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Etiopathological Study of Madhumeha and its Complication; Prevention through Yoga and Ayurveda

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ABSTRACT
Madhumeha (Diabetes mellitus) is becoming significant problem for the entire world day by day. Diabetes mellitus exploits a decent sized freight worldwide in terms of early mortality, morbidity and health care costs, and genetic vulnerability. It has been increased due to sedentary lifestyle; ill-advisable food habits and stress. In Ayurveda, its one among Mahagada (untreatable diseases), also the diagnosis and management of Madhumeha (Diabetes) is based on Tridosha theory. Acharya Madhava said the term Prameha, which is equivalent to group of symptoms which includes obesity, type I&II diabetes mellitus and metabolic syndrome in modern medicinal science. It is described in Vataja Prameha, managed by conventionally with exercise, diet regimens, internal medication, Yoga, pranayama and Pathyapathya. Signs and symptoms of Diabetes mellitus are difficult to diagnose in an early stage, which ultimately leads to many complications like Prameha Pidika. Therefore, in this study the etiopathogenesis of Madhumeha along with its complication was studied according to Ayurveda as well as modern science literatures. The preventive measures in Ayurveda can stave off through Samprapti Vighatana. Specific protocol for prevention of Madhumeha through Yoga and Ayurveda was established.

KEYWORDS
Madhumeha, Etiopathogenesis, Beejadosha, Updrava, Yoga
INTRODUCTION

India leads the world with major number of diabetic patients which is the major cause for mortality. In Indian literature it has been validated that diabetic patients do not attain the HbA1c below 7%. *Madhumeha is one type of Vataja pameha*¹ which comes under 20 *type of prameha*¹ and it can be correlated with Diabetes mellitus, its synonyms in Ayurveda are – *Madhumeha, Ojomeha, Ksaudrameha*². Sedentary life style and stressful mental illness is leading to foremost cause of Diabetes Mellitus – a perfect example for a lifestyle disorder. Diabetic patients are progressively increasing worldwide, because of modern lifestyle and comfortable living standards, without any physical exertion, eminence of packaging foods in daily diet, sleeping disturbance is also cause of various lifestyle disorders like obesity, diabetes mellitus, hypertension, coronary heart diseases, CCF etc. Diabetes is now the diseases in trends along with serious complications. It is necessary to make aware the society about the etiology and complications of diabetes mellitus.

In Ayurveda, *Updravas* (complications) of *Madhumeha* are described in detail such as *Putimansapidaka, shaithilya, murcha* etc³. It can be correlated with Peripheral neuropathy causing gastrointestinal illness, cardiovascular symptoms, genitourinary and sexual abnormality, Retinopathy, Nephropathy (Renal failure) are also the late consequences of DM (Diabetes mellitus). Thus complications of DM are more life threatening in patients therefore study of complications is need of an hour.

Also *Raktadushti lakshna* is the important *dushya of madhumeha* in Ayurveda and modern science. According to Dalhanacharya for pathogenesis of any *updrava raktadushti* is a prime factor⁴. So, in this article an attempt is made to find the ethiopathological components of *Madhumeha* (diabetes mellitus) and its management through yoga and Ayurveda.

MATERIALS AND METHODS

Literature review regarding *Prameha, Madhumeha, its Updravas, Samprapti* was completed by refereeing authoritative books of *Ayurveda*. Prevention and its management through *Pathya- Apathya* (life style modification), *Yoga and Ayurveda* is reviewed from various *Ayurvedic* texts, research publications.

The reviewed materials are compiled in sequential manner as well as critical review is done and an attempt is been made to draw some fruitful discussion.
SUMMARY
Paribhasa
33/1. Which means frequent excessive and cloudy micturation with high frequency, hazy consistency etc.
Madhumeha comes under the Astamaharoga or Astamahagada in Charaka Samhita Indriyasthana6 which indicates the bad prognosis of the disease.

According to Ayurveda the Nidana of madhumeha is the consequence of vitiation of dosha, chiefly the Vata dosha.

Acharya Charak has mentioned madhumeha also as a kulaja vikara due to defect in the beeja (Shukra and Shonita)7.

Acharya Sushruta had mentioned it as “Sahaja vyadhi” in perspective of the genetic factors, two factors i.e. hereditary and dietetic are generally responsible for causing the disease prameha and the patients are classified accordingly as sahaja (inborn) pramehi and apathyanimittaja (related to dietary and lifestyle factors) pramehi8.

