A CRITICAL REVIEW ON NIDANA AND SAMPRAPTI OF DADRU KUSHTA WITH RESPECT TO DERMATOPHYTOSIS (FUNGAL INFECTION)

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Abstract

Human skin is the largest organ of the Integumentary system, forming a major interface between man and his environment. The skin is the first line of defence from the external factors. Due to modern lifestyle, food habits and usage of lots of chemicals, cosmetics, pesticides, fast foods, industrialization, and poor sanitation leading to many skin problems. In recent years, skin conditions are the burning cosmetic problem. Itching, redness etc. Symptoms of skin make people thoroughly miserable and frustrate the person with no end. Since ancient days to till date, skin ailments are a challenge for the physician and society as well. All the skin diseases are explained under the heading of Kushta. Dadru Kushta is one of the commonly occurring skin diseases, which has been considered as one of the Mahakushta by Acharya Sushruta and Vagbhata¹ and Kshudrakushta by Charakacharya². The involved Dosha is Kapha Pittaja³. Ayurveda has given much more importance to Nidana (causative factor) and Samprapti (pathology) as these two are the important components of Nidana Panchaka in understanding the pathogenesis of disease and its management.

Key words – Kushta, Dadruksuhta, Smparapti, Skin

INTRODUCTION

Human skin is the largest organ of the Integumentary system, forming a major interface between man and his environment. The skin is the first line of defence from the external factors. Due to modern lifestyle, food habits and usage of lots of chemicals, cosmetics, pesticides, fast foods, industrialization, and poor sanitation leading to many skin problems. In recent years, skin conditions are the burning cosmetic problem. Itching, redness etc. Symptoms of skin make
people thoroughly miserable and frustrate the person with no end. Since ancient days to till date, skin ailments are a challenge for the physician and society as well. In Ayurveda Twak Shareera has an important place. Twak is the main seat of Vaayu Mahabhoota (air element) and it is one among Panchagyanendriya (five sensory organs) which has function of Sparsha (touch)⁴. All the skin diseases are explained under the heading of Kushta. Dadru Kushta is one of the commonly occurring skin diseases, which has been considered as one of the Mahakushta by Acharya Sushruta and Vagbhata and Kshudrakushta by Charakacharya. Acharya Charaka mentioned Dadru Kushta under Chaturtha layer⁵. The involved Dosha is Kapha Pitta characterized by Kandu (itching), Raga (redness), Mandala (circular patches) and Pidaka (Papules)⁶. In modern science, it can be correlated with Tinea Infection commonly called Ringworm infection. It is a fungal infection of the skin, which is highly contagious. It is also called as Dermatophytosis. The main cause of this infection Dermatophyte which spreads by contact because of improper lifestyle, uncleanliness of body, sharing clothes, pets that might carry fungi⁷.

**DADRU KUSHTA**

Kushta is Santarpanajanya⁸, Raktapradoshaja Vikara⁹. It is also called Mahagada¹⁰. It is further divided into Mahakushta and Kshudrakushta. Dadru Kushta being one among Kushta is explained under Mahakushta by Acharya Sushruta and Vagbhata and Kshudrakushta by Acharya Charaka. It is a Kapha Pitta Pradhana Tridoshaja Vyadhi.

**NIDANA**

As there is no direct explanation of Nidana of Dadru Kushta Samanya Nidana of Kushta can be considered here¹¹, ¹².

**Viruddha Ahara –**

Intake of Samyoga (combination) and Virya (potency) Viruddha (incompatibility) Ahara like Fish and milk in combined form leads to Agni Dushti leading to Ama. By this there will be Tridosha Prakopa. Even by its Abhishyandi property it also causes Raktadushti.

**Adhyashana –**

Bhuktasya Upari Bhojanam¹³ that means having food just after previous meal. This will make Agnimandya leading to Ajeerna. There is increased
Kleda (unctuousness) Utpatti in body leading to Kushta.

Vishamashana-
That means having food in irregular time leading to pittakopa and Raktadushti turn lead to Vishamagni.
Excessive intake of Tila will cause Pittakopa Kushtakara, Guda is Krimikara, Lakucha being Nindya (not to be used) phala is Vishtambhaka and Tridoshakopaka. Excessive intake of Madhura Rasa and Guru Ahara leads to Ama and Ajeerna. Amla Rasa leads to Pittakopa, Raktadushtikara and Mamsashaithilyakara. Dadhi being Abhishyandi leads to kapha and Pitta Dushti which may leads to increase in Kapha Pittaja Vyadhi like Dadru Kushta.

