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Review Article



Ayurveda and Modern considerations on Pathogenesis and Prognosis of Diabetes

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Abstract

Prameha is a condition described in traditional Ayurveda texts and this disease associated with other conditions including obesity, stress and other metabolic syndrome. Indulgence in the *Nidanas* (causes) leads disturbances in *Kapha* associated with *Pitta*. The imbalance of *Kapha* and *Pitta* increases *Kleda* in body and these all consequences initiates pathogenesis of *Prameha*. Modern science described disease as diabetes and mentioned several pathological events associated with disease including disturbed metabolic and hormonal regulations, etc. This article emphasizes ayurveda and modern considerations related to the pathogenesis and prognosis of diabetes.

Keywords: Ayurveda, Diabetes, *Prameha*, *Kapha*, *Kleda*

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1. Introduction

Prameha is a *Tridoshaja Vyadhi* but predominately involves vitiation of *Kapha Dosha*. The etiological factors disrupt *Kapha* and *Pitta* along with *Medovaha srotas*, the major pathological events are associated with

Kapha vitiation that increases *Kleda* resulting increased urine production and excessive urination. (1-4) Sedentary lifestyle and poor eating habits, etc. mainly causes *Prameha*, the major symptoms of disease as per different Ayurveda texts depicted in **Table 1**.

Table 1. Symptoms of disease as per various Ayurveda literatures

Purvarupa	Charak	Sushrut	Ashtang Sangraha	Ashtang Hridaya	Madhav Nidan
Kesheshu jatilbhavaha	+	+	+	-	-
Asyamadhurya	+	-	+	+	+
Karapddah	+	+	+	+	+
Karpadsuptata	+	-	-	-	-
Mukh, Talu, Kantha Shosha	+	-	+	+	-
Pipasa	+	+	+	-	+
Alasya	+	-	+	-	-
Kaya Chhidreshu Upadeha	+	-	+	-	-
Paridaha Agneshu	+	-	-	-	-
Shatapada Pipalikabhi Mutranabhi Sarvam	+	-	+	+	-

2. SAMPRAPTI

Samprapti Ghatakas:

- **Dosha** Shleshma Pradhana Tridosha
- **Dushya** Mamsa, Kleda, sukra, vasa, majja, lasika, rasa, oja
- **Srotas** Medovaha, mutravaha, udakavaha
- **Srotodushti** Atipravrutti, sanga
- **Agni** Dhatvagnimandya
- **Adhishtana** Basti, sarvashareera
- **Udbhavasthana** Amashayokta & Pakwashayoktavyadhi

A) Samanya and General Samprapti

Charka has described *Samanya* (General) *Samprapti* of *Prameha* elaborately in *Nidansthan*. It may be explained on the basis of *Shatkriyakala*. The *Samanya samprapti* process commences from the *Nidansthan*. (4-8)

a) Sanchaya

The excessive indulgence in *Nidan sevan* of guru, *Snigdha aahar* and *Avyayamadi vihar* leads to *Kaphadosha sanchaya*. It is mentioned that *Kleda* which gets *Sanchita* here is having the quality *Bahumutrata* vividly supported by charka. In *Prakrut avastha* the *Kapha* remains in *baddha* form i.e. solid or bind form but due to *Nidan sevan* its *Prakrita badha* form changes to *Dravatwa* form and that too in excess amount i.e. *Bahudrava*.

b) Prakop

These three factors *Nidan*, *Dosha* and *Dushya* gets combine together in such a precise way that they lead to *Prakopa* of *Bahudrava kapha* rapidly and get *Prameha* in future. In the first two stages the *Anukulatva* between *Nidan* and *Dosha* ensures. *Kaphakar Aahar* vitiates *Kapha dosha* without any resistance due to similar properties.

The *Anubandha* between *Vishesh (Anukul) Nidan* and *Kapha dosha* leads to increase in amount of *Kapha* which in future develops *Prameha*. The *Bahudrava dosha* is prove to develop *Prameha* and as it is already present in excess quantity from the beginning. Hence it gets aggravated rapidly when the *Anukul nidanas* are continued. This type of *Anukulatva* may be seen in person having *Kaphas prakriti* and who are having genetic predisposition of *Prameha*.

c) Prasara

In this stage the provoked *Kapha* gets spread all over the body occurring to *Sharir shaithilya* being one of the *Anukula* factors for *Nidana* towards the *Dosha*.

d) Sthan Samshraya

The provoked kapha has affinity towards bahu-abadha-meda due to their similar properties and gets ligated there.

The provoked kapha (*Vikruta*) after combining with bahu-abadha-meda causes its vitiation. The other important dushyas are sharir kleda and mamsa, which are already increased in large quantity, prior to vitiation

of kapha. The provoked kapha with vitiated meda gets combined with sharir kleda or mamsa or both.

This is an important stage because the prodromal symptoms of the disease are manifested in this stage. It is essential to diagnose the disease at this stage to prevent further progress of the disease for better prognosis.

e) Vyakti

In this stage of *Vyakta avastha* two types of manifestation occurred:

i) *Mutravaha strotodushti* due to sharir kleda dushti if vitiated kapha and meda come in contact with sharir kleda then it changes in mutra, the vitiated kapha impedes the opening of *mutravaha srotasa* which are already filled with vitiated meda and kleda, thus producing the disease *prameha*.

ii) The *puti pidka* due to mamsa dhatu deviation.

The above two manifestation of kleda and mamsa dushti will occur simultaneously or in two stages.

