

**A CRITICAL REVIEW OF LITERATURE OF DIABETES MELLITUS
WITH SPECIAL REFERENCE TO MADHUMEHA*****¹Vd. Gauri Balkrishna Chandanshive and ²Vd. Ravin Chandak**

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INTRODUCTION

Knowledge of History is foremost step in the research field as besides the basic ideas, it also provides the utmost guidelines for any further research. Evolution is the basic nature of everything whether living or none living. This also applies to the science as it also evolves sequentially. Chronological order of sequences presents itself in the form of history. A critical review of the history from the primitive stage to the present time assists one to understand the future in a better way. Majority of the description Nirukti, Samanya Nidana, Samanya Samprapti available in the context of Prameha such as Nirukti, Samanya Nidana, Samanya Samprapti suits Madhumeha, and as Madhumeha is one among 20 types of Prameha, and all the Prameha in due course, if neglected or not treated attain the stage of Madhumeha. Considering all the above points, the description of Prameha will also be made along with Madhumeha. Many research works done so far on Madhumeha in various postgraduate centers have equated it to

Diabetes Mellitus. So, a very brief description of Diabetes Mellitus will be made here from Daivika Yuga to modern period along with the description of Prameha and Madhumeha in particular. The Adhya Devata Lord Gajanana suffered from this disease. He had suffered from the disease because of his dietary and working habits. He used to consume excess of sweets (Modaka) and work continuously in sitting position and his body was also obese. After the attack of the disease he started to take Kapittha, Jambu Phala and Shiva Gutika, on the advice by his father Lord Shiva.

MATERIALS AND METHODS

CONCEPTUAL REVIEW

SAMHITA PERIOD (2000 B.C. to 800 A.D.)

Charaka (120 B.C.) has described the disease Madhumeha in the chapters of Sutrasthana 17th where etiopathogenesis of Avaranajanya Madhumeha along with complications is narrated which is the unique contribution in the field. In Indriyasthana he has mention about Arista Lakshana's of Prameha. Acharya Charaka has described Prameha as Anushangi Vyadhi and given the detailed description of the etiology, pathogenesis, symptomatology and complications in Nidanasthana 4 th chapter and in Chikitsasthana 6 th chapter he narrated detailed treatments and Pathya -Apathya. In Chikitsasthana term Ojomeha is used in place of Madhumeha.

Sushruta Samhita (1000 B.C.) describes it as Kshaudra Meha in which one passes urine, which resembles honey. It is described along with Nidana Panchaka of Prameha in the chapter of Nidanasthana 6th. Besides that specific decoction for specific type of Prameha has also been mentioned and described Pramehanivritti Lakshanas particularly, i.e. symptoms which shows recovery from the disease. In Chikitsasthana 11th, 12th and 13th treatment of even Asadhya type of Prameha has been given so that it may be converted to Yaapya one. An exclusive chapter for Madhumeha Chikitsa is available only in Sushruta Samhita where he indicates Shilajatu, Swarnamakshika, Rajatamakshika and Tugaraka Rasayana after Samshodhana of body.

In Astanga Hridaya (300 A.D) the description of Madhumeha is available in Nidanasthana chapter 10th and Chikitsasthana chapter 12th. Prameha is described as Mutraatipravritti Janya Vikara. Two types of Madhumeha are described i.e. Vata-Avarana and Dhatukshaya.

He has described „Dhatri Nisha“ for the treatment of Prameha. In Astanga Sangraha the description of Madhumeha is available in the chapters of Nidanasthana 10th and Chikitsasthana 14th, same as Charaka and Sushruta with slight modifications.

In Bhela Samhita Nidanasthana, description of two types of Prameha is given i.e. Swakritija Prameha and Prakritija Prameha¹². Harita Samhita 3 rd Sthana, 31st chapter has narrated Prameha as Papajanya Roga and enumerated 13 types of Prameha with different classifications like Puya Prameha, Takra Prameha, Rasa Prameha, Ghritha Prameha etc.

In **Kashyapa Samhita Sutra Sthana 25th chapter**, description of Pramehi child is available. He also narrated Prameha is a Chirakari Vyadhi.

Diabetes Mellitus in Modern Medical History

Madhumeha can be literally translated as Diabetes Mellitus as both of them mean honey urine. Diabetes is derived from Greek word, which means To siphon through, Mellitus a Latin word which means Honey. It had been known to Chinese as a wasting thirst disease for many centuries, and they observed that the urine was so sweet that it attracted dogs.

