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# An Integrative approach in the management of Uncontrolled type 2 Diabetes Mellitus w.s.r. to *Sthula Madhumeha*: A Case Report

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## ABSTRACT

**Introduction:** Diabetes is a disease of worldwide importance and a major public healthcare concern owing to its associated morbidity. Clinically Type 2 DM resembles *Madhumeha* with prevalence in India was 9.6% in 2021.This case report describes an integrated approach for the treatment of uncontrolled diabetes mellitus. **Main clinical Findings:** A 58-year-old male patient complained of polyurea, polyphagia, polydipsia, tingling, and severe burning in all 4 limbs, fatigue, and constipation. Investigations shows FBSL level of 247mg/dl, PPBSL 415mg/dl, and HbA1C 8.9%, BMI 28.6kg /m2. **Diagnosis:** *Sthula-Madhumeha* (Type 2 Diabetes Mellitus)**. Interventions:** Treatment includes, *Panchatiktapanchaprasutika Basti* for consecutive 15 days (*Kalbasti Krama*), local therapy, oral medications and lifestyle modifications. **Outcome:** Patient showed marked reduction in FBSL reduced to 82mg/dl PPBSL to 184mg/dl, and HbA1c to 6.8% after 3 months. Patient exhibited significant results in clinical signs and symptoms. **Conclusions**: It can be concluded that Ayurvedic intervention can be a complimentary treatment in uncontrolled DM.

**Key words:** *Type 2 DM, Diabetes, Ayurveda, Panchtiktapanchaprasrutik Basti, Sthula-Madhumeha, Vasantkusumakar Ras.*

## INTRODUCTION

Diabetes is a chronic, metabolic condition characterized by elevated levels of blood glucose (or sugar), on long term which leads to serious damage to the heart, blood vessels, eyes, kidneys and nerves. Hyperglycaemia (raised blood glucose or sugar), is a common effect of uncontrolled diabetes and causes catastrophic damage to many of the body's systems, especially the nerves and blood vessels. In 2019, diabetes was the direct cause of 1.5 million deaths and 48% of all deaths due to diabetes occurred before the age of 70 years. Another 460000 kidney disease deaths were caused by diabetes, and raised blood glucose causes around 20% of cardiovascular deaths.[1] It is a major healthcare concern worldwide due to associated morbidity its prevalence in India is 9.6% in 2021. The global increase in obesity rates has paralleled the rise in T2DM prevalence.[2] In individuals with obesity, excess fatty tissue, particularly visceral fat, releases a variety of bioactive substances, such as free fatty acids, inflammatory cytokines (e.g., TNF-alpha, IL-6), and adipokines (e.g., leptin, resistin). These substances interfere with the insulin signalling pathways, leading to decreased glucose uptake by cells and elevated blood glucose levels.[3] So, it is necessary to treat obesity and diabetes for better outcomes.

Modern antidiabetic medications provide notable results for the treatment of type 2 diabetes,

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particularly in blood sugar management. However, these drugs have limitations, including side effects, high cost, limited efficacy in certain populations, and potential long-term complications. Additionally, these medications do not reverse the course of the disease; rather, many patients require multiple drugs to maintain glycemic control. Furthermore, a few regularly prescribed medications can cause weight gain, which is detrimental to the management of type 2 diabetes.[4] It draws attention to the necessity of individualized treatment plans and the development of new therapies with improved safety profiles and efficacy. Diabetes and obesity are related conditions that arise from metabolic abnormalities. So, reversing the metabolic disruption is the first step in managing both conditions.

Therefore, the goal of this treatment is to break the pathogenesis of Disease, which lowers the risk of developing complications.

## CASE REPORT

A 58-year-old man came to our institute's OPD complaining of weight gain, polyuria, polyphagia, tingling and burning in his upper and lower limbs with generalized weakness, constipation for a year, and a recently cataract was diagnosed. He was advised to undergo surgical treatment for the cataract, but his uncontrolled diabetes delayed his surgery. So, patient was also worried about his pending surgery.

