

A REVIEW STUDY OF SWEDVAHA SROTAS W. S. R. TO PALMOPLANTAR HYPERHIDROSIS

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ABSTRACT

Ayurveda is one of the oldest science of medicine. The main aim of *Ayurveda* is to preserve the health of the healthy individuals and to treat the diseases without producing any side-effects to that individual. *Dosha-dhatu-mala* form the basis of *Ayurvedic* principles. The importance of *mala* (wastes) is not only in expelling wastes from the body, but they also play an important role in maintaining a healthy environment within the body. Among the *trimala*, *sweda* (sweat) is one of the *mala* described in *ayurvedic* classical texts. *Srotas* are various important channels or passages present in human body to carry the *poshya dhatus* (those *dhatus* which are in the process of digestion) & other substances from one place to another place inside the body. *Srotas* are also involved in the *utpatti* (origin/formation) of *dhatus*. *Swedavaha srotas* and its role in normal and abnormal circumstances in the body, have been described in this article. Palmoplantar hyperhidrosis is a disorder affecting many individuals. This disorder not only has the physical impact but it also has social impact, affecting the lives of those individuals, because this disorder affects their daily activities and it creates stress. Hence this disorder also affects the mental state of those individuals, to some extent. This article aims to provide precise information about *swedavaha srotas* and Palmoplantar Hyperhidrosis.

Keywords: Sweat, *Srotas*, Fever, *Sweda*, *Swedavaha*, *Jwara*

INTRODUCTION : According to *Ayurveda*, *sweda vruddhi lakshana* includes excessive perspiration, etc. So this can be correlated with Palmoplantar Hyperhidrosis.

'Sweda' Nirukti: - The word '*sweda*' is derived from '*swida*' *dhatu*. '*Gharma*' is one of the synonyms of '*sweda*'. The word '*sweda*' means '*ushma*' or '*taapa*' (hot temperature or heat).¹

Description of *sweda* in *charak samhita* :- Excretion of food is faeces and urine, that of *rasa* is *kapha* (phlegm), that of *rakta* is *pitta* (bile), that of *mamsa* is dirt of the external orifices, that of *medas* is *sweda*.²

Importance and functions of *mala* :- The excreta or the faecal matters of a man are indispensably necessary for the preservation of the body. They constitute of the wind and digestive fire (being primarily related with the movements of the *praakruta vayu* and the feeling of hunger). The urine fills the empty space within the bladder, and performs the function of washing or draining off the waste matter of the organism; whereas perspiration has the action of moistening the skin.³

'Srotas' Nirukti: - The word '*srotas*' is derived from '*sru gatau*' *dhatu*. Word '*srotas*' means to flow or ooze.⁴

Doshas move in the entire body & as such grossly they have no specific passage but use all the *srotas* as the same; but minutely speaking they have also their specific *srotas* as said by *Sushruta*. Unlike *Sushruta*, *Charaka* has not mentioned distinction between *dhamani*, *sira* & *srotas*.⁵

The symptoms of disorder of *srotas* are said generally and not according to those of *dosha*, in order to avoid expansion. However, the physician should diagnose the particular disorder also keeping the condition of *doshas* in view.⁶

Swedavaha srotas dushti lakshan (Signs and symptoms of vitiation of swedavaha srotas):- The origin or *prabhav sthana* of swedavaha srotas are *meda* and *romakupa*. Absence of perspiration or excessive perspiration, *parushta* (dryness/hardness), *shlakshnata* (oily texture) of the body, burning sensation in the body and goose bumps – these are the signs and symptoms of vitiation of the *swedavaha srotas*.

In *Kushtha vyadhi poorvarupa* (prodromal signs and symptoms) the above symptoms of absence of perspiration, etc. are also seen along with other symptoms mentioned in *kushtha roga poorvarupa*.⁷

Definition and Classification of Fever: -

The disease which is characterized by the cessation of perspiration, by increased temperature (of the skin), by pain all over the body and by a sense of numbness in the limbs, is called *jwara* (fever).⁸

Causative factors of swedavaha srotas

dushti: - Excessive exercise, excess exposure to sun/heat, disorderly consumption of cold and hot eatables/beverages, anger, grief and fear- all these factors cause vitiation of *swedavaha srotas*.⁹

Treatment of disorders of Swedavaha srotas: -

On vitiation of the *swedavaha srotas*, the treatment protocol described in *jwara chikitsa* (treatment of fever) should be implemented.¹⁰

Modern view of swedavaha srotas:

Sweat Glands: - A sweat gland develops as a down growth from the epidermis. The down growth is at first solid but is later canalized. The lower end of the down growth becomes coiled and forms the secretory part of the gland.¹¹

Development of Sweat Gland:

