

A SPECULATIVE GLANCE ON DISEASE KADARA AND ITS MANAGEMENT

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ABSTRACT

Ayurveda has a rich and comprehensive concept of life and health. Callosity is a French word meaning a local thickened or hardened part of the skin. It is a plaque of hyperkeratosis caused by repeated friction or pressure. It is assumed that frictional forces induce hyperkeratosis leading to thickening of stratum corneum of the skin over certain areas prone to mechanical stresses. Kadara, as described by the Samhitas, can be closely related to lesions of the skin caused by hyperkeratosis. Kadara has been enumerated and described in the classical literature under the heading of Kshudra Roga. Being overweight too, could lead to developing a corn as the excess weight increases the pressure on the feet. It also affects the person's gait, which in turn puts abnormal pressure on the soles. Corns may or may not be painful. Some corns are so silent they often go untreated, which is detrimental to your feet in the long run. Ayurveda deems corns as a less significant disease [kshudra roga] and ascribes them to imbalance of the kapha and vata doshas.

KEYWORDS: Kshudraroga, Kadara, Callosity, Corn, Agnikarma

INTRODUCTION

Ayurveda has a rich and comprehensive concept of life and health; taking into account all parts of human existence from the abstract transcendental value to its most concrete expressions in human physiology. Callosity is a French word meaning a local thickened or hardened part of the skin.^[1] It is a plaque of hyperkeratosis caused by repeated friction or pressure.^[2] It is assumed that frictional forces induce hyperkeratosis leading to thickening of stratum corneum of the skin over certain areas prone to mechanical stresses. If these frictional forces are distributed over a broader area, a callus occurs.^[3] In a callus, there is epidermal hyperplasia. The stratum corneum is

thickened and compacted, sometimes with parakeratosis over the dermal papillae leading to expansion of the granular layer. The underlying dermis may show an increase in dermal collagen and fibrosis around the neurovascular bundles.^[1] Kadara as described in classical Ayurvedic literature can be closely related to lesions of the skin caused by hyperkeratosis. Kadara has been enumerated and described in the classical literature under the heading of Kshudra Roga.^[4,5,6] However, meagre this disease may seem to be, it has a major impact on the physical fitness and mental tranquility of the patient.

Ayurvedic classics have advocated the use of various procedures to treat *Kshudra Roga*. *Agni Karma* has been mentioned for the proper management of *Kadara*.^[7,8,9] The management of *Kadara* is aimed at removal of the hyperkeratosis lesion by *Agni Karma* along with or without *Shashtra Karma*. *Agni Karma* can be done using different types of instruments depending on the nature of disease and the site of lesion. Some of the instruments include *Pippali*, *Aja Shakrita*, *Godanta*, *Kshara*, *Shalaka*, *Jambvoushtha*, *Ghritha*, and *Majja*.^[10]

Agni has been considered superior among the *Anushastras* for possessing fast action and permanent cure. It has been attributed the quality of curing the diseases which cannot be cured by other therapeutic measures such as surgery treatment with *Kshara* and medicinal management.

A SHORT REVIEW ON KSHUDRA ROGAS

As far as *Brihatrayi* is concerned, *Sushruta Samhita* and *Ashtanga Hridayam* have described *Kshudraroga* in separate chapters. After *Madhavidana*, *Bhavaprakash Samhita*, *Sharangadhara Samhita* and *Yogaratanakara* also elaborate chapters on *Kshudraroga*. Almost each and every *Kshudraroga* explained by these Acharyas is near about similar except for few variations. There is some variation in the terminology of some *Kshudrarogas* whereas in others symptoms change a little bit while in rest of them treatment part varies. This creates confusion to some extent. Further more, one meaning of *Kshudraroga* is given as disease occurring in children, as stated in *Madhukosha* commentary^[11]. Whereas *Madhavanidana* includes all those severe or

non-severe with less pain or without pain, small or big, all diseases are grouped as *Kshudraroga*^[12].

There are few diseases which have simple pathology but difficult to cure that are called as *Kshudra-roga*. *Kadara* is one among the *Kshudra Roga*. *Kadara* (corn) is initially painless condition but with its progress, it may become painful.

Vyutpatti

According to *Sabdakalpadruma* the word *Kadara* is derived from the union of words *Ka+dru+Ach*

Nirukthi

Kena-Vayuna pada visishtabagam drunathi darayathi nasayathi ithi kadara”.

