AYUSHDHARA
ISSN: 2393-9583 (P)/ 2393-9591 (O)
An International Journal of Research in AYUSH and Allied Systems

Review Article

A CRITICAL ANALYSIS ON THE BASIC CONCEPT OF *PRAMEHA* IN CONVENTIONAL PARLANCE

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KEYWORDS: *Prameha, Avila-Prabhuta Mutra, Meda Dusti.*

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ABSTRACT

Systemic information about several diseases has been documented in *Ayurvedic* classical texts. Although conventional entity of all of those diseases are not well established. Understanding of such diseases in conventional parlance is essential for an evidence based approach of *Ayurveda*. *Prameha* is one of such disease that is most widely described in almost all classical *Ayurvedic* texts but not well established in conventional parlance. The disease *Premeha*, has been named on its major clinical signs *Avila-Prabhuta-Mutra* (Excess and contaminated urine). In ancient text compiled by *Acharya Charaka, Acharya Sushruta, Acharya Vagbhatta* and many others, we get detailed description about this disease. *Meda Dusti* is considered as a key pathological phenomenon behind the development of *Prameha*. A conventional entity of this disease is still now doubtful. This review aims at scanning of both *Ayurvedic* and conventional medical literatures as well as published research articles to explore the basic concept of *Prameha* in conventional parlance.

INTRODUCTION

Ayurveda is one of the most ancient systems of medicine in India as well as all over the world. Literally the meaning of the word *Ayurveda* is the science of life. *Ayurveda* system of medicine not only deals with diseases but also equivalently deals with preventive aspect of health. In various Ayurvedic compendia there are a detailed description of the etiology, pathogenesis, types, symptomatology and complication and management of a number of diseases as per *Ayurvedic* parlance. Conventional entities of all these diseases are still now not evident and *Prameha* may be considered as such a disease.

Prameha is a disease, described by *Acharya Sushruta* and *Acharya Vagbhatta* under *Asthamahagada*[1] (Eight grievous diseases) which has widespread effect on health. *Acharya Charak* also accorded an immense importance to this disease due to its impact on health. The term '*Prameha*' has two parts. '*Pra*' denotes abundant, and '*Meha*' denotes 'passing of large quantity of urine. According to *Acharya Madhavakara.*

"Prakarsena Prabhutam Pracuram Varam Varam Va Mehati Mutratvagam Karoti Iti Pramehah"[2]

Premeha is characterized by increased quantity of urine associated with or without the increased frequency of urination. Hence, primarily *Prameha* may be considered as a systemic disease associated with urinary manifestations caused by enhanced urine formation.

Critical Analysis

A vivid description of etiologies, pathophysiology, types, symptomatology, complications and therapeutics of *Prameha* are available in all the classical *Ayurvedic* texts. Enhanced *Drava Guna* (consistency of a liquid) of *Kapha Dosha* are thought to be responsible behind the development of *Premeha*.[3] A number of body components are affected in *Prameha* including *Meda, Mamsa, Kleda, Sukra, Sonita, Vasa, Majja, Lasika, Rasa* and *Ojo*.[4] Among this, *Meda* is considered as chiefly affected site.[5] A wide distribution of affected components indicate a systemic involvement in this disease.

Types

Etiologically *Prameha* has been classified into two types by *Acharya Sushruta*.[6]

- *Sahaja* (Hereditary)
- *Apathyanimittaja* (Acquired)

Sahaja Prameha occurs as a result of *Beejadosha* (genetically susceptible). While describing prognosis, *Acharya Charaka* has narrated that *Prameha* occurring due to *Beeja dosha* is incurable.[7] *Apthyanimittaja Prameha* is a result of causative dietary and physical activity. According to *Dosha* predominance, *Prameha* is categorized into three major types.

1. *Vataja Prameha*
2. *Pittaja Prameha*
3. *Kaphaja Prameha*

The *Dosha* predominance is solely detected by the physical characteristics of urine.