Mithya Vihara
Swedasya Kleda Vidhrut that means Sweda does the Kleda Dharana (withholds). Due to climate variations (hot and cold), excessive hot and humid climate leads to Swedavaha Shrotodushti leading to Kushta (skin ailments).

Vishesha Nidana of Dadru Kushta
Dadru Kushta in the lights of Aupasargika Roga:

Kushta spreads from one person to another by Nishwasat (Inhalation of fungal spores in infected environment directly) Gatrasamparsha (by contact and touch), Sahashayyasana (by sharing beds) Vastra (sharing clothes, fomites etc). The mode of spread of Dadru kushta is similar to these; hence Dadru Kushta is an Aupasargika Vyadhi. In modern literature there is a striking similarity of this Aupasargika Roga with Dermatophytosis.

Vishesha Samprapti (Aupasargika)

Vishesha Nidana: like wearing wet and tight garments, synthetic garments,

\[\text{Excessive perspiration, obesity, diabetes}\]

Sanhramana of Krimi from affected person to other

Krimi enters through Sweda and vitatates Twak, Rakta and Lesika

Kandu, Raga, Mandala, Pidaka Utpatti (Dadru kushta)

Incidence of Disease
There is an increase in the incidence of skin conditions especially in the tropical and developing countries due to poverty, overcrowding, poor sanitation and personal hygiene, low standards of living along with high
humidity environments, pollution etc. Skin disease accounts for prevalence rate 10-20% of all consultation in general practice and out of them, fungal infection constitutes up to 20\%^{19}. In India after scabies and pyoderma Ringworm is the next common skin disease\(^{20}\). 39% of world population is suffering from it. In India also 5 out of 1000 people are suffering from Tinea infections\(^{21}\). North Karnataka is well known for its hot and humid conditions making its population at risk of many dermatophytic infections. Most common are Tinea Corporis and Tinea Cruris. These are common in age group of 21 to 40 years\(^{22}\).

**GEOGRAPHICAL DISTRIBUTION OF DERMATOPHYTOSIS\(^\text{23}\):**

Fungal infections of the skin, hair, and nails due to Dermatophytes are a common problem across the globe. Depending on the climate and culture, the clinical picture can differ. Tinea pedis and onychomycosis are the most prevalent clinical forms in western countries, while tinea capitis and tinea corporis are the most frequent forms in tropical areas.

**RISK FACTORS\(^\text{24}\):**

- Although dermatophytosis occurs worldwide, individual dermatophyte species may vary in their geographic distribution and self-virulence. These disorders cannot be differentiated by ethnicity or socioeconomic status, but poverty and overcrowded living conditions are important underlying social determinants. Factors contributing to the high frequency and chronic occurrences of dermatophytosis in developing countries may also include poor living conditions, children interaction patterns, and poor health seeking behaviour.

- Individuals of both sexes and all ages are susceptible to dermatophytoses; however, tinea capitis is more common in prepubescent children, and tinea cruris and tinea pedis are primarily diseases of adult males.

- Illness such as Obesity, Diabetes
- Extreme climate – Rainy season, Excessive heat, Humid climate, Moist conditions, damp areas
- Wearing tight fitting and wet clothings
- Infected fomites
- Immunocompromised conditions
There are approximately 40 different species of dermatophytes, of which the most common species that cause disease in human are Trichophyton rubrum, Trichophyton tonsurans, Trichophyton interdigitale, Trichophyton mentagrophytes, Microsporum canis and Epidermophyton floccosum. On a worldwide scale, T. Rubrum and T. Mentagrophytes account together for 80% to 90% of all dermatophytosis.25

CAUSES:
The infection is very common among children and people who have pets that may carry the spores of fungi, have wet skin condition, wearing wet clothings specially undergarments, who are having skin injuries or abrasions, improper lifestyle, by contact, use public showers, walking barefoot, and share hairbrushes or unwashed clothing and other fomites with other people which carry fungi in it.26

The fungi often tend to linger on clothes, towels, surfaces, and within brushes or combs.

