Indian population is influenced by sociocultural practices such as walking barefoot, skipping socks, especially in women, and the tardiness with which foot lesions appear [6]. Two of the primary causes include wearing open-heeled shoes, which cause the heel to expand and increase pressure, and standing for extended periods of time, especially on hard surfaces.

IV. Managing Heel Cracks:

A. Applying cosmetics to prevent heel cracks: - Moisturizers are part of preventative maintenance. It has been shown that urea-containing emollients significantly increase hydration, which in turn immediately improves the suppleness and smoothness of the skin [7]. By consistently utilizing catalysts to reduce hyperkeratosis and applying the right emollient to moisturize the tissues and restore the epidermal barrier, the skin integrity of the superficial heel fissures can be improved. By removing moisture from the dermis and bringing it into the epidermis, added humectants help emollients' occlusive activity and preserve the moisture content of cells [2].

For topical treatments of neurosis, commercially available formulations comprising urea, salicylic acid, and α hydroxyl acids (such lactic and glycolic acids) have been widely used. A catalyst that softens the corneal layer is salicylic acid. Water is absorbed in the stratum cornea when urea levels rise, increasing the water-binding capacity [4]. Using moisturizers to restore the skin's elasticity and smoothness is necessary to prevent the appearance of dry or cracked skin [13].

B. Topically applied tissue adhesive :-The Cochrane review demonstrated the benefits of this technique over the traditional type of closure. In the well-managed heel fissures, Octyl-Blend10TM tissue adhesive may be useful in conjunction with the two cyanoacrylates [3].

C. Non-surgical treatment: A product called Heel Protector Made of Soft Medical Silicone Gel helps prevent skin peeling and breaking. Tsurutsuru (Kt) socks made by Kakato: Kt socks contain naturally moisturizing substances that support the heel stratum's ability to retain water cornea and have the ability to retain sweat that evaporates. These findings suggest that Kt socks may improve. heels with dry skin [15].

D. The synthetic drug: Timolol promotes keratinocyte migration and re-epithelialization. β2-antagonist secretion affects the lamellar body, rebuilding the protective layer of the skin. Heel fissure healing may have been aided by a similar method [10].

E. Treating Heel Fissures with Herbal Extract:-

I) Centella asiatica leaf extract: Centella asiatica is a perennial herbaceous creeper. It is a member of the Apiceae (Umbelliferae) family and has been extensively studied in Ayurveda. Academic studies have validated the use of Centella asiatica for a variety of conditions, including wound healing. In vivo study reports showed quicker epithelial growth and higher collagen synthesis and cell proliferation at wound sites. One specific Centella component. Asiatica, also known as asiaticoside, has been reported to improve the tensile strength of newly created skin around lesions [9].

II) Euphorbia Caducifolia: Euphorbia caducifolia latex is noted for its antimicrobial, antifungal, and antibacterial properties in addition to its reputation as poisonous and skin-irritating. Euphorbia caducifolia latex is probably included in the formulation because it regains the Sneha and Ushna Gunas, which lower vitiated Vata. The heel crack heals as a result [16].

III) The Terminalia chebula: In Ayurveda, Terminalia chebula is said to balance the three vitiated humors of pitta, kapha, and vata. It soothes the Vata Dosha in particular. Ghee calms agitated Pitta and Vata. As a result, haritaki paste helps to soothe vitiated Vata. When it comes to treating Padadari patients and reducing their symptoms, dosha is beneficial. Rats' inflammation is reduced in a dose-dependent manner by Terminalia chebula fruit. Additionally, rats with diabetes benefit greatly from the hydroalcoholic extract of Terminalia chebula fruit in terms of wound healing [17].

IV) Vrukshamla beeja taila: Broken hands and feet are treated with seed oil, sometimes referred to as ghee or oil of kum. It makes normalization easier. Vatadosha was vitiated by Ushna [18].

