Review on Etio-pathogenesis and diagnostic criteria of *Prameha* w. s. r. to Diabetes Mellitus.

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Abstract:

Prevalence of life style and metabolic disorders are increasing in the present era due to unhealthy modification in the diet and life style. *Prameha* is the one of the disease of life style and abnormal metabolism. All the urinary and systemic diseases that cause copious quantity as well as abnormal quality of the urination comes under umbrella of *Prameha.* The etiopathogenesis and diagnostic methods of *Prameha* are explained in *Ayurved* before thousands of years. The lifestyle and dietary trend has been changed drastically with the course of time due to change in the environment. Change or disturbances of the environment is most often caused by human influence and natural ecological process. So it is needed to review the etiopathogensis and the diagnostic criteria of the *Prameha*. In *Prameha* most of the diagnostic variables (signs and symptoms) are nominal and categorical, hence diagnosis is often made by some degree of subjective interpretation of the clinician. To make the reliable, valid and consistent diagnosis of *Prameha*, modern investigation (objective *paramenters*) must be include in the diagnostic criteria of the *Prameha and the types of prameha*.

This study gives insight into review of etio-pathogenesis and diagnostic methods of *Prameha.*

Keywords: *Prameha*, diabetes mellitus, etiopathogenesis, diagnostic criteria

Introduction:

Concepts of diagnosis in *Ayurved* is unique, it comprises *nidana* of *dosh-dhatu-mala* imbalance by studying physical and psychological aspects. Diagnosis or *Rog-Rogipariksha* also consists of knowledge of *etio*-pathogenesis and *symptomatology*. *Acharya charaka* has given first place to *Rog-Rogi pariksha* (diagnostic methods) and

principles of treatment and drugs are given next place in order of importance.

Prameha is one of the life style disorder explained by *Acharya Charaka* 1000 BC. Life style disorders are increasing drastically day by day in present era due to unhealthy modifications in diet and lifestyle, decrease in physical activities, increased stress factor in life. It is the one of the eight most cripple and fatal disease *(Ashtamahagada)* mentioned in *Ayurveda* due to it's incurable nature. [1][2][3]

Prameha roga clinically presented in the form of urinary disorders but closely related to gastrointestinal, lymphatic, endocrinal, circulatory systems. It is a group of diseases those are clinically characterized by frequent micturition which may be excessive or scanty (*prabhuta mutrata*) and cloudy (turbid) micturition *(avil mutrata)* are collectively called *Prameha*.

In *Prameha* most of the diagnostic variables (signs and symptoms) are nominal and categorical; hence diagnosis is often made by some degree of subjective interpretation of the clinician. To make the reliable, valid and consistent diagnosis of *Prameha*, some pathological investigation (objective *paramenters*) must be include in the diagnostic criteria of the *Prameha and the types of prameha*.

So attempt has been made here to review the etiology and diagnostic criteria of the *Prameha*

Review of literature:
Prameha is clinically characterized by *prabhut mutrata* (polyuriea) and *avil mutrata*(turbid urine). *Ayurveda* mentioned that *bahudravasleshma* and *bahuabaddhameda* are the main pathological factors for *prameha*.

Etio-pathogenesis:
Asyashukha (eating as persons will), *swapnasukha* (addiction to the pleasure of lounging and sleeping for long time), excessive use of *dadhi* (curds), *mans rasa* (meat juice of domestic, aquatic and wet land animals), *dudh* (milk), *navin anna, navin jalapan* (new grain, drinks, rain water) and *guda padartha* (product of jaggery) and all things that increase *kapha* are the causative factors of *Prameha*. [4]

Table 1: Etiology of *Prameha:*

Sahaja	Hereditary, genetically determined, Juvenile onset
Apathyanimitta	Acquired (diet and lifestyle disorder)
Asyasukham	Over eating (diet rich in protein, fat& carbohydrate)
Swapnasukham	Sedentary life style
Avyamam-Alasya	Lack of exercise