### Personal history

The patient was K/C/O type 2 DM for five years taking metformin 500 mg BID along with an anti-diabetic diet, and also K/C/O hypertension for five years, he was taking Telma 40 mg 1OD for it.No noteworthy family history had been provided by the patient. The patient had a habit of drinking tea- 5-6 cups/day, sleeping in the daytime for 2hrs daily patient also had a history of tobacco and bettle nut chewing for 15 years and had stopped since 2 years.

### Clinical Findings

Physical Examination

On examination patient GC was fair/ Afebrile with Weight: 80 kg; height: 168 cm, and BMI: 28.36kg/m2; Built was Obese. Blood pressure = 130/90 mm Hg; Pulse rate = 74/minute; pallor, icterus, cyanosis, clubbing, and edema were absent; On Systemic Examination cardiovascular system (CVS): S1 S2 normal; respiratory system (RS): clear no adventitios sound; central nervous system (CNS): consciousness, orientation, memory, and speech are normal; Reflexes in both upper and lower limbs were normal and muscle power was elicited as 5/5 in all limb.

### *Ashtavidha Parikshan*

*Nadi (*~pulse*)* - *Kaphapittaj*

*Mal* - frequent - *Vibandh (*~constipation*)*

*Mutra (*~urine*)* - normal

*Jivha (*~tongue*)* - coated

*Shabd (*~speech*)* - clear

*Sparsh (*~temperature*)* - normal

*Drik (*~vision*)*- blurring of vision (K/C/O- B/L eye cataract)

*Aakriti (*~body built*)* - *Sthula (*~obese*)* BMI 28.36 kg/m2.

### Timeline

The timeline of treatment is explained in Table No. 1

**Table 1: Timeline**

| Date | Treatment plan | Dose | *Aushadhi Sevan Kal & Anupana* | *Karma* |
|---|---|---|---|---|
| 03/05/23 | *(Guduchi, Triphala, Musta) Kwath* | 40ml BD | *Apane* | *Srotoshodhan , Pachan* |
| | *Haritaki Churna* | 5gm | *Nishakale* with lukewarm water | *Anulomana* (a purging medicine; stimulates evacuation of the bowels) |
| 11/05/23 | *Kalkrama Basti* | 15 days | | normalizes *Vata, Kapha,* |

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| | | | | |
|---|---|---|---|---|
| AANANAN<br>ANANANAA | *Panchatikta Pramehaghna Basti*<br>*(for details refer Table No. 5)* | 500ml | Morning before meal | *Meda, Kleda.* potentiates the *Agni* and helps in *Ama -Pachana.* |
| | *Anuvasan - Triphaladi Tail* | 120ml | Morning after meal | |
| 11/05/23 - 02/06/23 | *Nisha-Amalaki Churna* | 5gm<br>21days | *Apane-Vyane*<br>with lukewarm water | Reduces *Kleda, Kapha Shaman* |
| 11/05/23 - 10/06/23 | *Gokshuradi Guggulu* | 500mg<br>30 days | *Vyanudane* with lukewarm water | *Basti Shodhaka, Kledaghna, Medoghna, Mehaghna, Tridoshaghna , Shothaghna, and Lekhana* properties |
| 27/05/23 - 10/06/23 | *Udvartan with Triphala, musta churna* | 30minutes<br>14 days | Morning | *Rukshana, Lekhana, Kledahara* |
| 28/05/23 - 18/05/23 | *Vasantkusumakar Ras* | 250mg<br>21 days | *Rasayane* with *Ghrita & Madhu* in unequal quantity | Reduces *Dhatushaithilya, Dhatukshaya, Dhatukshara n* and useful in *Ojodushtiavastha* of diabetics. *Dhatuposhan - Balya, Rasayana* |

## Diagnostic Assessment

According to signs and symptoms and laboratory investigations, patient was diagnosed as obese type 2 DM (*Sthulmadhumeha*). On laboratory investigation, he had FBSL-247mg/dl and PPBSL-415 mg/dl with HbA1c - 8.9 on admission. He had normal C- Peptide level of 4.04 ng/ml. Cholesterol was 162 mg/dl, triglycerides were 237.7 mg/dl, urine sugar Nil. CBC, kidney and liver function test within normal limit. Details are summarized in Table No.6.

