The Management of Dyslipidemia in Patients with Diabetes Mellitus Type 2 Using Ayurveda Based Treatment: A Case Study

ABSTRACT

Background: The biggest cause of death worldwide is dyslipidemia, a significant risk factor for coronary heart disease (CHD). Additionally, individuals with type 2 diabetes mellitus (T2DM) are at high risk for cardiovascular comorbidities. Currently available allopathic treatments are associated with several side effects. Ayurveda can play an effective role in reducing this risk factor by preventing the impact of Dyslipidemia.

Aim: This case study aimed to analyze the effectiveness of Virechana karma, ayurvedic medicines, and lifestyle modifications in the management of dyslipidemia in patients with Diabetes Mellitus 2.

Materials and methods: Three patients with the condition of Dyslipidemia and other comorbidities like diabetes, Obesity, hypertension, heart diseases, hypothyroidism, etc. were administrated with Virechana karma, ayurvedic medicines, and lifestyle modifications. The treatment's effectiveness was assessed by comparing the whole lipid profile at the end of the course of treatment and after the follow-up period to the baseline score.

Results: After therapy and after the follow-up, the lipid profiles of all three patients revealed statistically significant results. The levels of total cholesterol, low-density lipoprotein, and triglyceride significantly decreased and levels of high-density lipoprotein increased after Virechana karma. Additionally, BMI, sugar levels, and thyroid profile also improved.

Conclusion: Virechana karma, a traditionally used ayurvedic treatment was found to be useful in the management of dyslipidemia with Diabetes Mellitus 2. Randomized control trial with larger sample size is warranted to extrapolate the findings of current case study.

Keywords: Sasneh virechana; dyslipidemia; diabetes mellitus; case report; total cholesterol; HDL-cholesterol; lipid profile; BMI.

1. INTRODUCTION

Diabetes is a metabolic disorder wherein the person suffers from elevated blood sugar levels which if left untreated can damage vital organs. While dyslipidemia is a condition of lipoprotein metabolism marked by an increase in total cholesterol, low-density lipoprotein (LDL), and triglyceride levels, as well as a lowering in high-density lipoprotein (HDL) cholesterol levels. Diabetes and dyslipidemia are interconnected and both are key risk factors for cardiovascular diseases [1]. The most common cause of the cardiovascular disease (CVD) is dyslipidemia [2]. Higher triglyceride levels are caused by obesity, less physical activity, high sugar, and refined carbohydrate intake, as well as more alcohol consumption [3]. Diabetes mellitus, obesity, chronic heart disease, and thyroid disorders are among the morbid manifestations of this syndrome. Sixty to seventy per cent of patients with diabetes show lipid abnormality. Therefore, their treatment together can lead to clinical benefit [1].

India ranks second after China in number of diabetes cases which is expected to double by 2035 [3] the prevalence of dyslipidemia in India is unknown because it usually manifests as a subclinical condition with no symptoms. CVD has become so prevalent in India during the last two decades that it is responsible for 24 percent of all fatalities among persons aged 25 to 69 [4]. There is a 1–2% rise in the incidence of CHD for every 1% increase in cholesterol level [5]. Higher socioeconomic groups are the first to adopt unhealthy lifestyles like inactive behavior, a diet high in saturated fats, and consuming alcohol and smoking cigarettes. Heart disease and stroke are linked to high cholesterol levels.

Statins, which are currently available for hypolipidemic medications, have been linked to several negative effects [6]. Patients taking

crystalline or extended-release niacin had much higher ALT levels, and the risk of hepatotoxicity was much higher with slow-release niacin [7]. In current medicine, there is no satisfactory treatment for this illness because the medications used to treat dyslipidemia are potentially toxic, expensive, and contraindicated in pregnancy, hepatic, renal impairment, and other conditions, as well as having several side effects [8]. As a result, there has been a search for a new dyslipidemia treatment that is both safe and effective. At this stage, Ayurveda can intervene by lowering the risk factor to aim at the consequences of Dyslipidemia. In Ayurvedic practice, dyslipidemia can be associated with *Medo-Dushti* (fat tissue vitiation) in *Rasa* (primary product of digested food) or *Rakta Dhatu* (blood tissue). *Virechana* (Therapeutic purgation) is a Panchakarma therapy that uses the anal route to eliminate excess vitiated *Dosha* in general and *Pitta Dosha* in particular.

The goal of this study was to assess the effectiveness of *Sasneh Virechana* in the management of dyslipidemia. Here, three unique cases with the condition of dyslipidemia and other comorbidities were treated with the administration of Panchakarma (*sasneh Virechana* and *Basti),* lifestyle modification, and ayurvedic herbal medicines. This distinctive treatment helps in improving the lipid profile, especially HDL and triglycerides without using any allopathic medicines which include various side effects.