A. Sahaja Prameha

Prameha has been declared as a kulaja vikara due to some genetic defect. The over consumption of madhura rasa (apathyya sevana) during pregnancy is responsible for inducing Prameha at the time of fetal development, similarly Chakrapani explains i.e. genetic defects and dietetic factors are important cause in the manifestation of sahaja prameha or Madhumeha.

B. Apathya Nimittaja Prameha

The general etiology of prameha including kaphaja, pittaja, and vataja prameha described in the Ayurvedic classics are responsible for vitiation of dosha and it is most important for prameha/Madhumeha.


<table>
<thead>
<tr>
<th>S.No.</th>
<th>AHARA</th>
<th>VIHARA</th>
</tr>
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<tbody>
<tr>
<td>1</td>
<td>Guru dravya (heavy)</td>
<td>Swapna sukha (sleep)</td>
</tr>
<tr>
<td>2</td>
<td>Snigdha dravya (unctuous)</td>
<td>Asya sukha (sedentary life)</td>
</tr>
<tr>
<td>3</td>
<td>Amla dravya (Sour)</td>
<td>Avyayama (no exercise)</td>
</tr>
<tr>
<td>4</td>
<td>Lavana ras (Salty taste)</td>
<td>Chintahaen</td>
</tr>
<tr>
<td>5</td>
<td>Nava anna, Nava pana (new grown grains&amp;beverages)</td>
<td>Sansodhana karmaheenta</td>
</tr>
<tr>
<td>6</td>
<td>Anup Mamsarasa</td>
<td></td>
</tr>
<tr>
<td>7</td>
<td>Guda (jaggery)</td>
<td></td>
</tr>
</tbody>
</table>

SAMPRATI (Pathogenesis) of Madhumeha)9:-

The Samprapti of Madhumeha is described by various texts are explained below:

According to Charaka - In Charaka chikitsa sthana has considered to be Madhumeha is caused by Shuddha vata. Vata dosha gets aggravated by vatavridhikara nidana and it is leading to kshaya of kapha, pitta dosha and dhatu such as vasa, majja, lasika and oja. If Vata gets aggravated again then it carries oja
towards basti and thus leading to Madhumeha. Due to ignorance of proper treatment kaphaja or pittaja prameha achieved the advanced form; it is called Apratikarita Vatanubandhita Madhumeha. According to Sushruta - Due to negligence of treatment they get convert into Madhumeha. It is called Kalaprabhavjanya Madhumeha.

According to Vagbhatta - Due to kshaya of Saradhatus, vata gets aggravated which leads to madhu (honey) like urine, it is called Dhatuksayajanya or Dhatuapkarshanjanya Madhumeha.

Excessive consumption of sycophantic substances, Amla, lavana, guru (heavy), snigdha ahara (oily food) etc. and excessive sleep and deskbound lifestyle etc. lead to excessive raise of kapha, pitta, meda and mamsa which causes srotorodha (obstruction on srotas) along with avarana (covering) of vata. This vitiated vata carries the oja to basti resultant in Madhumeha and lakshanas become known of vata, pitta, kapha. It is called Avaranajanya Madhumeha.

**ADA Criteria of Diagnosis Mellitus10:-**

The classical triad of symptoms of hyperglycemia in Diabetes includes the following:

Polydipsia, Polyuria, Weight loss

Random blood glucose - ≥200mg/dl accompanied by the classic symptoms of diabetes sufficiently confirm the diagnosis of Diabetes mellitus.

**Fasting:**
- Normal- < 100 mg/dl
- Impaired fasting glucose- > 100 and < 125 mg/dl
- Diabetes mellitus- ≥ 125 mg/dl

2-hour Post prandial :-
- Normal- < 140 mg/dl
- Impaired glucose tolerance- > 140 and < 199 mg/dl
- Diabetes mellitus- > 199 mg/dl with symptoms

**Screening test:-**

HbA1C – Normal – <5.6%

Abnormal glucose homeostasis – 5.7 to 6.4%

Diabetes Mellitus - ≥6.5%

Hb1Ac also serves as prognostic indicator for Glycemic control.