Further *Prameha* is sub-classified into 20 types according to different *Acharya.*

Types of *Prameha*	**According to *Acharya Charaka* [8]**	**According to *Acharya Sushruta* [9]**	**According to *Acharya Vagbhat* in *Ashtanga hrudaya* [10]**
Vataja Prameha			
Udaka-meha	+	+	+
Ikshubalikarasa-meha	+	+	*Ikshu-meha*
Sandra-meha	+	+	+
Sandraprasada-meha	+	*Sura-meha*	*Sura-meha*
Sukla-meha	+	*Pishta-meha*	*Pishta-meha*
Shukra-meha	+	+	+
Sita-meha	+	*Lavana-meha*	+
Sikata-meha	+	+	+
Shanai-meha	+	+	+
Alala-meha	+	*Phena-meha*	*Lala-meha*
Pittaja Prameha			
Kshara-meha	+	+	+
Kala-meha	+	*Amla-meha*	+
Nila-meha	+	+	+
Rakta-meha	+	*Shonita-meha*	
Manjishtha-meha	+	+	+
Haridra-meha	+	+	+
Kaphaja Prameha			
Vasa-meha	+	+	+
Majja-meha	+	*Sarpi-meha*	+
Hasti-meha	+	+	+
Madhumeha	+	*Kshoudra-meha*	+

In the therapeutic point of view, *Prameha* are classified into two types [11]

- *Sthula Pramehi* (*Prameha* in obese individual)
- *Krisha Pramehi (Prameha* in non-obese individual)

Different therapeutic strategies are designated for each group.

Etiological Factors of *Prameha*

All those factors related to dietary habits and physical activities, which increase the quantity of *Kapha* are said to be the common etiological factors for all types of *Pramehas*.[12] Mainly obesogenic diet and sedentary lifestyle have been mentioned as causative factors for *Kapha Prokapa* as well as *Prameha*.[13]

Etiological factors associated with *Pitta Prakopa* or *Vata Prakopa*, can also lead to the *Pittaja* or *Vataja Prameha* respectively.

Pathophysiology

Exposure to dietary and physical activities associated with the development of *Prameha,* may lead to vitiation of *Tri-dosha* and affects *Meda Dhatu*. When vitiated *Tri-dosha* along with *Meda* become inclined to be excreted via urinary route, the disease *Prameha* is manifested. [14]

Acharya Charaka has described three different *Sampramti* of *Prameha* according to involved *Dosha*.

In general, *Meda* is considered as *Dushya* in *Prameha*.[15] According to *Acharya Charaka*, there are ten *Dushya* in *Prameha* including *Meda, Mamsa, Kleda, Sukra, Sonita, Vasa, Majja, Lasika, Rasa and Ojo*.[16]

Clinical Manifestations

Prameha is generally characterized by "*Avila-Prabhuta-Mutra*"[17] or contamination of urine with excess urine passage. The clinical manifestations of *Prameha* have been described in *Ayurvedic* classical texts solely on urinary feature. The different clinical features of twenty types of *Prameha* are also based on physical character of urine.[18] Systemic manifestations have been described in *Prameha* either in terms of prodromal symptoms[19] or in terms of complications.[20]

DISCUSSION

Basic Concept of *Prameha* in Conventional Parlance

The nomenclature of the disease "*Prameha*" are based on the cardinal features. Contamination of urine as well as excess passage of urine is the characteristic feature of this disease.

Acharya Madhavakara, the quantity of urine is increased in *Prameha* with or without frequent urination.

Pathologically the quantity of urine may increase in following state.

- Enhanced urine osmolarity and subsequent dieresis
- Failure of urine concentrating mechanism in nephrons.

Osmotic diuresis occurs when reabsorption of water is impaired in renal tubule due to presence of certain solutes. Solutes responsible for driving water excretion could be electrolytes, such as sodium, urea, glucose.[21] Hyperglycemic osmotic diuresis is found in Diabetes mellitus.

