A REVIEW ARTICLE ON DIABETES MELLITUS- AN AYURVEDIC APPROACH

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ABSTRACT
Diabetes Mellitus is one of the most common non-communicable diseases. In India, it is emerged as a health problem. Diabetes Mellitus is a heterogeneous metabolic disorder characterized by common feature of chronic hyperglycemia with disturbance of carbohydrate, fat and protein metabolism. In Ayurveda, it can be explained as Madhumeha. It is one of the types of Vataj Prameha where the patient passes honey like sweet urine. The main causative factor is sedentary life-style, excessive intake of dairy product, sweet, non-vegetarian, jaggery and heavy excess meals. In Ayurveda, it can be managed conservatively with diet, exercise and medication. Drugs like Shilajit, Khadir, Lodhra, Guduchi and Jambu are effective in controlling Madhumeha.

Keywords: Diabetes Mellitus, Madhumeha, Hyperglycemia, Turbid urine

INTRODUCTION
Diabetes Mellitus is defined as a heterogeneous metabolic disorder characterized by common feature of chronic hyperglycemia with disturbance of carbohydrate, fat and protein metabolism.\textsuperscript{1} Ayurvedic remedies for Madhumeha (Diabetes mellitus) are the oldest among all the available therapies. Prameha are a list of urinary disorders, especially characterized by profuse urination with several abnormal qualities due to imbalance of Doshas. In Madhumeha the urine becomes (sweet and smells) like honey. It is of two distinct types, one due to the aggravation of Vata on account of the Dhatukshya and the other due to Kapha-Meda Avarana (Blockage of channel) along with Vata prakopa. When there is condition of Avarana (blockage of the channels/ activity) there are the additional symptoms of the vitiation of the particular Dosha without any other apparent cause\textsuperscript{2}. Sometimes the symptoms are
mild and suddenly they appear in severe form which is difficult to cure.

Aims and Objective:-
- To access Madhumeha is a metabolic as well as urinary disorder.
- To access clinical presentation of Madhumeha.
- To access the principle management of Madhumeha.
- To access the importance of life-style modification in Madhumeha.

Material and Method:–
- It is a review study article.
- In classical Ayurvedic literature, the Madhumeha’s described form of etiology, causative factor, sign & symptom and treatment briefly in Brihattrai and Bhavaprakash.
- In this article review some Ayurvedic text, modern books, PUBMED and Research article.

**Nidana (Etiology)**–
According to Acharya charka

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Samprapti (Pathogenesis) –
According to Acharya charka:

Samprapti of Madhumeha is best described by Acharya Vagbhatta. He said Madhumeha can originate in two ways -
1. By the aggravation of Vata caused by Dhatukshya.
2. By the obstruction of Vata caused by Doshas covering it.

Madhumeha which is caused by Dhatukshya manifests as thin and asthenic individual due to loss of Oja. All this is Ojakshaya (imbalance in Ojus). In Margavaranjanya Madhumeha the vitiated Kapha and Meda obstruct the passage of Vata. The obstructed Vata is vitiates again and carries Ojus to Basti thus manifests Madhumeha.

As per Ayurveda according to the potency of particular feature of etiology, Dosha and Dusyas, response occurs in the form of non-manifestation or other-wise of the disorders. When these three factors do not combine together or if combined after a long time or in weakened state, disorder will not be there, or it will manifest lately, or in a mild form or without all the said symptoms. On the contrary, the result will be contrary. Thus is said the cause of response in the form of non-manifestation or otherwise of all disorders.5
**Poorvaroopa (Premonitory Symptoms)** –
There premonitory symptom are- feeling of burning in the palms and soles, body (skin) becoming slimy, heaviness in body, urine is sweet, bad in smell and white in color, stupor, debility, profound thirst, dyspnea, more accumulation of dirt in the palate, throat, tongue and teeth, hairs of the head adhering to one another and more growth of the hairs and nails.⁶

**Roopa (Clinical Features)** - The general feature of the diabetes syndrome is-
✓ Passage of a profuse and/ or turbid urine,
✓ The urine becomes like honey
✓ The entire body becomes very sweet.⁷
Sushrutacharya also says that Sahajameha Rogi is usually Krisha (thin built) while Apathyanimittaja Rogi is usually Sthula (Obese).⁸

**Classification of Diabetes Mellitus⁹:-**
**Type- 1 Diabetes Mellitus (IDDM)** - Type 1 diabetes, formerly called juvenile-onset diabetes, is usually diagnosed in children, teenagers and young adults. Type 1 diabetes may develop in adults. This is an autoimmune disease causing destruction of Beta-cells of pancreas which results in an absolute insulinopaenia.

