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CASE STUDY

Ayurvedic management of Type-2 Diabetes mellitus – A case report

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ABSTRACT

Diabetes mellitus is characterized by chronic hyperglycemia resulting from defects in insulin secretion, insulin action or both. Diabetes mellitus resembles to Prameha in Ayurveda and is classified as a Santarpanajanya vikara (disorder due to overnutrition). Present case is about a 63 years old overweight, Indian diabetic taking anti-diabetic drugs including insulin (Inj. LANTUS 36 IU) who presented with constipation, distension in abdomen, pain in lower limbs and disturbed sleep. Patient was treated with Phaltrikadi kwatha, Madhumehari Churna, Tab Diabecon-DS, Vasant Kusumakar Rasa along with other medications. Though the patient consulted for his abdominal symptoms in Ayurveda but with improvement in digestive fire and daily satisfactory clearance of bowel substantial improvement was observed in subjective symptoms with significant reduction in insulin dosage (36 IU to 8 IU) and other modern drugs dosage after Ayurvedic intervention with better glycemic control. This case study highlights the usefulness of Ayurveda and need of integrated medical care for cost effective management of diabetes.

Keywords : *Madhumeha, Phaltrikadi kwath, Madhumehari churna, Vasant Kusumakar Rasa, Case Study*

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Introduction:

Diabetes mellitus (DM), a metabolic disorder is characterized by chronic hyperglycemia resulting from defect in insulin secretion, insulin action or both. Epidemiological studies of Type 2 diabetes provide evidence that overeating, especially when combined with obesity diabetic, and under activity is associated

with the development of type 2 diabetes[1]. According to International Diabetic Federation Atlas 2019, an estimated 463 million adults are living with DM with approximately 1 in 13 adults (20-79yrs) being diabetic & prevalence could be alarmingly doubled to 700 million by 2045[2]. In Ayurveda, DM resembles clinically to Madhumeha, a type of Vataja Prameha and is categorized under Santarpanajanya vikara [3] (disorders due to over nutrition). Due to continuous indulgence in etiological factors like lack of exercise, sedentary lifestyle and excess consumption of high calorie foods Kapha (one of the biological humor) and Meda (fatty tissue) get vitiated, which if unchecked further vitiate Kleda (water content of body) and Meda at the level of every cell thus initiating the pathogenesis of DM [4]. This vitiated Kleda produce symptoms like Prabhoota mutra (polyuria) and Aavila mutrata (turbid urine).

Case report

A 63 year Hindu male known diabetic since 15 years and hypertensive reported to our hospital with complaints of constipation, distension in abdomen, pain in lower limbs and disturbed sleep. He belonged to a middle class Indian family with no known record of diabetes in his parents and grandparents. There was no history of diabetes present among siblings but his son was recently diagnosed with diabetes. During the first visit to our hospital patient was on modern anti-diabetic drugs [(Metformin (3g), Glimipride (8g), Tenegliptin (20mg), Pioglitazone (15mg) and Canagliflozin (100mg)] and Insulin Glargine (Long acting human insulin – 36 IU). Main reason for which patient reported to us was constipation and other gastrointestinal symptoms. He was passing hard and sticky stool irregularly with discomfort and unsatisfied evacuation. Constipation was associated with distension of abdomen which got aggravated after meals and occasionally got relieved after clear evacuation of bowel. Frequency of urine was eight to ten times during day time and two to three times during night. Sleep was disturbed and irregular due to nocturia and associated burning and numbness in feet (more during night). History of numbness, tingling and burning in feet along, loss of libido with Tandra (lassitude) and Pindikodveshtana (pain in calf muscles) was also present.

Clinical Findings

Patient was overweight with Body mass index 27.8 kg/m2 (height - 180 cm, weight - 90kg). Vitals recorded were pulse - 90/min, blood pressure - 130/90 mmHg, respiration – 20/min temperature - 98°F. Cardio-respiratory examination was normal. Neurological assessment showed diminished sensation to touch (light touch, pin prick- pain) over toes and legs (Glove stocking neuropathy) whereas temperature sense was intact for both cold and warm. Laboratory findings at the time of presentation were fasting blood sugar (FBS) – 180 mg/dl, PPBS – 200 mg/dl. Value of HbA1C on 02/04/19 was 8.6%.