Based on height, weight, BMI, Abdominal circumference, waist circumference, waist-hip ratio summarised in Table No. 2 patient was diagnosed as Obese. Subjective parameter score of *Prameha* Symptoms was 12 out of 18 mentioned in Table no. 3.

### Table 2: Anthropometric parameters

| **Anthropometric parameters/Date** | 03/05/23 | 27/05/23 | 21/06/23 |
|---|---|---|---|
| Weight (kg) | 80 | 74 | 71.45 |
| Height (cm) | 168 | 168 | 168 |
| BMI (kg/m2) | 28.36 | 26.2 | 25.3 |
| Waist circumference (cm) | 110 | 103 | 99 |
| Hip circumference (cm) | 108 | 105 | 100 |
| Waist hip ratio | 1.01 | 0.9 | 0.99 |

### Table 3: Subjective Parameters Score (*Prameha Rupa* assessment parameter with grading)

| **Subjective Parameters Gradation Score** | **Before Treatment** | **After Treatment** |
|---|---|---|
| *Prameha Rupa* assessment parameter with grading | 11/18 | 4/18 |

### *Prameha Rupa* assessment parameter with grading

| **SN** | ***Symptoms / Gradation*** | **0** | **1** | **2** | **3** |
|---|---|---|---|---|---|
| 1. | *Mutramadhurya* (Glycosuria) | Absence of glucose in urine | Traces of Glucose in urine | + Glucose in urine | ++ Glucose in urine |
| 2. | *Prabhuta Mutrata* (Polyuria) - | 3 - 5 times per day, | 6 - 8 times per day, 1 - | 9 - 11 times per day 3 | > 11 times per day |

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| | | | | | |
|---|---|---|---|---|---|
| | Frequency of urination | rarely at night | 2 times per night | – 4 times per night | > 4 times per night |
| 3. | *Pipasa-Adhikya* (Increased Thirst) | No thirst | Drinking water satisfy the thirst, dryness of mouth, throat | Frequent feel to drink water | Severe (Feeling of severe thirst, waking up night to drink) |
| 4. | *Kshudha-Adhikya* (Increased Appetite) | No appetite/ very poor | Occasional hunger/ eating only few mouthful/one third plate | Two to three meals per day, comfortable, neither hungry nor full | Feeling hungry all the time with several hunger symptoms |
| 5. | *Klama* (mental fatigue) | No fatigue and mental effort not reduced | Fatigued quickly but still able to make some mental effort | Fatigue on certain physical functions | Fatigue at rest, interfering work family or social life |
| 6. | *Purishabad dhata* (Constipation) | Stool passes as per normal schedule | Passes stool with strain, sometimes takes purgative | Passes stool after more than 24 hours, frequently takes purgative | Passes stool after gap of one day, normal purgatives does not work |

### Therapeutic Intervention

Mentioned in Timeline and Investigation Table.

### Follow-up and Outcomes

Following 45 days of treatment, it was noted that the weight, BMI, waist-hip ratio, abdominal circumference, PPBSL, and FBSL were reduced. In addition, after three months, HbA1c level also decreased. there was also notable reduction in signs and symptoms of Diabetes. Patient also undergo cataract surgery after treatment which was on hold due to uncontrolled diabetes before treatment.

## Discussion

The progression of diabetes, especially poor glycaemic control, leads to numerous potentially life-threatening complications and has a negative impact on both health systems and individual well-being. Also *Charak* included *Madhumeha* in *Astaumahagad* (~Eight major Diseases). So, it is must to control BSL and manifestations of Diabetes in order to avoid life threatening complications. Though patient was taking allopathic medications regularly since years still had poor glycaemic control and suffering with its manifestation. So, he turned towards ayurveda to get through this condition as alternative treatment. After examination patient was diagnosis according to ayurveda concepts as *Sthula-Madhumeha*. Then treatment was planned after understanding *Nidanpanchak* of Disease. According to *Ayurved*, In *Madhumeha*, due to the disturbance in Agni, vitiation of Kapha, Pitta, Meda, and Mansa Dhatu and their buildup at Basti obstructs Natural passage of Vayu and leads to disease.[5]