In spite of so many poorvarupas only two lakshanas have been mentioned in the classics, i.e. *prabhuta mutrata* and *avil mutrata*.

Prabhut mutrata occurs as a result of *vruddhi swarupa*. i.e. *kleddushti* and *avil mutrata* is one of the sign of *kled dushti*.

f) Bheda

In this stage various complications of the disease manifest and the disease progress towards *asadhyatwa* i.e. disease becomes incurable.

The *prameha* disease attains *sthairya* (Stability) and *Asadhya* (Incurability) state because of its *prakruti* and *vikruti*.

Hence Chakrapani has explained the term *prakruti* and *vikruti* that if all the natural properties of kapha become abnormal, the *prameha* gets chronic and if kapha get provoked further condition of incurability ensures.

Involvement of *raktadi dhatu* which is not similar in qualities to kapha is considered as *vikruti*. (7-9)

B) Samprapti according to Doshik Predominance

a) Kaphaj prameha

The etiological factors first cause the provocation of kapha because of its close similarity to the related hetu. This aggravated kapha then spreads all over the body rapidly due to *sharir shaithilya*. *Medadhatu* being excess in quantity. *Abadha* and having similar properties with the kapha, the provoked kapha while spreading gets amalgamated with meda dhatu causing vitiation.

This annexation of vitiated meda and kapha comes in contact with sharira kleda and mamsa.

Which are already in excess quantity resulting *putimamsa pidaka* on the other hand the vitiated kleda gets converts into mutra. The kapha along with meda and kleda impede the openings of *mutravah srotasa* resulting into *prameha*.

Sushruta narrated dushyas in each doshika type of prameha.

He narrated vitiation of kapha along with Vata, Pitta and Meda in khaphaj prameha.

b) Pittaj Prameha

Due to its etiological factors provoked pitta manifest as a pittaj prameha. Here similar pathogenesis occurs as described in kaphaj prameha. Depending on different properties of pitta dosha the pittaja prameha develops in to 6 types.

Pittaj prameha is not entirely pittika but it does have pitta predominance as it is mentioned in the very beginning of the 4th chapter of nidana sthan in Charaka samhita. There is dominance pitta dosha in comparison to kapha and vata dosha in pittik prameha.

Sushruta correlated along with Vata, Kapha and Meda in the pathogenesis of pittaj prameha. Almost similar pathology is described in Ashtang Sangraha and Ashtang Hridaya.

c) Vataj Prameha

Here Vata gets provoked due to its own etiological factors and draws out vasa adi dhatuj from the body towards basti, resulting into 4 types of vataj prameha. When oja is drawn towards basti due to vitiation of vata, the natural madhura swabhava of oja, due to the rukshaguna of vata gets transformed into kashay rasa leading to manifestation of madhumeha.

One more pathogenesis of vataj prameha is described in chikitsa sthana; their provoked vata due to depletion of other two dosha carries vital dhatuj towards basti resulting into vataj prameha.

As per sushruta kapha, pitta, medha, vasa, majja etc. take part in pathogenesis of prameha. (8-11)

3. Modern consideration

Pathogenesis

Type 1 Diabetes Mellitus

The basic phenomenon in type 1 DM is destruction of beta cell mass, usually leading to absolute insulin deficiency. It can be explained on the basis of 3 mutually inter linked mechanisms genetic susceptibility, auto immune factors and certain environmental factors.

- ✓ At birth, individuals with genetic susceptibility to this disorder have normal beta cell mass.
- ✓ Beta cells act as auto antigens and activate CD4+ T Lymphocytes bringing about immune destruction of pancreatic beta cells by auto immune phenomena and takes months to years. Clinical features of diabetes manifest after more than 80% of beta cell mass has been destroyed.

The trigger for auto immune process appears to be some infectious or environmental factor which specifically targets beta cells.

Type 2 Diabetes Mellitus

The basic metabolic defect in type 2 DM is either

delayed insulin Secretion relative to glucose load (impaired insulin secretion) or the peripheral tissues are unable to respond to insulin (insulin resistance).

Type 2 DM is a heterogeneous disorder with a more complex etiology and is far more common than type 1, but much less is known about its pathogenesis. A number of factors have been implicated through, but HLA association and auto immune phenomena are not implicated. These factors are as under

- ✓ Genetic factors
- ✓ Constitutional factors
- ✓ Insulin resistance
- ✓ Impaired insulin secretion
- ✓ Increased hepatic glucose synthesis

In essence, hyperglycaemia in type 2 DM is not due to destruction of beta cells but is instead a failure of beta cells to meet the requirement of insulin in the body. Its pathogenesis can be summed up by interlinking the above factors asunder:

- ✓ Type 2 DM is a more complex multi-factorial disease.
- ✓ There is greater role of genetic defect and heredity.
- ✓ Two main mechanisms for hyperglycaemia in type 2 DM – insulin resistance and impaired insulin secretion are interlinked. While obesity plays a role in of insulin resistance, impaired insulin secretion may be from many constitutional factors
- ✓ Increased hepatic synthesis of glucose in initial period of disease contributes to hyperglycaemia.

4. Conclusion

Prameha described in traditional Ayurveda texts as disease of *Kapha* vitiation. Indulgence in the *Nidan* causes disturbances in *Kapha* which increases *Kleda* and finally initiates pathogenesis of *Prameha*. Modern science described diabetes as disease of metabolic and hormonal disturbance.

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Conflict of Interest

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