



Case Report

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Reduction in FPG, OGTT and HbA1c levels in prediabetes after ayurvedic management- A case report

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ABSTRACT

Prediabetes is a condition in which there is elevated blood sugar does not reach the criterion accepted for an outright diagnosis of diabetes. The researchers are struggling to search an effective, satisfactory and harmless remedy. In present day, the Prediabetes is managed by lifestyle modification such as diet and exercise. They are helpful in controlling the condition but, even then a large population of Prediabetic patients turn out to be diabetic. Improper dietary habits and sedentary life styles are the major causative factors described for Prediabetes, which closely resemblance with the etiology of Kaphaja prameha. In our classics, Acharyas has mentioned that the person inflicted with Kaphaja Prameha should be administered the Apatarpana Chikitsa (depletion therapy) due to the involvement of vitiated Kleda, Meda and Kapha. We hereby present a case report of 63 year old male patient who was diagnosed as prediabetic according to American Diabetic Association. The patient was treated with Snehapana with Murchitha Sarsapa Taila (6 days) followed by Virechana with Trivrit Churna (1 day) and Nisakathakadi kashaya (3 months). The clinical effects were assessed on the basis of subjective and objective parameters. After the completion of the treatment, his FPG 116 mg/dL reduced to 98 mg/dL, OGTT 162 mg/dL reduced to 134 mg/dL and HbA1c level 6.3% reduced to 5.6%.

Keywords: Prediabetes, Kaphaja Prameha, Murchitha Sarsapa Taila, Trivrit Churna, Nisakathakadi Kashaya.

INTRODUCTION

Lifestyle changes due to urbanisation and modernisation have caused unhealthy diet habits, lack of physical activity and increased stress leading to overweight with higher levels of insulin resistance. India and many other developing countries are going through this scenario and as a result, we notice more of chronic metabolic disorders than communicable diseases posing increasing challenge to the national health [1]. Prediabetes is one among them. It is defined as condition in which there is impaired glucose tolerance, but elevated blood sugar does not reach the criterion accepted for an outright diagnosis of diabetes [2]. India which has a large pool of Prediabetic subjects shows a rapid conversion of these high-risk subjects to diabetes. The Indian Diabetes Prevention Programme-1 (IDPP-1) has shown an annual incidence of approximately 18% among subjects with Impaired Glucose Tolerance (IGT) [3]. There are an estimated 77.2 million people in India who are suffering from Prediabetes [4]. Type 2 diabetes is a life-style disorder and an interaction of genetic and environmental factors precipitates the metabolic abnormalities existing in Prediabetic subjects to the clinical stage of diabetes. There is a long asymptomatic prediabetic stage(s) before the development of diabetes [5]. Medical nutrition therapy aimed at reducing 5-10 % loss of body weight, exercise have been found to prevent or delay the development of diabetes in individual with Impaired Glucose Tolerance (IGT) [6]. Several systematic long-term prospective studies from different parts of the world have shown that Prediabetes is largely preventable. Although the genetic factors cannot be modified, its interaction with the diabetogenic environmental factors can be prevented by modifying diet and physical activity. Indian Diabetes Prevention Programmes (IDPP-1 and IDPP-2) have shown that by improving physical activity and by using healthy diet, incidence of diabetes can be significantly reduced with a relative risk reduction of approximately 30% in persons with Impaired Glucose Tolerance (IGT) [7]. However, no drug therapy is recommended at present [8]. They are very helpful in controlling the condition but the sad phase of the scene is that, even then a large population of Prediabetic patients turn out to be diabetic. Prediabetes can be compared to Kaphaja prameha because, sedentary lifestyle and improper dietary habits are the major causative factors described for Prediabetes, which closely resemblance with the etiology of Kaphaja Prameha [9]. Also intervening early stages of Pre diabetes can actually return elevated blood glucose levels to the normal range and can delay or prevent the onset of Type-2 diabetes [10]. Similarly Kaphaja prameha is only curable among Pramehas because in them, the causative Dosa and Dushyas are identical and so drugs and therapies are the same for both [11]. The present case is about a

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63 year old male diagnosed with Prediabetes as per American Diabetic Association (ADA). The patient was given Snehapana (intake of ghee in an ascending dose) for 6 days, Virechana (drug induced purgation) for 1 day and Samana Chikitsa for a period of 3 months.