**Investigation:-**

- O.G.T.T. (Oral Glucose Tolerance Test)
- Lipid profile
- Liver function test
- HbA1C (Glycosylated Haemoglobin (GHb))
- Blood glucose-Random, Fasting, Postprandial
- Urine tests (Routine and microscopic)– for Proteinuria
Immediate comprehensive eye examination (Fundus)

**COMPLICATION (UPDRAVA)**11:

Trishna, Atisara, Daha, Daurbalya, Arochaka, Avipaka, Putimamsa pidika, Alaji, Vidradhi etc.

Vataja prameha- Hridgraha, Laulya, Anidra, Stambha, Kampa, Shula, Baddha purishatva

**Prameha Pidika**12

Prameha pidikas are described in Brihattrayi as a major complication of prameha, and these may develop without prameha in the individuals having primary medodushti. These pidika require surgical intervention. In relation to origin of prameha pidika, sushruta says that due to atony of rasayana in patients of prameha, doshas do not move upward and as such pidika appear in lower parts of the body in case of madhumeha. Sushruta’s pidika is Asadhya. He narrated that these pidika occur due to tridosha and vitiated meda and mamsa. These pidika are mainly found in muscular regions, joints and vital parts (Marma). Updravas (complications) of Madhumeha is described in Ayurveda. “Rakta” (blood) is one of the dushya in madhumeha. Many complications of madhumeha mentioned in Ayurveda and modern science and raktadushti (vitiation of blood) lakshnas (symptoms) described in Ayurveda are same. Assessment of raktadushti in complications of madhumeha can be helpful to avoid complications and save the patients from hazardous effects.

**Sadhya-Asadhyata (Prognosis)** –

Sahaja prameha (due to a genetic defect) – Asadhy (incurable)

Chronic madhumeha (if not treated) – Asadhy because it can lead to severe complication like CRF (Nephropathy), Retinopathy and Multiple organ failure.

**MANAGEMENT (Prevention)**13:

The ancient Ayurvedic principles of preventive (Nidan parivarjan) and purificative measures (Samshodhan Chikitsa) with appropriate single/compound formulations (aushadi), diet (pathya-apathy) management has been proved to be fruitful for better wellbeing in Madhumeha (Type-II diabetics) patients. In general Type 1 Diabetes mellitus i.e. Krisha Pramehi patients are advised to have Santarpaka (Bringhan) medication as well as a diet which increase Dhatus in the body.

In type 2 Diabetes, Apathyanimittaja Rogi (Obese diabetic patients) is treated by Samshodhan (purification) due to intense increase of Doshas.

1. Snehana (Bahya and Aantarika)
2. Shodhana (Purification therapy under three categories) – Vaman, Virechana, Vasti (Asthapanal/Niruha)
3. Shamana with Single and Compound drugs
4. Exercise and life style modification & following regular regimen of exercise, yogasana, pranayama and regular food & sleep, following Ritucharya & Dincharya.
5. Rasayana – Triphala and Shilajatu Rasayana

**YOGA**

Yoga promotes all types of metabolism in the body. So Madhumehi should perform yoga. It is important to note that vigorous exercise is contraindicated in lean and weak patients with severe diabetes. Yoga will absolutely help in Madhumeha. Yoga now-a-days has fascinated the attention of Indian as well as western people.

Common Aasana that can be very effective in Diabetes are Shalabhasan, Mayurasan, Suryanamaskar, Dhanurasana, Trikonasana, Thadasana, Sukhasana, Bhastrika pranayama, Pashchimotanasana, Ardhmatyendrasana, Pawanmuktasana, Bhujangasana.

Asana:-
Meditative postures: Siddhasana, Padmasana, Vajrasana, Swastikasana
Relaxative postures: Savasana, Makarasana,
Rehabilitative or cultural postures: the major asana appear to have been meant for posturing the spine by forward stretching, backward stretching, lateral stretching, vertical stretching and twisting.

Results indicated that there was a substantial decrease in fasting glucose levels and postprandial blood glucose levels. The physiological effect of above mentioned postures with controlled breathing stimulates somato-endocrine mechanism ultimately effecting kinetics of Insulin.