Paribhasha

Kadara is a deep seated hard painful growth present over the hands and feet, having a raised central portion resembling the seed of *Badara* (*Kola matram*). It is caused by friction or repeated injury that vitiates the *Kapha* and *Vata* dosha leading to the formation of *Kadara*.

Paryaya (Synonyms)

S.No.	Language	Word used
1.	Sanskrit	Kadara, Keena, Kantakam, Sharkara
2.	Kannada	Ane/ Ani
3.	Malyalam	Aani
4.	Tamil	Aani
5.	Gujarati	Kadar
6.	English	Corn/ Clavus

Nidana

The knowledge of *Nidana* is essential for the understanding of *Samprapti* and to determine the *Sadhyasadyata* and *Chikitsa*. In *Ayurveda*, *Nidana* have been given at most importance because the first line of treatment is *Nidana parivarjana*.

The most important etiological factors described in Sushruta Samhita in respect of Kadara are injury to the pada because of thorn prick, stone, and any type of cut injury or repeated pressure over the foot during barefoot walking. Doshas also play an important role as Nidana. Vitiating of Vata and Kapha along with Rakta gives rise to changes which are more confined to parts of the skin subjected to friction and pressure effects.

According to Astanga Hridaya, Madhava Nidana, Bhavaprakasha and Gada nigraha

aghata by rough stones or prick of thorns causing a wound on the soles will result into Kadara

Samprapti

The above mentioned Nidana causes aghata to the pada results in aggravation of Vata and Kapha Doshas. Aggravated Doshas internally vitiate Medha and Rakta dhatus. With the involvement of these Doshas and Dhatus, a hard swelling is produced. The swelling resembles to Kola. This condition is known as Kadara.



Samprapti ghataka

Doshas : Vata & Kapha

Dooshya : Twak, Rakta, and Medhas

Agni : Jatargni: Manda, Dhatwagni:

Manda

Srotas : Rakta and Medhovaha

Srotodusti prakara : Sanga

Udbhava Sthana : Pada

Sanchara Sthana : Raktavahini sira

Roga-Marga : Bahya

Adhithana : Pada

Vyaktasthana : Pada

Roopa of Kadara

S.No.	Samhita	Roopas mentioned
1.	Sushruta Samhita ^[13]	Hard nodule like growth having risen edges which is painful and may present with some secretions.

2.	Ashtang Hridaya ^[12]	A hard and raised nodule like growth present over the feet (or hands).
3.	Madhava Nidana ^[11]	A hard and raised nodule like growth present over the feet (or hands).
4.	Yogaratanakara ^[9]	A hard and raised nodule like growth present over the feet (or hands).
5.	Vangasena ^[14]	A hard and raised nodule like growth present over the feet (or hands).

From the above mentioned roopas, the presenting features include Kathina Granthi (hard hyperkeratosis lesion), Kolawat/Keelawat utsannata (cone shaped lesion), Nimnamadhyonnata (growth is depressed in the centre with raised edges), Vedana (pain) and in rare cases Sraava (discharge). Sraava is a rare sign that may be seen only if the lesion gets infected.

Sadhya- Asadhyata

According to Sharangdhara Samhita, Kadara has been considered to be a Krichrasadhya disease.

MODERN REVIEW: CORN

Derivation

Corns are small calloused areas of skin caused by local pressure irritating tissue over a bony prominence. The word corn comes from the Latin cornu meaning horn or hoof.

Definition

A corn is a distinctively shaped callus of dead skin that usually occurs on thin or glabrous skin surfaces, especially on the dorsal surface of toes or fingers. They can sometimes occur on the thicker skin of the palms or bottom of the feet.

The hard part at the centre of the corn resembles a barley seed, which is like a funnel with a broad raised top and a pointed bottom. Because of their shape, corns intensify the pressure at the tip and can

cause deep tissue damage and ulceration. Hard corns are especially problematic for people with insensitive skin due to damaged nerves. The scientific name for a corn is heloma. A hard corn is called a heloma durum, while a soft corn is called a heloma molle.

The location of soft corns tends to differ from that of hard corns. Hard corns occur on dry, flat surfaces of skin. Soft corns (frequently found between adjacent toes) stay moist, keeping the surrounding skin soft. The corn's centre is not soft, however, but indurated.

Etiology

Both hard and soft corns are caused by pressure from unyielding structures. Abnormal mechanical stress may be intrinsic or extrinsic. Intrinsic factors include foot deformities, abnormal foot mechanics; and peripheral neuropathy. Extrinsic factors include poorly fitting footwear and heavy activity.