- **Abrus Papyrus:** An Egyptian medical compilation (1000BC) has referred to a condition called Polyuria.
- **Celsus (2 nd AD):** First clinical clear description of diabetes was given.
- **Arataeus of Cappadocia (150AD):** Has mentioned Polyuria and thirst. He rightly quoted “A mysterious affection not very frequent among man, being a melting down of flesh and limbs into urine, life is short, disgusting and painful, thirst unquenchable, death is inevitable”.
- **Thomas Willis (1670AD):** First mentioned sweet taste of diabetic urine.
- **Mathew Dobson (1776AD):** Demonstrated sugar in urine.
- **Johan Conard (1682AD):** First thought that pancreas was the cause of Polyuria. He experimented on dogs to prove this.
- **Claude Bernad (1813AD-1878AD):** First said about Diabetes. He punctured the 4th Ventricle of dogs brain and produced Glycosuria.
- **Paul Langherhans (1869AD):** Identified Islets of Langherhans and so this was named after him. He is a German medical student announced in a dissertation that the pancreas contains two systems of cells. One set secretes the normal pancreatic juice; the function of the other was unknown. Several years later, these cells are identified as Islets of Langherhans.
- **Kunhana & Lea (1893AD):** Discovered anti-diabetic hormones.

NIRUKTI (Etymology)

Madhumeha is a compound word made up of Madhu and Meha.

- **Madhu**

The word Madhu is derived from the root 'Mana' and the meaning as 'Manava Bhodane' i.e., which gives psychic contentment. The word Madhu is also derived from the root 'Manyante Visheshena Janati Jana Yasmin'

The root 'Manjane' is applied by Dha Adesha and it shows the similarity of urine in taste, colour and appearance etc. In Sanskrit literature, Madhu word is used in various contexts like Pushpa Rasa, Makarandah, Makshikam, Madhy, Ama, Kshiram, Jalam, Madura Rasa etc.

- **Meha:-** The word Meha is derived from the root 'Miha', which is employed in the sense of Sinchana: to moisten, Ksharana: to flow, Prasrava: excessive excretion. The word Meha was initially found in Rigveda as 'Mehanadthanam Karanallium'. The commentator of Rigveda, Sayanacharya interpreted the word Mehana as Medhra, which denotes Shisna (penis). In Sanskrit literature the Mih is used to denote to make water, to wet, to emit semen. Madhumeha is the disease in which the excretion is having quality similar to Madhu in its colour, smell, taste and consistency.
- **Prameha:-** It is a combination of Pra (Upasarga – Prefix) and Meha. The word „Meha“ is derived from the root 'Mih Sechane' by adding 'Lue' Pratyaya to it, which means to excrete or profuse watering which signifies urination as well as acts of passes any morbid urethral secretion.. Excessive quantity and frequency is indicated by the prefix (Pra). So when this root 'Mih' is added to prefix 'Pra' the word becomes Prameha.

The literary meaning of Prameha is to micturate, that is why the main characteristic features of Prameha is said to be Prabhoota Mutrata and Avila Mutrata. A condition characterized by excessive outflow of urine. Hence the disease is named, as Prameha where Meha is synonym of Mutra Dosha by Raja Nighantu and Bahumootrata by Hemachandra.

DEFINITION OF MADHUMEHA

In Ayurveda Madhumeha has been described as one among the 20 types of Prameha and is a sub type of Vataja Prameha in which patient passes excessive amounts of urine that tastes and looks like honey. To understand its etiology, pathophysiology, complications and management it becomes obligatory to go through Prameha as a whole.

Madhumeha is a disease in which urine of the patient is sweet like honey and quantitatively increased as well as astringent, pale and rough in quality and the whole body of Madhumehi becomes sweet. Other Acharyas also opines the same.

Acharya Sushruta has narrated the term Kshaudrameha; in place of Madhumeha. The Kshaudra is one of the varieties of Madhu which is Kapila (tawny) in colour. So it is clear that Kshaudrameha resembles Madhumeha. As per Sushruta all the Pramehas if neglected get converted into Madhumeha and the disease Prameha with Pidaka should be termed as Madhumeha.

SYNONYMS OF MADHUMEHA

- Prameha: Means “Prakarshena Mehati” - excessive urine out flow.
- Meha: Is referred to as Prameha by Amarakosha.
- Mootradosha: A urinary disorder.
- Bahumootrata: A disease where there is excessive urination.
- Paushpameha: In Anjana Nidana the word Paushpameha has been used in place of Madhumeha. In Sanskrit literature Paushpameha means Madhu.
- Madhumeha: A condition characterized by “excess urination, resembling honey either in colour or taste”. This word has been used synonymously with Prameha.
- Kshaudrameha: Kshaudra is a synonym of Madhu.
- Ojomeha: Ojas is considered as Tejas or essence of all Dhatus, which is a casualty in Madhumeha; hence Ojomeha has been used by Charaka to describe this disease.