**Pathophysiology According To Ayurveda & Yoga**

Etiological factors Prajnaparadha (wrong knowledge) & Kaphapradhana vihara, Ahara (Sedentary lifestyle, sleeping in daytime, Excessive intake of fermented food, oily foods, excess sweets and meat)

↓ Aggravation of kapha dosha

↓ Avarana (Obstruction in movement of vata)

↓ Rodha (Obstruction) to pitta

↓ Pitta cannot reach the target sites

↓ Sanga (Stagnation) of pitta, vitiation of pitta

↓ Madhumeha (Metabolic disorders DM)
Reversing Pathophysiology Ayurveda & Yoga
Prevention is better than cure, Yoga
↓
Change lifestyle counseling combats stress
satva increases
Detoxification Virechana—Purgation
↓
Removes excess Kapha
↓
Releases blockage of Vata
↓
Freed Vata moves the pitta to the site of action
↓
Restores balance
↓
Ayurveda doshas and Yoga guna
↓
Vipaka normalized (Glucose & lipid Metabolism), maintain dosha balance and prevention of life styles disturbance= Yoga\(^{15}\)

Primordial prevention in Ayurveda
Dinacharya - Vyayama balardh vyayam
Ashtvidh Ahar visheshayatan and Dwadash
Ashan Vichar - Use of proper dietary habits in very beginning of life i.e. childhood

Primary prevention in Ayurveda
Lifestyle modification - Sadvritta (follow good lifestyle), Nidana Parivarjana (avoiding etiological factors)

Secondary prevention in Ayurveda
In Madhumeha, drugs having rasayana, balya and jivaniya action as well as pramehaghnna properties like Amalki, Guduchi, Pippali, Haridra etc. Such measure which reduce meda and kapha and Upadrava for example heavy work out, ruksa udavartana, ratri jagarana etc.

Tertiary prevention in Ayurveda
Ayurveda has partial role at this stage but use of certain Rasayana drugs Amrita, Amalaki etc along with diet restriction help to reduce complications.

Pathyapathya\(^{16}\):
Pathya
Cereals: Old rice (Oriza Sativa)-after 1 year
Barley (Hordeum vulgare)
Godhuma (wheat)
Kodrava (grain variety–Paspolum scrobiculatum)
Pulses: Adhaki (red gram–Cajamus cajan)
Kulattha (horse gram)
Mudga (green gram)
Vegetables: Green Banana,
Tanduleyaka (Amaranthus spinosus)
Matsyakhshi (Alternanthera sessilis)
Bitter vegetables (Tiktasakam) like
Methica (Methi- Fenugreek leaves), Carrot
Karavellaka (Bitter gourd, Chaulai, Palak.
Mustard leaves
Fruits: Orange, Watyermelon, Apple, little ripe papaya, Jambu (Syzgium cumini),
Kapitha (Feronia limonia), Amlaki (Emblica officinalis)

Oils: Nikumbha (Danti- Baliospernum montanum), Ingudi (Balanitis aegyptiaca), Atasi (Linum usitatisimun), Sarsapa (Mustard). Rice brain oil

Others: jiggery

In Charaka Samhita:

A. Manthas (flour of various corn mixed with water), kashayas (decoctions), barley powder.

B. Yavaudana, vatya, saktu and apupa.

C. Purana shali dhanya (rice variety) cooked and mixed with the soup of mudga (pulse variety) etc. and preparations of tikta (bitter) vegetables.

D. Cooked shastika rice and trina dhanyas mixed with the oil of Danti, Ingudi, Atasi and Sarshapa (mustard).

E. The Mamsa (flesh) of viskira, pratuda and jamgala animals and birds are also recommended.

Apathya

Pizza, Fast foods – Pasta, Noodles, Rich proteins, Yoghurt, Dried fruits, Potato, Sugarcane, oily, All kind of Sweets, White bread, Beverages and Bakers food

CONCLUSION

Madhumeha is a disease characterized by prabhoot, avil mootrata, and mootra madhurya. Clinical appearance of Krishna Pramehi & Sthula Pramehi can be correlated with type-I & type-II diabetes, respectively. Ayurvedic treatment principles improve one’s routine lifestyle and maintain normal blood sugar level. There are many complications of Prameha related to Raktadushti such as putimansapidaka, Vidradhi, aruchi, avipak, Trishna, Daaha, Amlika, Jwara, shosha, Murcha, Daurbalya, Kampa and Panduroga. Raktadushti is also indirectly responsible for developing complications such as shwasa, mansopachay, Hrudishula, Hrudgraaha and makshikoupsarpan. In current era, life style modification with adopting appropriate food habits, Dincharya, Ritucharya, Asta and Dwadasha Ahara vidhi, Yoga & exercise have very important role in the management of Madhumeha.
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