The course of the disease is affected by Obesity, Diabetes, hot weather, humid climate; use of soaps and detergents and other fomites and those who have an increased risk of developing the infection, immunocompromised patients.27

PATHOGENESIS

Dermatophytes can survive solely on outer cornified layers of the skin. The ability of certain fungi to adhere to particular host arises from numerous mechanisms and host factors, including the ability to adapt to the human body. Natural infection is acquired by the deposition of viable arthrospores or hyphae on the surface of the susceptible individual. After the inoculation in the host skin, suitable conditions favor the infection to progress through the stages of adherence and penetration.

Development of host response is mostly by a T-cell mediated response of delayed-type hypersensitivity. Antibody formation does not seem to be protective. Natural defenses against dermatophytes depend on both immunological and nonimmunological mechanisms.

DEVELOPMENT OF HOST RESPONSE

Fungal metabolic products diffuse through the malphigian layer to cause erythema, vesicle or even pustule formation along with pruritus.
vivo activity is restricted to the zone of differentiation, newly differentiated keratin and Adamson's fringe within the hair shaft.

DISCUSSION:

Dadru Kushta is a Kaphapitta Pradhana Tridoshaja Vyadhi. Because of Mahaupakrama, Anubandhi Prakarsha, Kalaparakarsha Asadhyatvat it is considered under Mahakushta by Sushruta. That is as Dadru is a deep rooted recurring Vyadhi and involves deeper Dhatu and as the chronicity grows the treatment becomes difficult. Hence Sushruta considers under Mahakushta and Dalhana considers it under Asitha Dadru. But Acharya Charaka opines that Sukhyasadyatvat that is easy for the treatment, Uttarottara Dhatu Anupravesha Abhavat that it doesn't involve deeper Dhatu like Majja and Shukra, it is limited to Rasa, Rakta, Mamsa. Atyartha Peeda Abhavat there is no excessive pain as such. Hence he considers it under Kshudra Kushta and Dalhana includes under Sitha type of Dadru.

Vagbhata while explaining Dadru told it as Anushangi that is remains for longer period (Deergha Kaala Anubandha Vyadhi) explains about the adaptability of the Fungi in the body for longer period and even modern texts explains that the fungi can survive (extreme conditions like cold and summer season).

In rainy season air is saturated with moisture. This makes the weather humid and everything else damp. This makes it an ideal breeding season for fungi.

Even study suggests that C.Auris can live in extreme high temperature above 37-40°C.

In Diabetes the skin of the patient is moist, fragile due to impaired lipid metabolism more prone to breaking of skin and is nidus for the growth of different organisms.

In Obese patients due to excessive perspiration often there is an accumulation of skin debris and due to more folds of skin there is a more chance of remainant of these particles make susceptible for the fungal growth. Even excessive folds does the rubbing of skin results in friction and causes breakage or skin abrasions.
makes skin susceptible for fungal growth

The fungal spores inhabit on the unused utensils, clothes, tables, combs, brushes and other fomites for longer period in an inactive shield form and whenever there is favourable environment that is during the moist and humid climates it becomes active and causes disease in human and as well as animals. Hence there is a recurrence of this disease.

Due to wearing of tight and wet undergarments there is a lack of aeration hence makes favourable environment for fungal growth and even tight fittings makes skin rub and cause friction and makes skin abrasions.

Menstrual unhygine – Using unclean pads and even wearing a pad for longer duration results in fungal infection and causes severe itching.

Postcoital unhygiene- after having sex if private parts are not washed properly the ejaculations which are in contact with skin for longer period makes favourable for the growth of fungus. Jock itch (fungal infection of groin) is common that too in males.

In females it is common around waist and under breastfolds.

Fungal infections are opportunistic.Hence in children and in other immunosuppressed patient it will stay for longer period and even may involve systemic infection.

CONCLUSION

Dadru kushta is a Kaphapitta Pradhana Tridoshaja Aupasargika Roga (highly contagious). As this disease is Anushangi (remains in the body for long time) though proper treatment is given there is a recurrence of disease. Ayurveda in treatment mainly focuses on avoiding the etiological factors (Nidana Parivarjanam) and breaking of pathology (Samprapti Vighatana) and ultimately is Dhatu Samya so by avoiding etiology and by improving the lifestyle one can be free from disease.

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