Ayurvedic approach to the case

During evaluation of Panch Nidana (Ayurvedic diagnostic methods) excessive indulgence in Santarpana janya (related to overnutrition) dietary factors like Dadhi (curd) and Payas (milk products) were found with factors like Asyasukham (prolonged sitting), Diwaswap (day time sleep) and lack of exercise which increases Kapha dosha. Patient was having symptoms like Madhuryamasya (sweet taste of mouth), Mukha-talu-kantha shosha (dryness of mouth), Aalasya (laziness), Tandra (excess sleep and fatigue) and irregular bowel habits with hard and sticky stool with sense of incomplete evacuation which signify the state of Ama (undigested metabolic wastes) due to vitiated Kapha. Patient also reported symptoms like Prabhoot mootrata (polyuria - approximate amount of urine per void was 200ml) which was more during day as well as night. His Nadi was Kapha-Vata dominant (heavy with high volume), stool was Saama (settles at the bottom of pot), urine was Picchila (turbidity) and Prabhuta (excess quantity and frequency). Tongue was Shwetabha (whitish) and Malavrita (coated). All these factors signify the state of Ama and Agnimandya due to dominance of Kapha. Vitiated Kapha has the tendency to vitiate other components of the body with similar properties like Kleda (water content of the body) and Meda (fatty tissue). There was obstructive (Sanga) type of pathogenesis at the level of koshtha (gastrointestinal system) and Ati pravriti

at the level of Mutravaha srotas (genitourinary system).

Therapeutic approach

Considering the vitiated Kapha, Kleda & Meda our treatment protocol focused on Apatarpana chikitsa with Aamapachana, Deepana and Kledanasha properties. Due to dominant abdominal symptoms Nitya Virechana (daily purgation) was done. The treatment included diet, drug and lifestyle modifications.

Diet and lifestyle modifications

Patient was advised to take seasonal fruits (except mango, grapes, dates, banana & chiku) and one small bowl of porridge in breakfast. For lunch and dinner one bowl of any one cooked seasonal green leafy vegetable (bitter gourd, bottle gourd, pointed gourd, brinjal preferably) with one small bowl of cooked lentils (preferably green gram, horse gram, masur, pigeon pea) with 2-3 small size multigrain (barley, maize, whole wheat, soybean) flour rotis were advised. Patient was allowed to take one glass of clear buttermilk during daytime and half glass of milk without sugar at bedtime. Patient was advised to avoid eating without feeling hunger, sweets, curd, tubers, black grams, milk products and fried items.

Patient was asked to avoid day time sleep, prolonged sitting and to continue his routine of walking daily which he was doing earlier also but was advised to avoid exercise after eating anything for at least one hour.

Table I: Timeline

Date	Chief complaints	Test	Medications
12/7/19	Constipation, Distension in abdomen, Pain in lower limbs, Disturbed sleep Other symptoms – Numbness, tingling & burning in feet, loss of libido	FBS - 180mg/dl PPBS - 200 mg/dl	1. *Phalatrikadi Kashaya* – 50 ml twice a day empty stomach 2. *Madhumehari choorna* 5 g twice a day before meals 3. *Yograj Guggulu* 1g twice a day after meals 4. Tab Diabecon DS 2 tab twice a day after meals 5. *Shilajatwadi lauha* 2 tab twice a day after meals
2/8/19	Improvement in constipation and abdominal symptoms Complaints of weakness, pain in legs, loss of libido persisted	Serum cholesterol - 202, Triglycerides - 271.8 mg/dl, LDL - 131.4 mg/dl, HDL - 33.5 mg/dl, Urea - 13.0 mg/dl & Serum creatinine - 1.1 mg/dl	same treatment continued