**Type- 2 Diabetes Mellitus (NIDDM)** - Type 2 diabetes, formerly called adult onset diabetes, is the most common form and has an insidious onset. It is commonly seen in adults, but can occur even in childhood. Weight loss is uncommon unless hyperglycemia is severe while ketosis is rare. Familial in-heritance is very common. This form of diabetes usually begins with insulin resistance and initially there is a counter regulatory hyperinsulinaemia. With time, the pancreas loses its ability to secrete enough insulin in response to meals and clinical diabetes develops.

**Classification of Prameha:**
• Kaphaj Prameha: 10
• Pittaj Prameha: 6
• Vataj Prameha: 4

**Other types of diabetes**-
A number of other types of diabetes exist which develop due to:
- Genetic defects of the beta-cell function
- Genetic defects in insulin action
- Disease of exocrine pancreas
- Endocrinopathies
- Infections
- Rare autoimmune disorders
- Genetic syndromes associated with diabetes

**Criteria for the diagnosis of DM:**-
**Fasting:-**
• Normal- < 110 mg/dl
• Impaired fasting glucose- > 110 and < 126 mg/dl
• Diabetes mellitus- ≥126 mg/dl

2-hour post load -
• Normal- < 140 mg/dl
• Impaired glucose tolerance- > 140 and < 200 mg/dl
• Diabetes mellitus- > 200 mg/dl with symptoms

**Investigation:-**
- O.G.T.T. (Oral Glucose Tolerance Test)
- Lipid profile
Pratibha Et Al: A Review Article On Diabetes Mellitus- An Ayurvedic Approach

- Liver Biochemistry
- Glycosylated Haemoglobin (GHB)
- Blood glucose-Random, Fasting, Post-prandial
- Urine tests-Urine testing for glucose is still widely used.
- Protein urea is a reflection of the development of renal complication.

**Upadrava (Complications):**

*Daha, trishna, hrichadaaha* (Sour belching), *moorchha, anidra, kampa, Krisha* (emaciation), *swash* (increased breathing), too much elimination of urine (*prabhutmoortata*), improper digestion (*ajeerna*), *vamana*. Troubled by appearance of deep seated *Pidikas* (Eruption), Feeling of heaviness of the body (*Gaatrargurata*).\(^{10}\)

1. Metabolic complication- Keto-acidosis, Hyper-osmolar coma
2. Infective- Bacterial and fungal infections of the skin, mucosa, soft tissues, bone, urinary tract and lungs.
3. Late complication- Atherosclerosis- Coronary heart disease, cerebro-vascular disease and Peripheral vascular disease. Cataract, Diabetic ulcer (Diabetic foot), Nephropathy, Retinopathy, Dermopathy, Neuropathy- Polyneuropathy, autonomic neuropathy.
5. Maternal and fetal disorder in G.D.M.\(^{11}\)

**Prognosis (Sadhyaa-Asadhyata) Incurability:-**

- **Kaphaj Prameha:** Sadhya (*Samkriyatvaat*)
- **Pittaj Prameha:** Yaapya (*Vishamkriyatvaat*)
- **Vataj Prameha:** Aasadhya (*Mahatyatvaat*)

The diabetes syndrome since birth due to a genetic defect is said to be incurable. All stage of the diabetes syndrome, if not treated properly lead to severe complication like CRF (Nephropathy), Retinopathy and multiple organ failure are incurable.\(^{12}\)

**Treatment-**

In general, *Krisha Pramehi* which is co-related with Type 1 Diabetes mellitus patients are advised to have *Bringhan* medication (Anabolic) as well as a diet which increase Dhatus in the body.\(^{13}\)

In *Apathyanimittaja Rogi* which is co-related with Type 2 Diabetes, Obese diabetic patients with optimal body strength having intense increase of *Doshas, Samshodhan* (purification) of the body advocated.

- **Snehana**
- **Shodhana**
- **Virechana**
- **Vasti** (*Asthapanal/Niruha*)
- **Shamana**
- Exercise and life style modification & following regular regimen of exercise, *yogasana, pranayama* and regular food & sleep, following *Ritucharya & Dincharya*.