Before *Prameha bhedavastha* the patient may presents with the some *purvarupa (*prodromal features) like *sedoang-gandha (*excessive sweating with fetid odor), *shithilanglta* (flabbiness of body), *asanasukha- swapnasukha* (inclination to lie down, sedentary habits), *hridaya-netra-jivha-karna mal sanchati* (excessive mucosal discharge), *ghana-angta* (obesity) *keshanakha ativridhi* (rapid growth of hair and nails), *galatalushosha* (thirst), *madhurya asya* (sweetness of mouth), *karapada daha*

(burning sensation in hand and feet), *mutre-abhidhavanti pippilikashya* (swarming of ants on the urination). [5] [6] 7) [8]

Etiology of diabetes mellitus:

Diabetes mellitus comprises a group of metabolic disorders that share the common phonotype of hyperglycemia. DM is currently classified on the basis of pathogenic process that leads to hyperglycemia. Under this classification the term type 1DM and type 2 DM have replaced insulin dependent diabetes mellitus (IDDM) and noninsulin dependent diabetes mellitus (NIDDM) respectively. Type 1 DM is characterized by insulin deficiency and a tendency to develop a ketosis, whereas type 2 DM is a heterogeneous group of disorders characterized by variable degrees of insulin resistance, impaired insulin secretion, and increased glucose production. Other specific type include DM caused by genetic defects (maturity onset diabetes of the young 'MODY'), disease of the exocrine pancreas (chronic pancreatitis, cystic fibrosis, hemochromatosis), endocrinopathies (acromegaly, cushing's syndrome, glucocorticoids, thiazides, protease inhibitors), and pregnancy (gestational diabetes mellitus)[9]

Diet rich in sugar, fat, potato, rice, junk food, lack of exercise, mental stress, ganetics, obesity, excessive sleep these can leads the diabetic mellitus.

Types of *Prameha*:
There are two main types of *Prameha* are described – *Sahaja* and *Apathynimitta*. *Sahaja* are originated due to the precipitating

Table 3: *Samprapti Ghatak* of *Prameha*

factors from the inherited or congenital factors. *Apathyanimitta* are results from *doshaja* vitiation. Based on clinical importance two types are *Sthoola prameha* and *krisha prameha* has been mentioned in the text.

Table 2: Types of *Prameha:*

A	*Hetu Bheda* (Etiological types)[10]	*Sahaja-Apathyanimitta*
B	*Deha Prakruti Bheda* (Constitutional types)[11]	*Sthul balvan – krisha durbal*
C	*Doshika Bheda* (clinico pathological types)[12]	*Kaphaja- Pittaja-Kaphaja*

There are 20 types of *Doshaja Prameha* are explained and if they are not treated properly they may convert in to *Madhumeha,* which is an incurable disease which may produce serious complications. *Madhumeha* is one of the types of *Prameha,* which have a great clinical similarity with diabetes hence it can be correlated with diabetes mellitus. *Prameha* is the pathological state of the *kapha pradhan dosh dushti.* Due to vitiation of of *kapha dosha* the *kleda* of *meda, mansa, basti* gets vitiated and get accumulated in *basti* and eliminated in the form of liquid through urine so it characterized by excessive (polyuria) and turbid urination. The nature of micturation is depends upon the body reaction with the dosha-dushya in a varying proportion. [13] [14] [15]

Dosha	Kafa, pitta, Vata
Dushya	Meda-Mans-udaka-rakta-vasa-shukra-majja-lasika-rasa- oja
Srotas	Medovaha-Mutravaha
Srotodushti	Atipravruti
Agni	Medo dhatvagi
Udhbhavasthana	Kostha
Vyaktastana	Mutravaha srotasa

Samprapti(Pathogenesis):

Hetu sevana

↓

Tridosha vitiation

↓

Dhatvagimandyata

↓

Vitiation of rasa -rakta

Vitiation of meda-Mansa-kleda

↓

Dhatu Shatilyata

↓

Kleda nirmiti

↓

Bastigata kled sanchiti

↓

Prabhut avil mutrata

↓

Prameha

Diagnosis of *Prameha*:

Prameha comprises 20 types, further classified in to three groups, *Kapahja* (10), *Pittaja*(6), *vataja*(4) which resembles very much with different stages of diabetes mellitus.

Diagnosis of *prameha* should be made on the basis of history – *Purvarupa* -Prodermal feature, clinical findings and some imp pathological investigation.