Aetio-pathogenesis

Corns are the result of mechanical trauma to the skin culminating in hyperplasia of the epidermis. Most commonly, friction and pressure between the bones of the foot and ill-fitting footwear cause a normal physiological response-proliferation of the Stratum corneum. One of the primary roles of the Stratum corneum is to provide a

barrier to mechanical injury. Any insult compromising this barrier causes homeostatic changes and the release of cytokines into the epidermis, stimulating an increase in synthesis of the Stratum corneum. With corns, external mechanical forces are focused on a localized area of the skin, ultimately leading to impaction of the Stratum corneum and the formation of a hard keratin plug that presses painfully into the papillary dermis.

Symptoms and Signs

Common Sites

Corn commonly involves the skin on the hand, feet and knees. The area of occurrence of corn in sole of the foot is mentioned here under as follows.

Site: Right /Left sole

- Antero lateral
- Antero medial
- Medial
- Lateral
- Postero lateral
- Postero medial

Symptoms

- A thick, rough area of skin.
- A hardened raised bump.
- Tenderness or pain under the skin.
- Flaky, dry or waxy skin.

Hard Corn (Heloma durum)

Corn develops when intermittent pressure occurs over a very limited area. Corn consists of a conical wedge of highly compressed Keratotic epithelial cells. The apex of the cone points towards the underlying bone, and impinges on the Malpighian layer of the dermis, with its nerve endings, which explains why corn is painful. A corn is characterized by a central core of white appearance composed of

degenerate cells and cholesterol. This core becomes apparent or more obvious when the superficial layer of the corn has been pared away. Because of the paring, the corn is seen to have a concave surface. Formerly it was thought that there was always a bursa beneath the apex of the corn, now it has been shown that in most instances there is no bursal sac but liquefaction has occurred in the depths of the corn. The corn is encircled by a narrow area of keratosis, which disappears gradually at the periphery. Palpation especially after removing of the superficial layer, reveal a bony projection beneath the cutaneous lesion. In contradistinction to callosities, corns occur chiefly where the normal skin is thin. Corns are found particularly on the 4th toe and over the dorsal projection of hammer toes.

Soft Corn (Heloma mollies)

It is soft because it occurs where maceration takes place. The site of appearance of a soft corn is at the bottom of the cleft between 4th and 5th toes where opposing prominent projections of the bases of the proximal phalanges gives rise to pressure and friction. The great pressure exerted on toes is shown by their prismatic shape. The apex of the prism is directed towards the intervening cleft. Soft corns are particularly painful due to its contour and consistency.

Prognosis

Corns if left untreated result in painful ambulation and also in subhelomal bursitis and blistering that can rupture to the surface. The close proximity of some corns to joints and bone septic arthritis and/or osteomyelitis can ensue. The mechanical forces that cause corns and calluses can also rupture portions of the sub-cutaneous vascular plexus,

leading to haemorrhage within keratotic tissue. In healthy patients, these observations are of minor significance, but in other cases (e.g. in diabetics and in patients with connective tissue disease), they may herald extensive skin ulceration or vasculitis.

Treatment

The main treatment for Corn lies in preventing further friction on that area. If friction persists and is not prevented; Corns are always likely to reoccur.

The lesion can be treated either by applying keratolytic agents locally or by surgical excision.

NON-SURGICAL TREATMENT

For local treatment an ointment containing 10 to 40% Salicylic Acid in Vaseline base should be liberally applied over the lesion which should be kept bandaged overnight. Next morning the softened keratin should be rubbed off and during the day this lesion should be protected from friction with the help of a cotton pad. Again at night the same ointment can be applied again and kept under bandage. This should be continued till the keratin plug has been shed off completely.

Salicylic Acid in collodin (20%) applied for a few nights followed by soaking in hot water are often effective in removing a corn.

SURGICAL TREATMENT

The surgical treatment is undertaken under local anesthesia and consists of removing the thickened keratin plug from the underlying epidermis by dissecting at the level of Stratum granulosum (which is visible as a dark brown layer). Following this, the base of the lesion should be cauterized with concentrated phenol or

tricolor acetic acid. Then the wound should be dressed with an antibiotic ointment. Cauterization of the wound with phenol or tricolor Acetic Acid should be repeated on the third or fourth day. Once the lesion has healed a daily massage with 10% Salicylic Acid in Vaseline for two or three weeks is considered sufficient to keep the skin soft.