CLASSIFICATION OF MADHUMEHA

In the Ayurvedic classics Madhumeha has been classified as follows on the basis of various aspects.

1. On the basis of Body Constitution.

Sthula and Krisha:- In Chikitsa Sthana, Charaka has classified patients of Prameha into two main group's viz. Sthula Pramehi and Krisha Pramehi while describing line of treatment of Prameha. Sushruta also mentioned that body constitution of Sahaja Pramehi is usually Krisha (thin) and that of Apathya Nimittaja Pramehi is Sthula (obese).

2. On the basis of the etiological factors

Sahaja (Hereditary): It has been described by Sushruta and its etiology has been said to be Beeja Dosha, the patients being lean, thin and emaciated. Charaka also narrated Jatapramehi because of Beeja Dosha and has emphasized it as Kulaja Vikara. This category of Prameha have been said to be incurable. So it can be said that it has got genetic origin. This type can be compared with Type 1 D.M.

Apathyanimittaja (Acquired): It has been narrated by Sushruta according to etiological factors²⁹. It can be further classified into following two subtypes.

- Avaranajanya
- Dhatuapakarshanajanya

Avaranajanya pathogenesis occurs due to etiological factors which lead to the vitiation of Kapha, Pitta, Meda and Mamsa which in turn cause Avarana of Vata Dosha leading to its provocation and manifestation of Madhumeha.

Dhatuapakarshanajanya pathology occurs due to depletion of Dhatus because of the Vata vitiated etiological factors and the Madhuratwa of Oja is displaced by Kashaya Rasa & it is brought to the Basti leading to Madhuvat Mutratyaga, leading to Madhumeha.

Vagbhata has clearly mentioned the two types of Madhumeha.

- Dhatukshayajanya Madhumeha
- Avaranajanya Madhumeha

3. Santarpanajanya and Apatarpanajanya

This type of classification is described by Charaka. Classification is mainly based upon the over nutrition and under nutrition. So, Santarpanajanya Madhumeha³⁵ can be correlated with Avaranajanya Madhumeha and Apatarpanajanya can be correlated with Dhatukshayajanya Madhumeha.

- Avaranajanya /Santarpanajanya
- Dhatukshayajanya /Apatarpanajanya

4. On the basis of Sadhya / Asadhyata.

- Utpatti Vishishta Anilatmaka: Asadhyata
- Vatanubandhita Kapha-Pittaja: Yaapya
- Vata Avarana Janya: Kriccha Sadhya

In nutshell, Sahaja and Apathyanimittaja are the types of Madhumeha. The Krisha, Dhatukshayajanya and Apatarpanajanya can be correlated with Sahaja Madhumeha. The Sthula, Avaranajanya and Santarpanajanya can be correlated with Apathyanimittaja Madhumeha.

NIDANA OF MADHUMEHA

Knowledge of etiological factor and their role in the pathology is very much necessary to find out the constituents like Dosha, Dushya, Mala, progression of the disease and their role in diagnosis and prognosis. All ancient treaties mentioned the common etiological factors of Prameha but Charaka mainly narrated the specific etiological factors according to Dosha and also mentioned the specific etiological factors of Madhumeha. This is the unique contribution of Charaka.

Among the Prameha Nidanas that are mentioned in our classics Samanya Prameha Nidanas and Kaphaja Prameha Nidanas can be considered as Nidana for Madhumeha in Sthula. For all types of Prameha especially Madhumeha, Kapha Dosha is the key factor and it can be established by Gangadharas version. In that he says, Gulma is caused by Vayu, Raktapitta by Pitta and Madhumeha caused invariably due to the vitiation of Kapha Dosha.

Sushruta has categorized the existence of Sthula and Krisha varieties of Pramehis and Charaka has prescribed different lines of treatment for the Sthula and Krisha Pramehis. He has also asserted that whenever a patient presents with Madhupama Mutra, a wise physician should always consider the possibilities of Madhumeha due to Vata as a result of Ksheenata of Doshas and Madhumeha due to Kapha as a result of Santarpana.

It is very clear from Charaka's explanation that Madhumeha in Krisha occurs in the event of a relative Vata Vriddhi in comparison to the other Doshas. These persons may have been Sthula in the beginning but would have become Krisha due to Dhatu Kshaya. On the other hand, Krisha Madhumehis are usually Rogis with Beeja Dosha. Hence, when such a Rogi consumes the Nidanas of Vata Vriddhi, he develops Madhumeha sooner than a Sthula Rogi who always indulges in Tarpana Ahara. Sthaulyata is also a condition due to Beeja Dosha and this Beeja Doshaja Sthaulya Rogi is more under the risk of developing the Madhumeha than the Jatothara Sthaulya person.