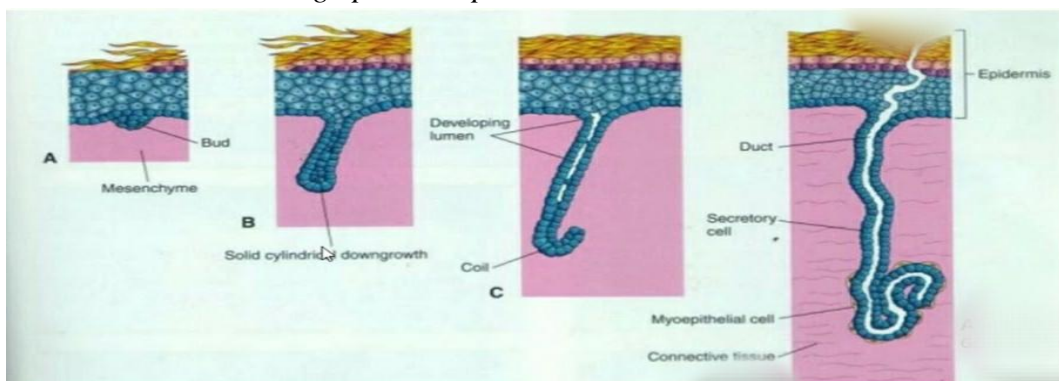


Fig. 1 (Showing the development/formation of sweat gland)

Types, location and structure of sweat glands¹² :- Sweat glands produce sweat/perspiration. They are present in the skin over most of the body. They are of two

types- (1) Typical Sweat Glands and (2) Atypical Sweat Glands.

- The typical sweat glands are merocrine in nature. They are most numerous in the

palm and sole, the forehead and scalp, and the axillae.

- The sweat glands are simple, coiled tubular glands, and whose duct open at the skin surface.

- The lower end of the tube is highly coiled on itself to form the body/fundus/secretory part of the gland.

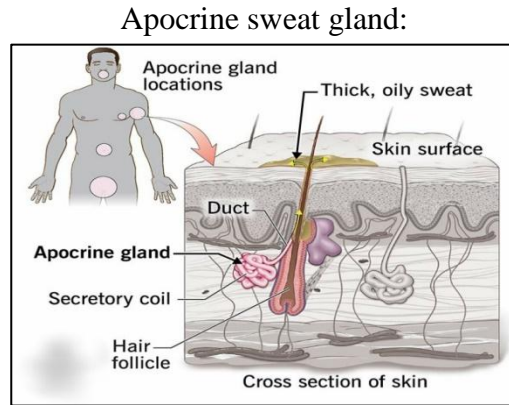


Fig. 2 (Structure of sweat gland in relation to the skin)

- Secretory part is present in the reticular layer of the dermis. The secretory part is lined by cuboidal to low columnar cells. Sometimes the epithelium may appear to be pseudo stratified.

- The part of the tube connecting the secretory element to the skin surface is the duct. It runs upwards through the dermis to reach the epidermis. Within the epidermis the duct follows a spiral course to reach the skin surface. The orifice is funnel shaped. On the palms, soles and digits the openings of sweat glands lie in rows on epidermal ridges.

- In larger sweat glands flattened contractile, myoepithelial cells are present between the epithelial cells and their basal lamina.

- The duct is lined by stratified cuboidal epithelium.

- Sweat glands (including the myoepithelial cells) are innervated by cholinergic nerves.

- Cells- two types of cells are seen in the secretory part :-

(1)Dark cells- they are pyramidal in shape and contain secretory granules. Their secretion is mucoid.

(2)Clear cells- they are present without any granules. Their secretion is watery.

Palmar Hyperhidrosis¹³ :- Primary or Essential Hyperhidrosis is a disorder characterized by excessive, chronic sweating acquired during rest, unrelated to the need of heat loss of the body. It can affect one or more areas of the body, occurring predominantly in the hands, armpits, feet, head, and inguinal region.

The prevalence of Primary Hyperhidrosis (PH) is approximately between 1% to 3%. It occurs in all seasons, including winter. In circumstances like that of stress, anxiety, fear and nervousness, there is exaggeration of symptoms. PH nomenclature is given as per its anatomical locations: Face and scalp (craniofacial hyperhidrosis), palmar region (palmar hyperhidrosis), armpits (axillary hyperhidrosis), inguinal region (inguinal hyperhidrosis) and plantar regions (plantar hyperhidrosis).

Hyperhidrosis inflicts significant impact on quality of life of patients, interfering with their labour, day to day activities, social interaction, hobbies; and can cause emotional and psychological distress.

Palmoplantar Hyperhidrosis¹⁴ :- **Palmoplantar** hyperhidrosis is excessive sweating localized to the palms of the hands and soles of the feet. It is a form of focal hyperhidrosis in which there is increased sweating which is limited to a specific region of the body. In the palmoplantar hyperhidrosis the sweating tends to worsen during warm weather.