13/9/19	a)Weakness b)Loss of libido During this period patient experienced episodes of hypoglycemia and consulted modern physician where his dosage of drugs and medicines was tapered	Results on 26/9/19 FBS – 160 mg/dl PPBS – 140 mg/dl HbA1C – 7.8 %	1. *Phalatrikadi kashaya* 25 ml morning empty stomach 2. *Madhumehari choorna* 5 gm twice a day before meals 3. Tab. Diabecon DS 2 tab twice a day 4. *Triphala choorna* 3 g mixed with *Lauha bhasma* 125 mg *t*wice a day
18/10/19	Loss of libido, Numbness, tingling & burning in feet improved but persisted (Dosage of insulin further reduced)	-	*1. Phalatrikadi kashaya* 25 ml morning empty stomach *2. Madhumehari choorna* 5 gm twice a day before meals 3. Tab. Diabecon DS 2 tab twice a day *4. Vasantkusumakar ras* 125mg BD
5/12/19	Loss of libido, Numbness, tingling & burning in feet improved but persisted	Results on 05/12/19 FBS – 110 mg/dl PPBS – 125 mg/dl HbA1C – 7.0 % Total Cholestrol – 247 mg/dl Triglycerides – 266.7 mg/dl LDL cholesterol – 152.4 mg/dl HDL cholesterol – 45 mg/dl vLDL cholesterol – 53.3 mg/dl Serum creatinine – 1.11 mg/dl	same treatment continued
17/01/2020	Loss of libido, Numbness, tingling & burning in feet improved but persisted (Dosage of insulin further reduced)	-	same treatment continued

Table II: Changes in modern medications after Ayurvedic intervention

Changes in modern medications after Ayurvedic intervention		
	Modern medication before Ayurvedic intervention	Modern medication after Ayurvedic intervention
Oral anti-diabetic drugs	Glimepiride (8 mg/day) Metformin (3g/day) Pioglitazone (15mg) Teneglitptin (20 mg) Canagliflozin (100 mg)	Glimepiride (4 mg/day) Metformin (2g/day) Pioglitazone (stopped) Teneglitptin (20 mg) Canagliflozin (50mg)
Inj LANTUS (Insulin Glargine)	8/6/19 - 36 IU	08/09/19 - 24 IU 13/09/19 - 18 IU 18/10/19 - 12 IU 17/01/20 - 08 IU

Discussion

Present case is a case of Santarpanajanya *Madhumeha* (Type 2 DM) with Kapha dominant constitutional clinical presentation. Patient was on oral hypoglycemic drugs along with insulin but still laboratory parameters as well as quality of life were not good. As patient was overweight diabetic with constipation and other abdominal symptoms as main cause of concern, so Aptarpana (one with reducing properties) line of treatment was adopted in this case i.e. Aampachana (digesting the metabolic wastes), Deepana (stimulates digestive fire), Kapha & Kleda (water soluble wastes) pacifying treatment [5], along with Nitya virechana (daily purgation) and Rasayan(antioxidant properties).

Madhumehari choorna having ingredients predominant in Katu (pungent), Tikta (bitter), Kashaya (astringent) taste, being Ushna Veerya (hot potency) and having Katu Vipaka helped in stimulating the digestion (Deepana, Pachana) and pacification of vitiated Kleda & Meda. Madhumehari choorna has shown anti-hyperglycaemic and hypolipidaemic activities in clinical trials [6]. Gymnema sylvestre, a main ingredient of the formulation has shown anti-diabetic as well as β-cell regeneration activities. [7] Pterocarpus marsupium Roxb. an ingredient of the formulation has proven anti hyperglycemic activities.[8] The proven hypoglycemic effect of Triphala is well known to scientific community for significant glucose lowering effect and can be attributed to the presence of menthol and sorbitol [9]. Methika (Fenugreek seed) seeds are high in soluble fiber and have shown reduction in fasting plasma glucose and post prandial plasma glucose levels along with decreased insulin resistance. [10]

Diabecon-DS[11] is a poly herbo-mineral formulation showing combined stimulatory effect on insulin release, by increasing the cellular permeability, reducing the elevated blood glucose level by inhibiting intestinal glucose absorption[12] Meta-analysis of Diabecon has also shown that it significantly reduces the risk factors of coronary artery disease by modulating lipid profile due to anti-cholestrolemic properties, reducing the levels of free fatty acids and re-normalizing lipid abnormalities[13].