V) Shudha Hingul, Teel tail, Jatyadi tail, and Ral (shudha):- Goghrit, Jatyadi tail, Teel tail, and Shudha Hingul may promote smooth, hydrated skin, which may promote healing of foot cracks, reduce symptoms, and promote a suitable recovery [19].

VI) Sesame seeds: These are plant-based oil extracts. It can spread throughout the body by penetrating bodily tissues. It fixes the cracks in the shoes [20].

F. Natural Treatments for Heel Fissures:-

i) Coconut oil-This oil possesses antiseptic, antimicrobial, and wound-healing qualities. healing properties that protect skin from bacterial infections [21]. Coconut oil and mineral oil have comparable results. Both show a discernible improvement in skin hydration [22].

ii) Almond oil-Defects in the function of the skin barrier are linked to heel fissures. Fatty acids included in almond oil aid in the rapid healing of heel cracks. It keeps the skin from losing water [23].

iii) Olive oil-Olive oil is a rich source of antioxidants, including vitamin E. It supports skin healing with its antioxidant and anti-inflammatory characteristics. Subject-specific Oil application improves the integrity and barrier function of the epidermis [23].

iv) Honey- It is a natural moisturizer. It prevents the skin's natural moisture loss. It assisted in restoring dry and damaged skin and softening it even further. Honey has the capacity to heal wounds and possesses antibacterial qualities [24].

v) Aloe Vera- It has good moisturizing qualities. It is used to treat dry skin because of its moisturizing qualities. Aloe vera and dietary supplements include specific minerals with potent antioxidants that promote skin healing. Subject-specific Applying aloe vera gel increases the synthesis of collagen. This promotes skin crack healing [25].

vi) Grind ginger- Turmeric has anti-inflammatory and antibacterial qualities. qualities. The mixture of castor oil and turmeric powder was used to treat fractures [26].

Conclusion:-

These days, it's important to take care of your feet because they might cause many diseases. Diabetes patients may develop severe cracks or fissures in their heels, which could damage the epidermis. damage to the dermis It might cause ulceration, amputation, and a bacterial infection. The sick people's life and thoughts are made uncomfortable by the heel cracks. It is thought to be a cosmetic problem. There are numerous alternatives for cosmetic procedures. to check for heel cracks. Applying moisturizers has many advantages. The dry skin is the main reason for the cracking. Therefore, a variety of cosmetics, such as humectants and emollients, are applied to the cracks. Non-surgical gel heel protectors and socks are used. The tissue adhesive works well for heel fissures as well.

References: -

[1] Hashmi F, Wright C, Nester C, Lam S. The reliability of non-invasive biophysical outcome measures for evaluating normal and hyperkeratotic foot skin. Journal of foot and ankle research. 2015;8(1):28.

[2] Longhurst B, Steele C. Dry heel fissures: Treatment and prevention.Dermatological Nursing. 2016;15(3):46-9.

[3] Longhurst B, Allan E, Bristow I. The use of cyanoacrylates in the management of dry heel fissures: a preliminary study. Podiatry Now. 2010;13(9):11-5.

[4] Bikowski. Hyperkeratosis of the heels: treatment with salicylic acid in a novel delivery system. Dermatology for the Clinician.2004;3(6):350-1.

[5] Arali DSA. A Comparative Clinical Study of Grithayavakshara Lepa and Katutaila in Management of Padadari W.S.R Rhagades. International Journal of Advance Research, Ideas and Innovations in Technology. 2017;3(1):928-32.

[6] Harrison-Blount M, Hashmi F, Nester C, Williams AE. The prevalence of foot problems in an Indian population. The Diabetic Foot Journal. 2017;20(2):95-102.

[7] Kate Carter AM, Judith Anders, Martin Grant, Elizabeth Cheek. A study to assess a cosmetic product in the treatment of cracked heels among diabetics.Dermatological Nursing. 2013;12(3):44-50.

[8] Choi JY, Kim EJ, Jang SI, Kim AR, Lee TJ, Lee HK. A new technique for evaluating heel xerosis grade and the effects of moisturizer on heel skin dryness. Skin Res Technol.2018;24(4):557-61.

