

Physiological Understanding of *Medovaha Srotas* in the Current Perspective

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Abstract

Srota is a pathway (channel) that carries substances or energy from one place to another in the human body. Sushruta mentioned that the channels of circulation are present in intra-cellular, inter-cellular and extra cellular spaces of the human body. Acharya Charakaa has broadly described thirteen types of *srotas*, while Sushruta mentioned eleven pairs of *srotas*. Both Charakaa and Sushruta quoted *medovaha srotas*, which are self-explanatory to explicate the importance of *medovaha srotas*. According to Sushruta *medovaha sroto-dushti* (vitiation) *lakshanas* are *sweda agaman* (excessive sweating), *snigdha angataa* (oily appearance of the body), *talushosha* (dryness of the palates), *sthaulya* (obesity), *shophataa* (edema) and *pipasa* (thirst). According to Charakaa, the vitiation of *medovaha srotas* will lead to *prameha purvarupas*. All these characters described by Sushruta are due to hyper- or hypo-secretions of epinephrine, norepinephrine, estrogen, leptin, insulin, androgens, growth hormone, ADH and aldosterone, thyroid hormone, glucagon, amylin, GIP, GLP-1, epinephrine, cortisol and insulin. From physiological point of view, all these characters either described by Charakaa or Sushruta seem to be the diseases or conditions related to hormonal imbalances.

Keywords: *Dusti*, Hormones, Imbalance, *Medovaha*, *Srotas*

Introduction

Transporting passages of *dhatu*s undergoing transformation are known as *srotas*.¹ Different types of *srotas* are described in Ayurveda in which *medovaha srotas* are mentioned by both Charakaa¹ and Sushruta.² According to Sushruta, *medovaha sroto-dushti* (vitiation) *lakshanas* are, *sweda agamanam* (excessive sweating), *snigdha angataa* (oily appearance of the body), *taalu shosha* (dryness of the palates), *sthaulaya* (obesity), *shophataa* (edema), and *pipasa* (thirst).² According to Charaka, the vitiation of *medovaha srotas* develops *prameha purvarupas*.³

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Sweda Agamanam (Excessive Sweating)

Excessive sweating may be due to the disorders like diabetes mellitus, hyperpituitarism, and various forms of thyroid disease.⁴ Adrenal gland disorders can cause the adrenal medulla to produce increased levels of epinephrine and norepinephrine. These hormones act on the sympathetic nervous system, leading to excessive sweating.⁵

Taalū Shosha (Dryness of the Palate)

The sensation of dry mouth including palate will occur when the salivary flow rate is less than the rates of water absorption from the mouth.⁶ A dry mouth is symptom as well as cause of high blood sugar. Sex steroids also affect the rate of sebum secretion like testosterone that has stimulatory effect and estrogen has been shown to have inhibitory effect.⁷ Corticotrophin-releasing hormone and corticotrophin-releasing hormone receptor genes also have effect on human skin and sebaceous glands.⁸

Thirst (Pipasa)

The cause of thirst (*pipasa*) may be due to decrease of blood volume without reducing the intracellular fluid. The decreased blood volume is distinguished by cells in the kidneys and elicits thirst for both water and salt via the renin-angiotensin mechanism.⁹ Excessive thirst is characteristically found in diabetes and hyperaldosteronism.

Leptin is a hormone produced by adipose cells and its action is opposite to ghrelin (hunger hormone). Both leptin and ghrelin act on receptors in arcuate nucleus of hypothalamus to regulate appetite.¹⁰ In obesity, a decreased sensitivity to leptin occurs, resulting in an inability to detect satiety despite high energy stores.¹¹

Discussion

Kati (hip), *vrik*² (kidney) and *vapavahanas*¹ (omentum) are mentioned as *moola* of *medovaha srotas*. White adipose tissue is found in mesenteric, omental, and perirenal area.¹² Adipose tissue responds to afferent signals from traditional hormone systems and the central nervous system as well as it secretes factors like leptin, cytokines, adiponectin, proteins of renin-angiotensin system, and resistin with important endocrine functions. Adipose tissue is also a major site for metabolism of sex steroids and glucocorticoids.¹³

Omental adipose tissue produces three times more IL-6 than subcutaneous adipose tissue.¹⁴ A recent study indicates that IL-6 directly stimulates adrenal cortisol

release in addition to stimulating hypothalamic CRH and pituitary ACTH release.¹⁵

Charaka mentioned the *prameha poorvaroopa* as symptoms in *medovaha sroto dusti*.³ Dysfunction of thyroid, adrenal gland, pituitary and pancreas may cause hyperglycemia in absence of diabetes.¹⁶ Excess adiposity and adipocyte dysfunction may lead to deregulation of adipose tissue-derived adipokines, which may give rise to development of various metabolic diseases through altered glucose and lipid homeostasis with inflammatory responses.^{17,18}

Conclusion

Charaka and Sushruta mentioned that *kati*, *vrik* and *vapavahana* are the *moolas* of *medovaha srotas* and these are the stores of adipose tissue having important endocrine functions. *Medovaha dusti* characters mentioned by these Acharayas also may be due to disturbance of equilibrium of hormones. On the basis of above description, it can be concluded that from physiological point of view, all the characters described either by Charaka or Sushruta seem to be changes related to hormonal imbalances.

Conflicts of interest: Nil

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