Phalatrikadi kashaya [14] acts by improving the Agni (all enzymatic activities thereby normalizing the metabolic functions) and removing the accumulated toxic metabolites with its Virechaka (purgative) [15] effect. Citrullus cholocynthis one of the ingredient of Phaltrikadi Kashaya is having bowel clearance action and has been found to be effective in reducing accumulation of advanced glycation end products by inhibiting amylase and a-glucosidase activity eventually slowing down the worsening of diabetic pathogenesis, rejuvenation of degenerated cells of Islet of Langerhans[16]. Curcuminoids present in Curcuma longa and Berberis aristata prevent lipid peroxidation in a significant higher degree than the commonly used antioxidant, intervening in free radical

propagation by quenching pre formed free radicals. [17] Shilajatwadi loha [18] acts as a Rasayana, plays role by re-normalizing the serum lipids and cholesterol possibly due to its androgen receptor and glucocorticoid receptor antagonistic activities and has shown anti-diabetic activity in experimental studies. [19]

Vasant Kusumakar Rasa was added for its antioxidant (Rasayana) effect to reduce the oxidative stress and prevent the diabetic complications. [20]

Combination of *Yogarja guggulu, Triphala choorna* & *Lauha Bhasma* were given for symptomatic management for short duration.

Patient Perspective

Patient was satisfied with the Ayurvedic treatment in terms of improvement in quality of life, reduction in insulin and other anti-diabetic drug dosage. He was also satisfied with his blood sugar levels which were in better control after initiating the Ayurvedic treatment.

Conclusion

Patient approached Ayurveda for his abdominal symptoms but after Ayurvedic intervention, improvement in digestive fire, daily satisfactory clearance of bowel, increased energy level was observed. With this reduction in insulin dosage (36 IU to 8 IU) and other modern drugs dosage was observed with better glycemic control. The results of present case study are encouraging and have shown that Ayurveda principles are effective in management of diabetes. The holistic approach of Ayurveda, can definitely pave the way not only to achieve better glycemic control but also to improve the QOL of diabetic population and lowering the economic national and global burden of Diabetes mellitus. However, this is a single case record further documentation of the results of the treatment combination in patients having similar presentation will definitely benefit the diabetic population.

Informed Consent

Written informed consent was obtained from the patient before submitting the case report. Identity of the patient was not disclosed at any point

Conflict of Interest - None

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सारांश:

मधुमेह, एक संतर्पण जन्य जीर्ण विकार है, जिसका कारण इन्सुलिन के स्राव या उसके कार्य में कमी अथवा दोनों हो सकते हैं। वर्तमान इतिवृत एक तरेसठ वर्षीय मधुमेह रोगी के सन्दर्भ में है जो कि इन्सुलिन एवं अन्य मधुमेह नियंत्रक औषधियों का सेवन कर रहा था परन्तु उसकी रक्त शर्करा अनियंत्रित थी जिसके फलस्वरूप वह कब्ज, पेट का फूलना, अनिद्रा, पिण्डलियों में एंठन एवं निद्रा की अनियमितता आदि शिकायतों के साथ अस्पताल में इलाज हेतु प्रस्तुत हुआ। रोगी को फलत्रिकादी कषाय, मधुमेहारी चूर्ण, डायबेकोन, बसंत कुसुमाकर रस आदि औषधियों दी गयीं । रोगी को दी गयी चिकित्सा से उसकी क्षुधा, मल निष्काशन की नियमितता आदि लक्षणों में सुधार के साथ साथ इन्सुलिन एवं अन्य आधुनिक दवाईओं की मात्रा में कमी तथा प्रयोगाशालीय मापदंडों में सुधार देखने को मिला। प्रस्तुत लेख मधुमेह में आयुर्वेद की चिकित्सीय उपयोगिता एवं मधुमेह रोगियों की बेहतर चिकित्सा हेतु आयुर्वेद एवं आधुनिक चिकित्सा को एकीकृत करने की और इंगित करता है ।