Table 4: Diagnostic criteria for *Prameha*

History	*Purvarupa*	Clinical findings	Urine findings	Blood
*Heredetary- *Apathynimitta- Diet and life style: Sedentary life style, Diet rich in shita –*sneegdha- Madhur , Medya, drava,*curd and other milk products, *Gramya, anup, audak mans rasa*, New grains, new water, sweets made from jaggery	*Kara-pada daha *Pipasa- tritam *Swadasya *Danta etc maladhyatvam *madhur- shukra mutram *shadpada pippilika- sarira-mutram *tandra *khewda anga gandha *shithil anga *Alasya *malang kaye *Jatila bhavakesheshu *Mutra dosha Swash	*Prabhut Mutrata (Polyuria), *Khaudha Polyphagia* *Trishnadhikya Polydipsia *Hasta pada daha (burning sensation over sole and palm) *Murcha(diabetic coma)	*Urine- Routine and microscopy *Urine sugar F & PP Alteration in the physical- chemical- microscopic properties of urine (*varna-ganda- matra-avilta*)	*BSL F/PP *Glucose tolerance test *Sr Insulin F/PP *HbA1c

Diagnosis of *Prameha* types:

Table 5: Diagnosis of *Kafaj Prameha:*

Sr No	Type of *Prameha*	Color (Varna)	*Gandha* (Odor)	*Matra* (Vol)	*Guna Vishesh* (Other)	Urine analysis
1	*Udaka meha*	Clear/ white/	Odorless	Copious	Cold /turbid	Polyurea
2	*Ikshumeha*	Sugarcane juicy appearance	Sweet	-	-	Sugar ++++
3	*Sandrameha*	-	-	-	-	Urinary sediments

					++++
4	*Surameha*	Clear (uppar part)	-	-	-	Sediments in the bottom (layers formation)
5	*Pistameha*	White (thick Milky)	-	Increase	-	Protein++
6	*Shukrameha*	Semen like	-	-	-	Protein ++
7	*Sikta meha*	-	-	-	-	Crystals resembles sand
8	*Shit meha*	-	Sweet	Copious	Cold	Sugar ++
9	*Shanai meha*	-	-	Increase	-	-
10	*Lala meha*	Saliva /	-	-	sticky	Increased viscosity

Table 6: Diagnosis of *Pittaja Prameha:*

Sr No	Type of *Prameha*	*Varna* (color)	*Gandha* (Odor)	*Matra* (Vol.)	*Guna Vishesh* (Other)	Urine analysis
1	*Kshar*	Alkali like	Alkali like	-	Alkali like taste	Ph more than 7
2	*Nill*	Blue	-	-	-	-
3	*Haridra*	Deep yellow	-	-	Burning mict.	-
4	*Kala*	Black	-	-	-	-
5	*Manjista*	*Manjistha kwath*	*Ama Gandhi*	-	-	-
6	*Rakta*	Blood,red	foul	-	Hot,	-

Vataj Prameha:
Madhumeha is subtype of *Prameha* or terminal stage of *Premaha*, that's while the rest of 19 *prameha* are said to reach the stage of *madhumeha* in course of time and outlay enough if not treated properly.

Table 7: Diagnosis of *Vataja Prameha:*

Sr No	Type of *prameha*	Color (*Varna)*	*Gandha* (Odor)	*Matra* (Vol)	*Guna Vishesh* (Other)	Urine analysis
1	*Vasa meha*	*Vasa saman*	*Vasa saman*	-	-	-
2	*Majja meha*	*Majja like*	*Majja like*	-	-	-
3	*Kshaudra meha/*	-	*Madhur*	-	*Madhur*	Sugar++

	Madhumeha					
4	*Hastimeha*	*Lasik like*	*Lasika*	Copious	Hot/slow	-

Almost all the *Ayurveda* clinicians and Academicians correlate *Prameha vyadhi* with diabetes mellitus as there are closely related with etiology and clinical presentation.

Diabetes mellitus is a chronic, non communicable and expensive public health disease. It is clinical syndrome in which body's ability to produce or respond to the hormone insulin is impaired and it is characterized by hyperglycemia with glycosuria. It is a metabolic disorder, involves carbohydrate, proteins, fats and electrolytes, produce a varied clinical picture [16]. The long term manifestations occur due to structural and functional changes in various organs such as eyes, kidneys, brain, etc. These complications of diabetes occur mainly due to vascular involvement of various viscera [17].