Loss of the concentrating mechanism results in uncontrolled polyuria with low urine osmolality and can be a consequence of any of followings.[22]

- Defective secretion of regulatory hormones
- Loss of structural integrity of renal tubules

A progressive tubulointerstitial damage in patients with moderate degree of chronic kidney diseases, may leads to failure in urine concentrating mechanism.[23]

Concept of *Meda Dusti* in Conventional Parlance

Meda Dusti is considered as a central pathological phenomenon in *Prameha*. An obesogenic diet and sedentary lifestyle are thought to believe as causative factors. According to various classical text, *Meda* are potentially founds in following site.

- *Sphig* (Gluteal region)
- *Udara* (Abdomen)
- *Vapabaha* (Omentum)
- *Vrikka* (Kidney)
- *Asthi* (Inside the bones)

Acharya Madhavkar mentioned that *'Snehat Medo Janayati'* mean *Meda Dhatu* is derived from *Sneha* or fatty food intake.[24] Hence, it can be inferred that concept of *Meda* in Ayurveda corresponds to the physiological components associated with both lipid storage and utilization in conventional aspect. *Meda dusti* or functional abnormality of *Meda* is considered as a key pathological phenomenon behind the development of *Prameha*.

Normally adipocytes are associated with lipid storage function and to handle the excess lipids. But an extreme elevation of lipid may cause a spill over into non-adipose cells.

When excess lipid in non adipose tissue enters into potentially toxic pathways of nonoxidative metabolism, it may results in accumulation of harmful lipid intermediates and subsequent cellular dysfunction as well as injury. This is known as lipotoxicity. Lipotoxicity is a metabolic dysfunction associated with altered lipid homeostasis.[25]

Long-chain nonesterified fatty acids (NEFA) or free fatty acid (FFA) and their products are mainly responsible for lipotoxic effects.[26] Lipotoxicity is thought to be responsible behind the development of insulin resistance as well as pancreatic β-cell dysfunction and plays a potential role in the pathogenesis of diabetes mellitus.

A specific variety of *Prameha* which is termed as *Madhumeha*, bear a resemblance to diabetes mellitus.[27]

Chronic lipotoxicity play an important role in the progression of chronic kidney disease (CKD).

Elevated NEFA concentrations in obesity are thought to arise from an increased adipose tissue mass.[28] An increase in serum NEFA concentrations promotes it's binding to albumin.[29]

In the kidney, filtered NEFA albumin complex can aggravate the chronic tubular damage and inflammatory phenotype. Nonlipidifed albumin is thought to be less toxic to renal tubular cells than NEFA-albumin complex.[30] Maladaptive renal cell lipid synthesis in both the glomerular and tubular compartments in response to renal injury also contributes to progression of nephropathy.[31]

CONCLUSION

As per classical *Ayurvedic* literature, *Prameha* is a disease caused by *Meda Dusti* and associated with the urinary manifestation of excess and contaminated urine formation. *Meda Dusti* fundamentally indicates an altered lipid homeostasis or abnormality in lipid utilization and storage. Hence it may be inferred that the disease *Prameha* is a consequence of lipotoxicity.

In respect to cardinal features and pathophysiology, *Prameha* may be considered as state of lipotoxicity as well as subsequent tissue damage which may results in either osmolar diuresis or failure of urine concentrating mechanism in kidney.

Commonly diabetes mellitus and CKD are two most common diseases associated with such pathophysiological mechanism and may come under the heading of *Prameha*.

Lipotoxicity also plays a potential role in the pathogenesis of diabetes as well as CKD. Enhanced urine quantity and altered urine quality are also characteristic phenomena in both diabetes mellitus and renal tubular damage due to osmolar changes and inability to concentrate urine respectively.

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Cite this article as:
Suman Kundu, Nisith Kumar Mandal, Dipanjan Jana. A Critical Analysis on the Basic Concept of Prameha in Conventional Parlance. AYUSHDHARA, 2018;5(4):1805-1809.
Source of support: Nil, Conflict of interest: None Declared