Comparison of the causes of Madhumeha and Diabetes Mellitus

Nidana of Madhumeha

- Beeja, Beeja Bhaga & Beeja Bhaga Avayava Upatapa leading to Madhumeharambhaka Dosha Dusti in Sahaja Madhumeha
- Kulaja Vikara- Pitr Pitamahadi Karma
- Kaphamedokara Ahara Vihara Sevana, Avyayama and Chinta Tyaga

- Vikara Vighata Abhava and Sahaja Asatmya
- Ksheera, Dadhi as Kaphakara Ahara
- Sthaulya Upadravas
- Shoka Udvega in Vataja Prameha
- Anashana

Etiology of DM

- Genetic susceptibility in the 6th Chromosome leading to Insulin Dependent Diabetes Mellitus.
- Familial inheritance more in Insulin Dependent Diabetes Mellitus.
- Over eating and under activity.
- Auto immunity.
- Bovine albumin.
- Obesity leading to Non Insulin Dependent Diabetes Mellitus.
- Stress leading to Insulin Dependent Diabetes Mellitus.
- Malnutrition in infancy predisposes to Insulin Dependent Diabetes Mellitu.

SAMPRAPTI GHATAKA OF MADHUMEHA

On the basis of various references the Samprapti Ghataka of Madhumeha is described as follows.

Dosha: Disease is Tridoshakopanimittaja.

➤ **Kapha:** Bahu and Abaddha - in Avaranajanya Madhumeha
Kshina - in Kshayajanya Madhumeha.

➤ **Pitta:** Vriddha - in Avaranajanya Madhumeha
Kshina - in Kshayajanya Madhumeha

➤ **Vata:** Avrita - in Avaranajanya Madhumeha
Vriddha - in Kshayajanya Madhumeha

Dushya: Rasa, Rakta, Mamsa, Meda, Majja, Vasa, Shukra, Oja, Lasika, Kleda and Sveda.

Srotas : Annava, Mutravaha, Udakavaha, Medovaha Srotas.

Sroto Dusti : Atipravritti, Sanga, Vimarga Gamana.

Agni: Vaishmya in all Agnis (or Dhatvaagnimandya)

Ama: In Madhumeha the Ama Roopi Kapha causes Saamata of Medodhatu first, leading to increased Kledata subsequently, this results in Saamata of other Dhatus as well, including the Ojas. Hence Dushya's are presenting in the form of Ama in Madhumeha.

- ✚ **Udbhava Sthana:** Amashaya.
- ✚ **Sanchara Sthana:** Sarva Shareera.
- ✚ **Adhistana:** Basti
- ✚ **Vyakta Sthana:** Mootravaha Srotas and Sarva Shareera.
- ✚ **Vyadhi Swabhava:** Chirakari
- ✚ **Bhedavastha:** Occurrence of Upadravas such as Puti Mamsa and Prameha Pidaka etc.
- ✚ **Swabhava:** Chirakari.

UPADRAVA OF MADHUMEHA

Samanya Upadrava: Trishna, Atisara, Daha, Daurbalya, Arochaka, Avipaka and Prameha Pidaka are the Upadravas of Madhumeha. Chakrapani opined that these complications manifest only on long term Anubandha of disease.

SAMANYA CHIKITSA SIDDHANTA

- ✚ **Nidana Parivarjana in Margavarajananya Madhumehi:-** An Apathyanimittaja Madhumehi is usually Sthula, likes Abhyavaharana & hates Chankramana. Here, the patient should be made to avoid all Kaphakara Ahara Vihara either to prevent the occurrence or to cure the disease.
- ✚ **Nidana Parivarjana in Dhatu Kshayajanya Madhumehi:-** Nidana Parivarjana in such Madhumehi persons is studied with special reference to Sahaja Madhumeha. It lies entirely on the Mata or Pita so as to how best they act to prevent the occurrence of the disease in them. They should avoid the Beeja, Beeja Bhaga or Beeja Bhaga Avayava Upatapa leading to Madhumeha Arambhaka Dosha Dusti.
- ✚ **Apakarshana and Prakriti Vighatana:-** The Apakarshana of Dosha is mainly done through Samshodhana but only when Roga and Rogi Bala are in Pravaravastha and when either one or both are Avara, then it is done through Langhana and Langhana Pachana, which constitutes Samshamana Chikitsa, in other words Prakriti Vighatana.
- ✚ **Apakarshana in Margavarajananya Madhumeha:-** In Sthula Madhumeha Samshodhana is indicated and before starting this therapy Snehana is advised. For Snehana Karma, when there is predominance of Kapha Dosha along with Vata then Thaila processed with Kaphagna drugs should be used.

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