2. CASE REPORT

The present study is a case study of 3 patients, who visited Madhavbaug clinic, Chinchwad. Before and after the study's completion, all of the participants were thoroughly examined with the required biochemical and pathological tests.

Case 1 is a 43-year-old female patient who came with a complaint of weight loss of 8 kg in the last 5 months, dyspepsia, dysphagia, and severe general weakness. She was suffering from hypothyroidism for 10 years and Diabetes Mellitus type 2 (T2DM) for 5 years. She was been administrated with Tab. Thyroxin 50 od and Glynase MF 1 BD in the past.

Case 2 is a 59-year-old male patient who came with a complaint of Dyspnea on exertion (DOE) grade 1 and Palpitation. He is suffering from T2DM, and Hypertension for 6 years and had undergone myocardial infarction-Percutaneous transluminal coronary angioplasty (MI-PTCA) 4 years ago. He was been administrated with Tab. Ecosprin 75 HS, Tab. Telma AM 40 OD, Tab. Met XL 25 OD, and Tab. Gemer 1 BD.

Case 3 is a 47 years old male patient who came with a complaint of DOE grade 1 and Pedal Edema. He is suffering from DM for 3 years and had undergone MI-PTCA 3 years ago. He was been administrated with Tab. Clavix AS 75/10 HS, Tab. Met XL 50 OD, and Tab. Glycomet GP 1 BD.

An investigation of the HbA1C and lipid profile test for all the 3 patients was done. Based on prior diagnosis, the treatment for DM 2 with Dyslipidemia was done. The patients were administrated with Panchakarma therapy with Ayurvedic herbal medicines and lifestyle modification which includes a certain diet plan.

2.1 Virechana Karma

In all three patients following protocol was employed for *Virechana Karma* which involves three steps:

1. First step (*purvakarma*): *Snehapaan* or Consumption of Medicated *Ghrit* for up to 5 days.

   Patients were advised to take *Dadimadi Ghritam* in the following amount-
   Day 1 – 30 ml
   Day 2 – 60 ml
   Day 3 – 90 ml
   Day 4 - 120 ml
   Day 5 – 150 ml
   On each of these days, *Snehana* and *swedana* were also done in the morning. *Snehana* (External oleation) was done using sesame oil and *swedana* (steam therapy) was done with Steam from *Dashmool Kwat*h.
   Patients were instructed not to consume any diet after *snehapan* till they feel hungry. On Day 6 no medicines were advised only *Snehana* and *swedana* were done.
2. Second step (*Virechana karma*): Purgation
   On the 7th Day, patients were advised to take 3 tablets of Abhayadi Modak as purgative to be taken early morning around 8 am on empty stomach with warm water. Patients were advised to only drink warm water throughout the day.
   Patients were asked to note the number of Motions (*Vegas*) had throughout the day. It was noted that all 3 patients had 8-9 Vegas in a day.

3. Third step (*Sansarjan Karma*):
   All the patients were advised to follow a specific diet plan for the next five days. The Diet plan was to avoid sudden use of oil and salt in diet which were gradually introduced into the diet over the next 3- 5 days.

3. RESULTS

The administration of *Panchakarma* therapy with Ayurvedic herbal medicines and lifestyle modification showed significant recovery in all 3 patients. The changes were observed in BMI, HbA1C, and lipid profiles. The results were compared between the values taken before treatment, after 30 days, and after 60 days. The Table 2 provides information on basic body characteristics and Figs. 1-3 lipid profile assessment before and after the treatment of patients 1, 2, and 3 resp.

Case 1 was an underweight diabetic and thyroid patient. Her HbA1C and cholesterol levels were high. She was taking allopathic medicines. After visiting the Madhavbaug clinic, prior blood tests were done and the *Virechana Karma* along with ayurvedic medicines and lifestyle modifications were done. Lipid profiles changed significantly after receiving treatment for one month. HbA1C was also reduced. Her allopathic dependency was reduced. Case 2 was a DM 2 and hypertension patient who had undergone angioplasty several times previously. Then he was been admitted to Madhavbaug and was administrated *Virechana Karma* treatment for seven days. His weight was reduced by 4 kg, 2-D Echo report improved, stress test returned to normal, swelling of the limbs completely disappeared, and shortness of breath stopped. Case 3 was a diabetic patient who had undergone angioplasty 3 years back. After visiting Madhavbaug, prior diagnostic tests were done and after that, he was been administrated with *Virechana Karma.* Interestingly, as this patient was previously administrated with Statin, after the treatment, his allopathic dependency was also decreased. The stress test became normal and the lipid profile also improved.

4. DISCUSSION

There are numerous lines of evidence supporting the inverse relationship between HDL cholesterol and overall body cholesterol. By inhibiting the clearance of cholesterol from the artery wall, a drop in plasma HDL cholesterol concentration may exacerbate the onset of atherosclerotic heart disease [9]. A metabolic disorder Dyslipidemia has a resemblance with *Medovriddhi* described in Ayurveda.