**Herbal medications helpful in Madhumeha\(^{14}\)**

- **Musta** (*Cyperus rotundus*)
• Daruharidra (Berberis aristata)
• Arjuna (Terminalia arjuna)
• Khadir (Acacia catechu)
• Lodhra (Symplocos racemosa)
• Guduchi (Tinospora cordifolia)
• Patol (Trichosanthes dioica)
• Vata (Ficus bengalensis)
• Udumbar (Ficus glomerata)
• Gudmar (Gymnema sylvestre)
• Shilajit (Purified Bitumen)-(most effective)
• Nimba (Azadirachta indica)

Preparations used in a patient of Madhumeha for effective management:

(a) Ghrita & Taila - Trikantakdy Sneha, Dhanvantar Ghrita, Triphala Ghrita, Pramehamihir Taila.
(b) Asava-Arista - Lodhra Asava or Madhva Asava, Daya Asava, Bhalataka Asava.
(c) Leha (Paste) - Salsaradi leha, Kusha Avleha, Vanga Avleha.
(d) Udaka- Sarodaka, Kushodaka, Madhukodaka, Sidhu, Madhvika.
(e) Vati (Tablet) - Trikatukadya Modaka, Shiva Gutika, Shilajatvadi Vati, Chandraprabha Vati, Indra Vati, Gokshuradi Vati, Aarogyavardhini Vati.
(f) Churna (powders) - Nyagrodadi Churna, Eladi Churna, Karkatbijadi Churna, and Triphala Churna.
(g) Rasa/ Bhasam- Vasantakusumakar Rasa, Brihta Bangeshwar Rasa, Suvarna Banga, Apurvamalinivasant Rasa, Harishankar Rasa, Panchana Rasa.
(h) Kwatha (Decoction) - Phalatrikadi Kwatha, Darvadi Kwatha, Vidangadi Kwatha, Triphaladi Kwatha.

Diabetes can be controlled by giving attention to three aspects:
• Ahara
• Vihara
• Aushadha

The role of ahara and vihara are equally or even more important than drugs in order to control blood sugar level as well as to prevent complication of this disease.

Cereals-Yava–Barley (Chenopodium album), godhooma- Wheat, Shyamaka, kodrava, bajara.

Pulses- Mainly beans- Mudga (Green-gram), Chanaka (Bengal gram).

Vegetables - Thiktha shakas, Methika (Trigonella foenum-gracum), Nimba (Azadirachta indica), Karavella (Momordica charantia), Patola (Trichosanthes anguina), Rasona (Garlic), Udumbar (Ficus racemosa).

Fruits- Jambu (Syzygium cumini), Talaphala (Borassus flabellifer), Bilwa (Aegle marmelos).

Pathya and Apathya - Shyama, Kodrava, Uddalika, Godhooma, Chanaka, Aadak and Kullatha which are old- are suitable to be used as foods by patients of Madhumeha (Diabetes). Vegetables of bitter taste (Thiktha), meat of animals and eggs of birds of deserts like regions (Jangala mamsa), boiled Yava and its preparations, Mudga, Shali, and Shastika are all suitable as foods.

Shauviraka (fermented gruel), Sura (beer), Buttermilk, oils, milk ghee, jaggery, foods processed with sour sugarcane juice, food prepared from flour, meat of animals of marshy regions should be avoided from use.

Yoga - Yoga improves all sorts of metabolism in the body. So diabetics should perform
different types of yoga. Yoga will definitely help diabetes mellitus. Yoga now-a-days has attracted the attention of Western people. Common Asana that can be very effective in Diabetes are Pranayam, Trikonasan, Mayurasan, Surya-namaskar, and Dhanuraasan. 

**Exercises**- Brisk walking, jogging, bicycling, swimming.

**DISCUSSION**

Diabetes mellitus is a life-style disorder. It is of two types- Type I DM and Type II DM. The description of Madhumeha is the specific contribution of Acharya Charka as well as Acharya Susruta and Acharya Vagbhatta. He has included it in Astamahagad. The clear cut cause of disease is still unknown. In Ayurveda, Prameha is broadly classified in Kaphaj Prameha (10), Pittaj Prameha (6) and Vataj Prameha (4). Prameha is Kapha-Medo pradhan disease. In Ayurveda, treatment and treatment therapies are described uniquely for every person and special contribution in etiopathogenesis of Prameha.

**CONCLUSION**

Diabetes Mellitus is a metabolic disease and urinary disorder and described as Madhumeha in Ayurvedic. Two type of clinical presentation are seen Krishna Pramehi (Type-I diabetes mellitus) & Sthula Pramehi (Type-II diabetes mellitus). Ayurvedic principles of management can help the patient to have better blood sugar control and routine life inspite of modern management methods. Various researches on drugs like Shilajit, Giloya, Vijayasara, Haritaki, Manjistha & formulation have shoves promising results in patient. In addition life style modification with adopting proper food habits, yoga & exercise have very important role in the management of Prameha (Diabetes Mellitus).

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