When the Corn becomes too painful on pressure, a 5% aqueous solution of tricolor Acetic Acid should be prepared and a drop of this solution should be injected at the base of the Corn. It is convenient to take a large syringe preferably 10ml capacity and a wide bore (20 or 19 gauge) long needle. The needle should be inserted obliquely from the periphery of the corn to the extent that the tip of the needle lies at the base of the corn. Success of the injection can be judged from the fact that a pressure on the Corn after the injection would no longer elicit any pain. Apart from this if corn is due to orthopedic deformities it should be corrected properly.

When you get a corn...

-Soak your feet in salted warm water for 5 – 10 minutes to make the area soft. Then, scrub the area gently with the help of a pumice stone or some other scrubber to rub off the dead skin. After this, apply a medicated cream or gently massage the foot with coconut or mustard oil. You can even add Epsom salts to the water instead of regular salt.

-Add a capful of vinegar to warm water and douse your feet in it for 10 minutes. Then scrub gently and massage with a greasy oil like castor oil or olive oil for further lubrication. Tie a small piece of cotton/bandage dipped in vinegar onto the corn. Leave it in this position for a few

hours or overnight. Vinegar naturally sanitises dead skin tissue, making the affected area easier to clean and scrub off the dead tissue.

-Roast some turmeric powder in mustard oil and apply this paste when bearably hot to the corn. Cover it with a bandage and keep overnight.

-Mix one teaspoon of aloe vera gel with one half teaspoon of turmeric and apply on the corn.^[15]

-For chronic, hardened and persistent corns, you need advanced ayurvedic treatment by a physician

CHIKITSA

The treatment given for *Kadara* includes surgical excision and *agnikarma*. It has also been told that *Agnikarma* can be done with *Sneha* because of its quality of being *sukshma marga sanchari* i.e. it is able to penetrate deeper in the tissue thereby burning the root of the lesion. The *sneha dravya* to be used has been told to be *Tila Taila* as per *Chakradutta* and *Gadanigraha*. Following are other treatment modalities that are a compilation of methods mentioned by more recent authors in their respective books and also few *anubhuta yogas*:

-Massage skin with medicated oils such as *jatyaadi taila*, *kasisaadi taila* and *shadadhwata ghruta*.

-Application of a paste prepared out of *Shigru swarasa* and Copper sulphate to the site of lesion gives immediate cure.

-Internal medication that can be used for treatment of *Kadara* includes administration of *Dhatryadi Ghruta* followed by licking the paste of *Madhusnuhi* powder mixed with honey.

-Preparing a *kwatha* by mixing 1 part of *Hareetaki*, ½ part of *Yavachincha* with 6 parts of water and boiling this until it reduces to ¼th can be used to wash the affected part.

-A paste prepared by mixing Calcium Carbonate and Sodium Carbonate (washing soda) together with a little Coconut oil until uniform consistency is achieved. This paste can be used for external application in cases of *Kadara*.

-Hot oil prepared from Cashew nut shell can also be used for external application in *Kadara*.^[16]

DISCUSSION

The available literature in the ancient and modern medical books with regard to *Kadara* and *Corn* was compiled and critically analysed in Ayurvedic and Modern review. This enables one to understand the physiopathology of the *Kadara* and mode of action of the therapeutics in a better way. The literary review reveals that description of *Kadara* was first seen in *Sushruta samhita*. It is considered as a *Kshudra roga*. The similar description of *Sushruta* is available in other texts like *Astanga Hridaya*, *Astanga Sangraha*, *Bhavaprakasha* and *Sharngdhara samhita*. *Nidana* of *Kadara* are, *aghata* by thorns, stones or any cut wounds etc. The disease is having clinical features like pain and hardness. The management of this is by *chedana karma* followed by *Agni karma* with *sneha dravyas*. This disease can be compared to *Corn*. There are striking similarities in etiology, clinical features and management of both these conditions.

CONCLUSION

Kadara, as described by the *Samhitas*, can be closely related to lesions of the skin caused by hyperkeratosis. *Kadara* has been enumerated and described in the classical literature under the heading of *Kshudra Roga*. *Agni Karma* has been mentioned for the proper management of *Kadara*. *Kshudrarogas* do not have *Dosha*-wise subtypes. Internal causative factors of *Kshudrarogas* are not mentioned whereas external are specifically mentioned.

Most of the *Kshudrarogas* do not produce very much pain or discomfort. Still, one should not take medicinal trials and waste time to treat them if they are stated *Shastra Karmasadhya*.

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