In the present study, the efficacy of *sasneh virechana,* lifestyle modification, and ayurvedic medicines in the treatment of DM and Dyslipidemia was studied. After seven days of treatment, there were significant changes in the patients. BMI and HbA1C values were reduced. The lipid profile was improved drastically. LDL, the bad cholesterol was decreased and HDL, the good cholesterol was increased in the body. Along with Dyslipidemia and Diabetes, case 1 was suffering from thyroid as well. Her thyroid profile was also improved. *Virechana karma* enhances cholesterol excretion while improving liver function.

Table 1. Information on drug and posology

AbhayadiModak		
Common name	**Latin name**	**Part used**
Pippali	Piper longum	fruit
Pippali (mool)	Piper longum	Root
Twak	Cinnamomumverum	bark skin
Tejpatara	Cinnamomumtamala	leaf
Musta	Cyperusrotundus	root
Dantimool	Baliospermummontanum	root
Trivrutta	Operculinaturpethum	root
Sharkara	NA	NA
Madhu	NA	NA
DaadhimaadiGhrita		
Common name	**Latin name**	**Part used**
Dadima	Punicagranatum	Dried seed
Dhanya	Coriandrumsativam	Fruit
Chitraka	Plumbagozeylanica	Root

Shringavera	Zingiberofficinale	Rhizome
Pippali	Piper longum	Fruit
Ghee	NA	NA
Water	NA	NA

Table 2. Demographics of patients before and after the study treatment

	Day 1	Day 30	Day 60
BMI (Kg/m^2),			
Patient 1	23.73	22.89	22.54
Patient 2	27.9	26.7	25.1
Patient 3	27.3	26.1	24.8
HbA1C (%),			
Patient 1	13.98	10.88	7.9
Patient 2	8.2	6.5	5.8
Patient 3	6.1	6	5.9
ESR (Mm/hr.),			
Patient 1	37	23	11
T3 (nmol/l),			
Patient 1	0.54	0.55	0.97
T4 (nmol/l),			
Patient 1	8.16	7.9	8.09
TSH (mU/l),			
Patient 1	4.95	4.6	4.21

BMI– Body mass index; CHL- Combined hyperlipidemia; ESR- Erythrocyte sedimentation rate; HDL– High-density lipoproteins; TG– Triglycerides; LDL– Low-density lipoproteins; TSH- thyroid-stimulating hormone; VLDL - Very low-density lipoproteins