[9] Majeed M, Vaidyanathan P, Mundkur L, Majeed S, Sable P, Vuppala KK. Efficacy of Centella Asiatica Extract in the Management of Cracked Feet: In Vitro and Clinical Evidence. World Journal of Pharmacy and Pharmaceutical Sciences. 2016;5(12):983-94.

[10] Pawar M. The title of the paper: Treatment of painful and deep fissures of heel with topical timolol. J Am Acad
Dermatol. 2020.

[11] Bristow I. Hyperkeratosis of the foot: part 1. Podiatry Review. 2015;72(1):16-23.

[12] Hashmi F, Nester C, Wright C, Newton V, Lam S. Characterising the biophysical properties of normal and hyperkeratotic foot skin. Journal of foot and ankle research. 2015;8(1):1-10.

[13] Gin H, Rorive M, Gautier S, Condomines M, Saint Aroman M,Garrigue E. Treatment by a moisturizer of xerosis and cracks of the feet in men and women with diabetes: a randomized,double-blind, placebo-controlled study. Diabet Med. 2017;34(9):1309-17.

[14] Yu D, Si-yuan X, Ying W, Fu-sheng W, Yu W, Xu-ying X, et al.Nonsurgical treatment for foot deformities and lesions in patients with diabetes mellitus. The Journal of Diabetic Foot Complications.2017;9(1):8-14.

[15] Kamo A, Umehara Y, Negi O, Iwata M, Kamata Y, Suga Y, et al. Effects ofKakato-tsurutsuru socks on dry heels in healthy volunteer subjects. The Journal of Dermatology.2020;47(4):413-7.

[16] Pathak J, Acharya R. Clinical Efficacy of Snuhi Based Formulation On Padadari. IJRMST, 2019;8:116-22.

[17] KMSP ESEP, Perera P. A clinical study on effect of paste of haritaki (terminalia chebula retz) in padadari (cracked feet). Jour of Ayurveda & Holistic Medicine. 2014;2(3):1-5.

[18] Mohammed1 F, SVJ, SBT. Clinical Efficacy of Vrukshamla Beeja Taila (Kokum Butter) in the Management ofPadadari (Cracked Heels). Ayu Med Sci.2017;2(2):209-13.

19] Reddy KR. Clinical Evaluation of the Efficacy of an Ayurvedic Cream Healmate in the Management of Cracked Heels (Pad-Dari). International Journal of Applied Ayurved Research.2017;3(2):359-63.

[20] Naveed-Us-Saher Khan, DSuresh B. Katre, Surekha Pillewan. Role of padabhyanga of til taila in padadari (cracked heels). International Journal of Innovative Pharmaceutical Sciences and Research. 2017;5(10):131-6.

[21] Poljšak N, Kreft S, Kočevar Glavač N. Vegetable butters and oils in skin wound healing: Scientific evidence for new opportunities in dermatology. Phytother Res. 2020;34(2):254-69.

[22] Agero AL,Verallo-Rowell VM. A randomized double-blind controlled trial comparing extra virgin coconut oil with mineral oil as a moisturizer for mild to moderate xerosis. Dermatitis: contact, atopic, occupational, drug.2004;15(3):109-16.

[23] Lin TK, Zhong L, Santiago JL. Anti-Inflammatory and Skin Barrier Repair Effects of Topical Application of Some Plant Oils. Int J Mol Sci. 2017;19(1).

[24]Ediriweera ER, Premarathna NY. Medicinal and cosmetic uses of Bee's Honey - A review. Ayu.2012;33(2):178-82.

[25] Amar Surjushe RV, and D G Saple. Aloe vera: A short review. Indian J Dermatol. 2008;53(4):163-6.

[26]Chandramouleeswaran P. Foot care through ayurveda. International Journal of Research in Ayurveda & Pharmacy. 2011;2(6):1635-6.