CASE REPORT

The present case is a 63 years old male visited the Kayachikitsa OPD of Amrita Ayurveda Hospital with presenting complaints like frequent urination, excessive thirst and extreme fatigue since 1 month and weight loss since 2 months.

Investigations

Baseline haematological investigations were done which revealed Hemoglobin (Hb) – 14.1 g/dl, Total Leukocyte Count (T.L.C) – 11000 cells/cumm, Erythrocyte Sedimentation Rate (ESR) – 19 mm/ first hour, Fasting plasma glucose (FPG) – 116 mg/dL, Oral Glucose Tolerance Test (OGTT) – 162 mg/dL and Glycated haemoglobin (HbA1c) – 6.3 %.

Diagnosis ^[12]

The patient was diagnosed as Prediabetic as per American Diabetes Association (ADA).

Therapeutic intervention

Table 1: Internal medicine and External treatment schedule

Treatment	Medicine	Dose	Anupana (adjuvant)	Days
Amapachana (optimizing digestion)	Trikatu churna	5 gm twice daily	Hot water	7 days
Snehapana (intake of ghee in ascending dose)	Murchita Sarsapa Taila ¹³		Hot water	5 days
Sarvanga Abhyanga (full body massage)	Tila Taila			3 days
Virechana (drug induced purgation)	Trivrit Churna ¹⁴	12 gm	Honey	1 day
Samanaushadhi	Nisakathakadi kashayam ¹⁵	50 ml twice daily	Lukewarm water	75 days

RESULTS

Patient came for follow up after three months. The patient was re-examined and re-assessed and haematological parameters were reinvestigated.

Table 2: Subjective and Objective assessment of Prediabetes

Subjective Parameters			
SI No	Symptoms	BT	AT
1	Urinating often.	Present	Absent
2	Feeling very thirsty.	Present	Absent
3	Feeling very hungry.	Absent	Absent
4	Extreme fatigue.	Present	Absent
5	Blurry vision.	Absent	Absent
6	Cuts/bruises that are slow to heal	Absent	Absent
7	Weight loss	Present	Absent
8	Tingling, pain or numbness in the hands/feet.	Absent	Absent

Objective Parameters			
SI No	Criteria	BT	AT
1	FPG	116 mg/dL	98 mg/dL
2	OGTT	162 mg/dL	134 mg/dL