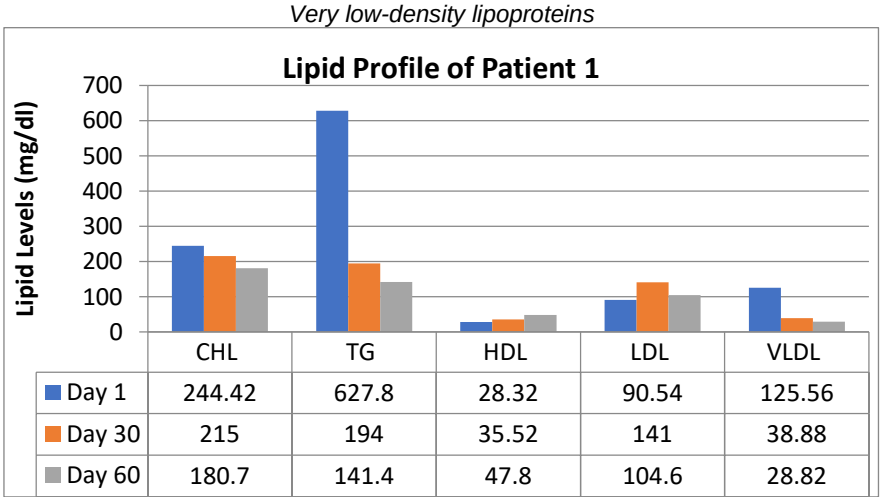
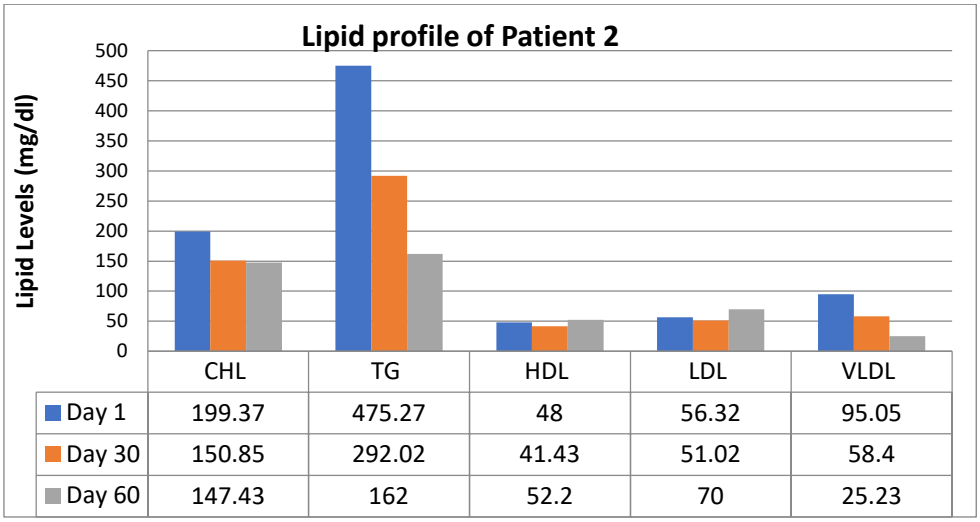
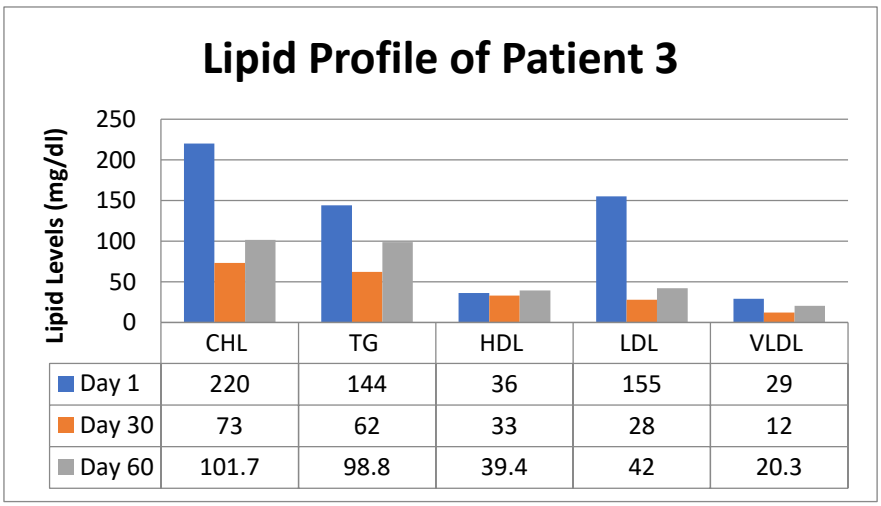


Fig. 1. Lipid profile assessment before and after the treatment of patient 1



	CHL	TG	HDL	LDL	VLDL
Day 1	199.37	475.27	48	56.32	95.05
Day 30	150.85	292.02	41.43	51.02	58.4
Day 60	147.43	162	52.2	70	25.23

Fig. 2. Lipid profile assessment before and after the treatment of patient 2



	CHL	TG	HDL	LDL	VLDL
Day 1	220	144	36	155	29
Day 30	73	62	33	28	12
Day 60	101.7	98.8	39.4	42	20.3

Fig. 3 Lipid profile assessment before and after the treatment of patient 3

Additionally, digestion and metabolism are crucial functions of *Agni*. *Virechana karma* indirectly affects *Agni*, which controls how the gut, liver, and lipid synthesis work [3]. The research also revealed that consuming ghee as a *snehapana* would not cause blood cholesterol levels to rise. Ghee in general considered dyslipidemic but here we are trying to prove that *abhyantarsnehapaan* with *samyaka Virechana* can reduce raised cholesterol levels.

Therefore, as a result of the present discussion, it can be concluded that *Virechana karma* treatment along with ayurvedic medicines and lifestyle modifications are effective in the management of Dyslipidemia and other comorbidities like diabetes. We need a big cohort study to understand the role of *Virechana karma* to control dyslipidemia and also comprehensive and large sample size investigations are required to detect relapse of the disease over a relatively extended period. To find a disease recurrence over a reasonably long period, extensive examinations with high sample sizes are needed.

5. CONCLUSION

The effectiveness of *Virechana karma,* ayurvedic medicines, and lifestyle modifications in the management of Dyslipidemia was considered in this present study. After treatment, there was noticeable improvement in the lipid profile. The effectiveness of *Virechana karma* in lowering triglycerides, LDL cholesterol, and total cholesterol has been strongly demonstrated. This pilot case study shows that this method is safe and cost-effective and may be helpful to patients with Obesity, Diabetes, Hypertension, heart diseases, hypothyroidism, etc.

CONSENT

Informed consent from each participant was registered.

ETHICAL APPROVAL

Institutional review board approval and in compliance with the ethical standards of the responsible institution on human subjects as well as with the Helsinki Declaration.

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COMPETING INTERESTS

Authors have declared that no competing interests exist.

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