Signs and symptoms of Palmoplantar

Hyperhidrosis: - Symptoms of palmar hyperhidrosis are usually bilateral and symmetrical and there are no other associated conditions. Palms, soles are cold, wet and present colour that can range from pale to blush. The episode of sweating has a sudden onset, which may or may not be related to emotional stress and it presents predominantly on the palms and fingers. Rapidly the hands, soles are wet by the droplet detachment, and in some cases there may be swelling of the fingers.¹³

Palmoplantar hyperhidrosis



Fig. 3 (Pictures depicting the signs and symptoms of Palmoplantar Hyperhidrosis)

Pathophysiology of Palmar Hyperhidrosis¹³:- The human body has about 4 million sweat glands, of which 75% are eccrine. The eccrine sweat glands are epidermal appendages innervated by cholinergic fibres of sympathetic nervous system, whose main function is to produce sweat, which is colourless, odourless, and is responsible for regulating the body temperature.

The eccrine secretion is derived by displacement of calcium ions from the extracellular environment to the internal structure of the secreting cell, and by keeping a control on the stimulation and activation of ions and water in this environment. Sweat composition includes sodium chloride, water, 2-methylphenol, 4-methylphenol, urea and other nitrogen

metabolites, which finally result into a hypotonic secretion as compared to plasma.

No histopathological finding was identified in individuals with PH, nor the increase in the amount of sweat glands. This data infers that PH is a complex disorder of the autonomic nervous system which includes the sympathetic and parasympathetic pathways. It can be depicted that PH is basically a neurological disease with more of the cutaneous manifestation.

Sympathetic activity in a particular part of the body can be calculated by measuring the skin resistance to electrical conduction. Electrophysiological studies show high skin sympathetic response in

patients with PH compared with healthy subjects.

The main neurotransmitter of the neuroglandular junction of postganglionic fibres is the acetylcholine, unlike what happens in most of the nerve endings, whose neurotransmitter is noradrenaline. Various stimuli like physical activity, heat, anxiety and stress, activate the preoptic area of the hypothalamus that, by sympathetic stimulation, release acetylcholine in the neuroglandular junction, increasing the response in the sweat gland and generating a retrograde stimulus to the hypothalamus through the afferent pathways, the negative feedback. The balance between the afferent and efferent pathways is extremely important for the maintenance of homeostasis in the body. In people suffering from PH, this system appears to be in focal imbalance, involving amplification of efferent stimuli.

Diagnosis of Palmar Hyperhidrosis¹³ :-

Diagnosis of PH is clinical, being Starch-Iodine Test

conducted through history and physical examination. The main diagnostic criteria include visible sweat, exaggerated and located, lasting at least 6 months, without apparent cause and with at least two of the following characteristics:-

- Bilateral and symmetrical sweat.
- Frequency: at least 1 episode per week.
- Impairment in daily activities.
- Age of the onset < 25 years.
- Presence of family history.
- Absence of sweat during sleep.

PH can be evidenced from a minor test (Starch-iodine), in which an alcoholic solution of iodine 2% is applied in the test area and then starch (e.g. corn starch) is sprinkled. The hyperhidrotic area solubilizes the iodine, which promotes a complex reaction with the starch. The trapping of the iodine atoms in the helices of amylose chains causes a dark blue staining.



DISCUSSION :Sweda is one of the essential component of our body as it acts as one of the *mala* which has the action of keeping our skin moist. Also the sweat excretes wastes from our body through the skin surface and helps to maintain normal body temperature. Any deviation in this mechanism causes the development of pathophysiology which can cause fever. *Swedavaha sroto dushti* includes various signs and symptoms like loss of perspiration or excessive perspiration, dryness, excessive oiliness of skin, burning, goose bumps. Loss of sweating is also a prodroma of *kushtha* disease, only when it presents itself along with other signs and symptoms of *kushtha*. In the absence of signs and symptoms of *kushtha*, the excessive perspiration only indicates vitiation of the *swedavaha srotas*. ‘*Shita-ushna akrama*’; that means just after consuming cold foodstuffs/drinks immediate consumption of hot foodstuffs/drinks and vice-versa is a common mistake which plays an important role in the vitiation of *swedavaha srotas*. Palmoplantar hyperhidrosis is a disease involving the autonomic nervous system and is characterized by excess sweating localized to the palms and soles of the affected person. It affects the mental state of the patients because they are unable to perform all tasks smoothly. Hence efforts need to be made to find out some easy solutions to cure this problem.

CONCLUSION

Palmoplantar Hyperhidrosis is one of the disorder indicating *vitiation* of *swedavaha srotas*. Loss of sweating etc. symptoms are seen as one of the prodromal signs of *kushtha*; but when they are alone then they may be considered as indicators of *vitiation* of *swedavaha srotas* and if they are associated with other symptoms of

kushtha poorvarupa then they may indicate *kushtha*. One of the important and most common causative factor of *swedavaha srotodushti* is – just after consumption of cold beverages/foods immediate consumption of hot beverages/foods and vice-versa. This is very harmful and it should be avoided to prevent vitiation of *swedavaha srotas*.

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