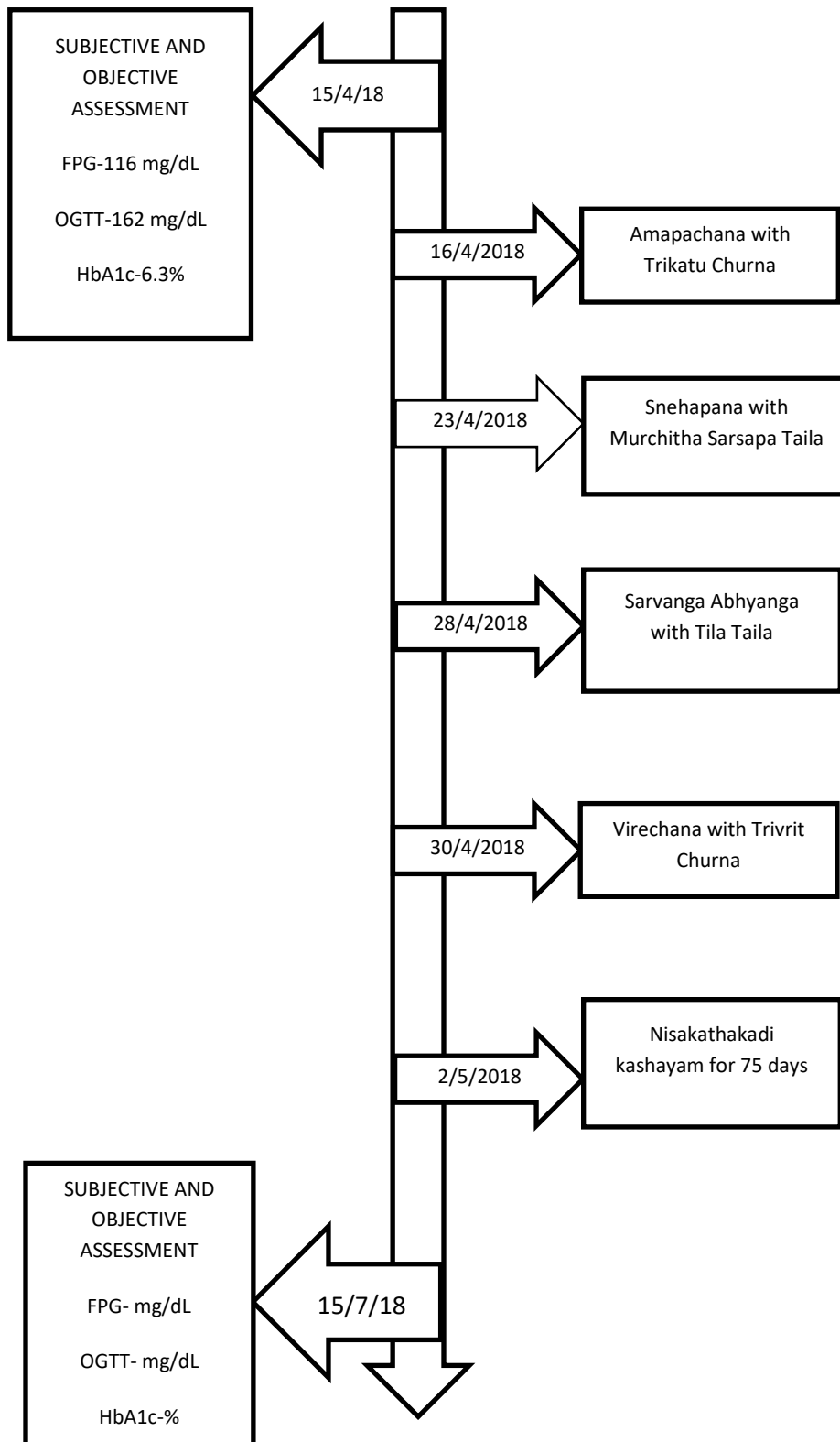
3	HbA1c	6.3%	5.6%
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DISCUSSION