### Probable mode of action of formulations

The line of treatment for this condition requires *Deepana*, *Pachana*, *Lekhana*, *Vata-Kaphahara*, and *Medohara* intervention. Therefore, *Nityavirechan* and *Triphaladi Kwath*[6] were given for *Srotoshodhan*, *Aamapachan* & *Anuloman*. *Haritaki* is used for mild purgation therapy in DM-II as it decreases hepatic glucose utilization resulting in hypoglycemic action. It may also increase stimulation of the enteric nervous system to accelerate intestinal motility.[7]

Then after *Deepana Pachana*, *Basti* was administered with *Panchatikta Kwatha*, *Ghrita*, *Sarshapa Kalka* and *Saindhava* in quantity mentioned in Table no.5. this *Basti* was mentioned in *Charak Siddhi Sthana,*[8] specifically for *Prameha* as

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*Panchatiktapanchaprasrutika Pramehaghna Basti*. *Basti* have a potent role in the *Vata-Anulomana* and regulation of *Dhatusamya* as it drained impurities (*Mala*) from the micro and macro channels of *Dhatu*. Result in breakdown of pathogenesis of *Madhumeha* as *Kleda* expel out in the form of *Basti Pratygaman*.

Following *Basti*, *Gokshuradi Guggulu* was advised. It carries *Kledaghna, Medoghna, Tridoshghna, Lekhana, Shothaghna* properties. also help to prevent complications like diabetic nephropathy. Scraping, or the *Lekhana* property, can be used to remove any blockage in both macro-and microvessels. As such, it rectifies the *Srotorodha* in *Mootravaha* and *Medovahasrotas*.[9] Along with it, *Nisha-Amalaki Churna* reduces *Kleda* and rectifies *Dhatvagnimandya*. And directly influence both *Dosha* and *Dushyavishesha*, that is, *Bahudrava Shleshma* & *Kleda*, thus counteracting *Samprapti*.[10] It also acts as *Naimittak Rasayana* in *Madhumeha*, as it has antidiabetic, hypoglycemic, and antiatherosclerotic properties due to the chemical composition of curcumin and vitamin C, with anti-inflammatory and antioxidant properties it might have helped control the disease.[11] Use of *Udwartana* with *Triphala Churna*, that is, rubbing *Triphala* powder on the body in the direction opposite to hair root. It results in *Twakprasadana* (skin nourishment), and *Kapha-Meda Vilayana* (liquification of *Kapha* and *Medas*). This can be useful in reducing body fat and weight loss.[12]

After *Kleda* removal *Vasantkusumakar Ras*,[13] a powerful antidiabetic medication, was used as a *Rasayan*. It contains *Swarna, Naga, Vanga,* and other body tissue-promoting or immunomodulatory agents that corrects *Dhatu Kshaya* in *Madhumeha* in the form of tissue repair, antioxidant activity, pancreatic stimulation, rejuvenation, anti-atherosclerosis, and hypoglycemic effects. Some animal studies have highlighted its potential to prevent diabetic complications such as hepatomegaly, nephropathy, and retinopathy.[14] Along with this treatment, patient was advised to do daily 30 minutes walking exercise along with diet that includes exclusion of foods that are high in salt, sugar and fat. It has a protective effect and can prevent the development of diabetic complications by maintaining good glycemic control. Further research and studies on the application of Ayurveda in the treatment of type 2 diabetes are required to prove this.