Globally the prevalence of type 2 diabetes is increasing at an alarming rate. The numbers of people with type 2 diabetes worldwide are projected to increase from 171million in 2000 to 366 million by the year 2030 [18]. India is diabetic capital of world, with 64.5 million no of diabetic patients, along with large burden of undetected diabetes cases in the community. Prevalence rate in male is 12%, in female 11.7 highest rate found in elderly people of age group 70-79 yrs (13.2%). Low and middle income countries are facing the greatest burden of diabetes mellitus. Nearly 1 million Indians die due to diabetes every year. There is increasing risk of diabetes in urban population [19]. Pattern of diabetes incidences in India is related to geographical distribution. Rough estimate shows that the prevalence of diabetes in rural population is one quarter that of urban population in India [20].

Diagnosis of pre diabetes and diabetes mellitus with IFG (impaired fasting glucose) $=100 < $ mg/dl or IGT (Impaired glucose tolerance) $140 < $ mg/dl or combination of the two. Or by oral glucose tolerance test (OGTT) Or HbA1c $= 5.7 \% < $ (American Diabetes Association).

For the differentiate diagnosis between type 1 and type 2 diabetes Sr. Insulin level should done.

Discussion:

Ayurveda recommends *dincharya* in order to maintain the heath of a healthy person, but in this modern era life has become fast, competitive, mechanical, stressful and sedentary that one could not fallows the rules of *dincharya*. This is resulting in to increase in the lifestyle related metabolic disorders like *Prameha*. Unfortunately, many of the *Prameha* patients remain unaware of their diseased status in a early state of disease. As the disease progress *Prameha* may produce the serious complications and it may become incurable. This underscores the need of diagnosis of the cases in time, so that proper treatment can be started timely. It is difficult to diagnose the disease like *Prameha* in a pro-dermal phase

as patient may remain asymptomatic or sometimes with minimum symptoms.

With proper dietary and life style history, *Rogi* and *rog pariksha*, and some pathological investigations *prameha* can be diagnose in a early state.

Result:

Prameha is lifestyle disorder, clinically can be co-related with diabetes mellitus. *Sahaj Prameha* can be correlated with Type 1 DM, and *Apathyanimitta Prameha* can be correlated with Type 2 DM but needs a further study to evaluation. *Prameha* can be diagnose with the help of history of illness, *purvarupa*, *rupa* but can be confirmed with help of Blood and urine investigations. Differentiable diagnosis among *Prameha* types can be confirmed with the help of physical, chemical and microscopic properties of urine.

Conclusion:

All the urinary and systemic diseases that presented with copious quantity as well as abnormal quality of the urination are collectively called as *Prameha roga* clinically presented in the form of urinary disorders but closely related to gastrointestinal, lymphatic, endocrinal, circulatory systems. Twenty types of *prameha* if untreated properly can be leads *madhumeha* which is clinically correlated with *diabetes mellitus* which is related to protein fat carbohydrate metabolisim. Careful and minute observations are needed to indentify the *prameha* in *purvarupavastha* clinically. *Prameha* and types of *prameha* can be diagnose with help of proper history taking, clinical examination and urine analysis. *Madhumeha* which is clinically correlated to diabetes mellitus and can be diagnose with help of fasting BSL, PP BSL, HBA1C and urine analysis. To differentiate between type 1 diabetes and type 2 diabetes Sr. Insulin fasting and post prandial is handy investigation

Further scope of Study:

Clinically it is difficult to diagnose a *Prameha* in *Purvrupavastha* due to subjective prodromal features explained in *samhitas*. If we could find the association of *Purvrupa* of *Prameha* with pre diabetes and diabetes mellitus, with the help of laboratory investigations, we may able to diagnose a *purvarupavstha* of *Prameha* timely. Study should be done on *prameha* type and urine analysis. This will help us to diagnose the type of *Prameha* and treat *Prameha* patients in a different state of *Prameha,* This study will also guide us to suggest the preventive and diagnostic aspect of the disease.

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