Prediabetes may be either 'impaired fasting glucose' (IFG), based upon a fasting plasma glucose result, or 'impaired glucose tolerance' (IGT), based upon the fasting and 2-hour oral glucose tolerance test results (OGTT) ¹⁶. The American Diabetes Association (ADA) recommends the normal cut-off for fasting plasma glucose (FPG) as <100 mg/dL. Both IGT and IFG have heterogeneous pathogenesis and hence may have different rates of progression to diabetes. People with combined IFG and IGT have approximately double the rate of conversion to diabetes than those with any one the abnormalities. Both the states are associated with insulin resistance and other cardiovascular risk factors such as dyslipidaemia and hypertension. IGT is shown to be a stronger risk predictor than IFG¹⁷. Prediabetes can be compared to Kaphaja prameha described in the context of Prameha in Ayurvedic classics due to similarity in etiological factors. The major etiological factors are (1) genetic and hereditary factors and (2) unhealthy dietary habits and lack of physical activities¹⁸. In our classics it is mentioned that all three Doshas are involved in the pathogenesis of disease but vitiation of Kapha Doshas is the main causative factor. In Ashtanga Samgraha it is mentioned that Kapha associated with Vata, Pitha, Medas, Kleda, Mamsa, Sukra and Rasa getting localized in the urinary bladder produces Kaphaja Prameha¹⁹. Acharya Charaka has emphasized that the person inflicted with Kaphaja Prameha should be administered the Apatarpana Chikitsa (depletion therapy) due to the involvement of vitiated Kleda, Meda and Kapha²⁰. Generally, patients of Prameha have excess accumulation of Kleda, Meda and Mutra and diminution of digestive activity²¹. Hence, in order to enhance the Tejo dhathu and to reduce Kleda and Meda; Ameda, Amutrala and Vahni Dipana Aushadha should be given. Therefore keeping the above points in view this case report discusses the "Combined effect of Snehapana followed by Virechana and Samanaushadhi in controlling Prediabetes". Treatment was planned in two phases- Shodhana Chikitsa (purificatory therapy) and Shamana Chikitsa (pacificatory therapy). The patient was given Amapachana (optimizing digestion) with Trikatu choorna (fine powder of dried drugs) for a period of seven days till the appearance of Nirama lakshanas (features of optimal digestion). On the eight day patient was given Snehapana (internal administration of medicated oil in escalating dose) for five days till the attainment of Samyak Snigdha Lakshanas (features of optimal oleation). For Snehapana, Murchitha Sarsapa taila (Brassica juncea) is taken²². Sarsapa taila is Katu, Ushna, Tikshna and Lakhu. It pacifies Kapha and Vata²³. Katu rasa does the Soshana of Sneha, Kleda and Meda and also pacifies Kapha²⁴. As Kapha and Kleda have Sheeta guna, Ushna virya being opposite does Samprapti Vighatana²⁵. Taila is desirable in diseases due to involvement of Kapha dosha and Meda²⁶. Sarsapa taila has hypoglycemic effect by stimulation of glycogen synthesis leading to increase in hepatic glycogen content and suppression of glycogen phosphorylase and other glyconeogenic enzymes²⁷. Then, after three days of Sarvanga Abhyanga (full body massage) with Tila Taila (sesame oil) Virechana was done. Trivrit Churna is chosen for Virechana. Virechana helps in promotion of Agni and elimination of Kapha dosha²⁸. Trivrit Churna mentioned in Charaka Samhitha Kalpa sthana, is indicated only in patients suffering from diseases caused by Kapha²⁹. Trivrit is having Katu vipaka and alleviates Kapha and pitta³⁰. Yavakshara is having Katu, Ushna and Kapha Vata hara properties³¹. Pippali is also having Katu, Ushna and Kapha Vata hara properties³². Nagara is Dipana, Ushna and alleviator of Vata as well as Kapha dosha³³. Madhu is indicated in Prameha and having Kapha hara property³⁴. All the drugs in this combination (*Piper longum*³⁵, *Operculina turpethum*³⁶, *Zingiber officinale*³⁷, *Hordeum vulgare*³⁸) are proved to be antidiabetic. After Samsarjana karma (diet following purgation) the patient was asked to take Nisakathakadi kashaya as Samanaushadhi. It is a kashaya in which only indication is Prameha and is widely used in clinical practice with profound effect. The drugs mentioned in this yoga are mainly Kapha

vata hara and having antihyperglycemic activity³⁹. Lipid (sneha) is hydrophilic hence after appropriate oral administration of lipids

Table 3: Timeline of treatment



(Snehapana) the cells of the body become saturated with fats. Then the fat material comes out of the cell to the extra-cellular fluid by the process of osmosis. The level of fatty acids etc increases in the blood which results in high plasma volume as there is quantitative increase due to the aqueous properties of the Sneha (lipids) and liquefied metabolic waste brought out from the tissues. The equilibrium of the normal plasma is maintained and so the extra amount of liquid reaches to the Koshtha (Gastro Intestinal Tract) to be expelled out of the body. When Virechana dravyas (purgatives) are administered, these increased amounts of the body fluids are evacuated by which the vitiated Doshas (humors) and metabolic waste are also expelled out resulting in the radical cure of the condition⁴⁰.

CONCLUSION

On the basis of this single case study, it can be concluded that Snehapana (internal administration of medicated oil in escalating doses) with Murchitha Sarsapa Taila followed by Virechana (purgation) with Trivrit churna and internal administration of Nisakathakadi Kashaya have shown significant hypoglycemic effect in reduction of FPG, OGTT and HbA1c levels to normal during the 3 months trial periods. The patient had significant relief of symptoms. Further studies are needed to see whether Ayurveda has better outcomes in long term.

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