**Table 5: Showing contents and Procedure of *PPP Basti***

| SN | Ingredients | Quantity |
|---|---|---|
| 1. | *Saindhav lavana* | 5 gm |
| 2. | *Go ghrita* | 100 ml |
| 3. | *Sarshapa kalka* | 50 gm |
| 4. | *Rasna, Nimba, Patol, Saptaparn, Chirayata Kwath* | 400 ml |
| ***Basti* Procedure** | | |
| **Type:** *Kalakrama* - AANANANANANANAA<br>*A - Anuvasana Basti, N - Niruha Basti* | | |
| ***Poorvakarma:*** *Sarvang Snehana* - using *Tilatail* for 20 min, *Nadiswedansa* - with *Dashamool Kwath* upto *Swedaagamana* (approx. 20 minutes) | | |
| ***Pradhanakarma*:**<br>Patient was asked to lie down in (*Vamaparshwa*) left lateral position with left leg straight and right leg flexed on *Basti* table.<br>Rubber catheter and Anal ridge were lubricated using Sneha then ¼th length of rubber catheter (connected to oil filled Syringe) was inserted into anal canal. Small amount of *Basti Dravya* was kept in syringe and catheter was removed.<br>*Anuvasana Basti* given *Ardrapani* (~ Just after having light meal) With *Koshna* (~Lukewarm) *Triphaladi Taila* 120ml and<br>For *Niruha Basti* contents were mixed in sequence *Saindhava*, *Goghrita*, *Sarshapakalka*, then *Koshna Kwatha* of *Panchtikta* drugs added titration done and *Basti* was given empty stomach by following procedure as mentioned above for *Anuvasan Basti.* | | |
| ***Paschatakarma***<br>The patient was instructed to lie down on supine position for 10-15 mins after *Basti* and to defecate on developing urge.<br>*Basti Deya Kal* and *Pratyagamana Kala* (Retention Time of enema) of every Basti was noted. | | |

## RESULT

After treatment patients BSL almost returned to normal also HbA1c was reduced to 6.8. Significant

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reduction also achieved in terms of clinical manifestations of *Madhumeha* leads to improvement in QOL of patient. Reduction in Weight, BMI, waist circumference, hip circumference, waist-hip ratio was also observed. Result summarised in table No. 2 & 6.

**Table 6: Investigation**

| **Investigation/date** | **03/05/23** | **08/05/23 On admission** | **19/05/23** | **12/06/23** | **21/06/23** | 15/08/23 |
|---|---|---|---|---|---|---|
| BSL-fasting *(mg/dl)* | **247** | 230 | 155 | 94 | **83** | |
| Post meal *(mg/dl)* | **415** | 371 | 269 | 282 | **162** | |
| HbA1c *(%)* | | **8.9** | | | | **6.4** |

| **Investigation/date** | **08/05/23 On admission** | **21/06/23** |
|---|---|---|
| Cholesterol *(mg/dl)* | 162.66 | 124 |
| triglyceride *(mg/dl)* | 237.7 | 195.5 |
| ldl *(mg/dl)* | 96.6 | 96.6 |
| hdl *(mg/dl)* | 58.64 | 33.6 |
| Haemoglobin (gm/dl) | 11 | 11.4 |
| TLC (/cumm) | 8600 | 8000 |
| DLC | | |
| Lymphocytes *(%)* | 57 | 49 |
| Eosinophills *(%)* | 36 | 34 |
| Monocytes *(%)* | 7 | 5 |
| Platelets(lakh/cumm) | 1.01 | 1.34 |
| Blood urea*(mg/dl)* | 24.4 | 28.2 |
| Sr. Creatinine*(mg/dl)* | 1.03 | 1.3 |
| uric acid*(mg/dl)* | 7.1 | 7.1 |
| Urine routine micro | | |
| A/b | NIL | NIL |
| Sugar | NIL | NIL |
| C-peptide (ng/ml) | 4.04 | - |

## CONCLUSION

This integrated approach, using oral Ayurvedic drugs, Panchakarma procedures, and diet, can be effective in treating patients with type2 DM. It can be a major and efficient integrative and alternative management option for Diabetes Mellites and for the prevention of its complications and also in the treatment of metabolic disorders by correction of metabolic derangement.

**Declaration of patient consent**

Authors certify that they have obtained a patient consent form, where the patient has given his consent for reporting the case along with other clinical information in the journal. The patient understands that his name and initials will not be published, and due efforts will be made to conceal his identity, but anonymity cannot be guaranteed.

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