



Case Study

STUDY OF THE EFFICACY OF ISCHEMIA REVERSAL PROGRAM ALONG WITH RESTRICTED DIET IN AN ELDERLY MYOCARDIAL ISCHEMIC PATIENT WITH A KNOWN HISTORY OF HYPERTENSION - A CASE STUDY

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ABSTRACT
The biggest global cause of morbidity and mortality, according to the World Health Organization, are cardiovascular diseases (CVDs). Consequently, there is a need for new therapeutic modalities that will complement current CVD care tools. To evaluate the effectiveness of the Ischemia Reversal Program along with a restricted diet in an elderly myocardial ischemic patient with other comorbidities like Hypertension (HTN) and Hypokinesia. 60-year-old male had a myocardial ischemia episode in April 2020 and received standard allopathic medical care. The patient had a history of HTN. This patient opted for Ischemia Reversal Program (IRP) and dietary modification with Ayurveda-based medicines as an add-on complementary treatment to accelerate the healing process. The patient had elevated HTN (SBP/DBP:123/74) according to the ambulatory blood pressure monitoring (ABMP) report which was reduced post-intervention (SBP/DBP:109/66). The patient also showed hypokinetic anterior wall LV according to the 2D ECHO report while the post-intervention 2D ECHO report showed no regional wall motion abnormality. Findings of our study suggest that IRP which includes Ayurveda-based *Panchakarma* therapy along with dietary modifications can serve as treatment for patients with myocardial ischemia and other comorbidities like HTN, and hypokinesia.

INTRODUCTION

Reduced blood flow to the heart causes myocardial ischemia, which prevents the heart muscle from getting enough oxygen. According to the World Health Organization, cardiovascular diseases (CVDs) are the leading global cause of morbidity and mortality.^[1] Globally, CVDs are responsible for around 17.5 million deaths.^[2] The primary causes of this kind of disease is an increased prevalence of epidemiological transition, which includes urbanization, lifestyle changes, etc.^[3] India is currently in an era of obesity and inactivity, where sedentary behaviour leads to illnesses including lipid abnormalities, diabetes, ischemic heart disease, and

HTN, which in turn increases morbidity and mortality in India and adds to the burden and cost of healthcare.^[4]

Several pharmacological treatments, including vasodilators, diuretics, angiotensin receptor blockers, beta-blockers, and inhibitors of the angiotensin-converting enzyme, are available for the treatment of myocardial ischemia.^[5] The prognosis has not improved despite significant recent developments in myocardial ischemia treatment. Therefore, there is a need for novel therapeutic approaches to add to the toolbox for the management of myocardial ischemia. Ayurvedic physicians recommend using *Panchakarma* therapy (a 5-step procedure for providing internal body cleaning) in addition to traditional allopathic drugs for the treatment of the chronic stage of heart failure.^[6] *Panchakarma* and other complementary therapies are combined in the IRP. *Swedana* (passive heat therapy), *Snehana* (oleation), and *Basti*, (per rectal medication administration), are the *Panchakarma* techniques employed in this program.^[7]

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This study aims to elaborate on the effect of the Ischemic reversal program which includes Ayurveda-based *Panchakarma* therapy along with a restricted diet (high protein and low carbohydrate) in a patient with myocardial ischemia and other comorbidities like HTN, Hypercholesterolemia, Coronary Artery Disease (CAD), and hypokinesia. This study has opened the door to alternative medicine which is not restricted to allopathy. This treatment helps in ischemic reversal by decreasing anxiety and fear and increasing quality of life simultaneously.

Case Report

1. A 60-year-old male patient reported to Madhavbaug Jawahar Chowk Clinic in April 2020 with a complaint of myocardial ischemia and occasional chest discomfort, gaseous discomfort, and constipation. The patient had a history of HTN. The allopathic medicines taken before treatment by the patient were Amlovas-M 2.5/25 Tablet- OD, Tab Tegritalc 200mg- OD, Tab Atorlip 80mg- OD, Tab Deplatta 150- OD, and Tab Losacar-H- OD. The Ayurvedic medicines taken before treatment were *Arjkadha* - 20ML BD, *Wincol churna* - 3GM BD, Tab GHA- 2 Tab BD, Tab *Garci*- 1 tab OD (in the second month).

Basic parameters like height, weight, body mass index, abdominal girth (ABG), pulse, blood pressure (BP), VO₂max, and Serum creatinine were checked before and after the treatment. Lipid test, treadmill test (TMT) reports, ambulatory blood

pressure monitoring (ABPM) reports, pre and post-CT angiography volumetric analysis reports, and 2D Echo reports were evaluated before and after the treatment.

Based on prior diagnosis, the IRP and dietary modification as an add-on complementary treatment to accelerate the healing process was administered to the patient.

Intervention

The treatment of the patient was started on 24th July 2020 and lasted for 95 days with regular follow-ups. The intervention consisted of IRP, dietary modification, and Ayurveda-based medicines.

- IRP consisted of 14 sittings of *Panchakarma* based therapy comprising centripetal oleation thermal vasodilation, and per rectal drug administration.
 - The patient followed a reverse diet kit which was portion-controlled and comprises a high oxygen radical absorbance capacity, high protein, low carbohydrates, and high fiber diet for 2 months. *Madhavshakti atta* and sunrise breakfast kit for 1 month.
2. The Ayurvedic medicines administered to the patient were *Arjkadha* - 10 ML BD and Tab GHA - 1 Tab BD.

RESULTS

Table 1 show changes in basic body parameters observed in the patient before the treatment i.e., on day 1 of the treatment and after the treatment i.e., after 95 days of the treatment.

Table 1: Changes in Basic Characteristics of the Patient

Parameter	Before treatment	After treatment
Height (cm)	165	165
Weight (kg)	76	67.3
BMI (kg/m ²)	27.92	24.68
ABG (cm)	105	96
Pulse (bpm)	71	69
BP(mmHg)	110/80	110/76
Vo ₂ Max (mL/kg/min)	23.80	36.05
Serum creatinine (mg/dL)	1.08	1.08
ABG - Abdominal girth, BMI - body mass index, BP - blood pressure		

A lipid test was done at regular intervals to assess the lipid profile. Table 2 shows the details of the lipid profile.

Table 2: Lipid profile before and after the treatment

	19/06/2020	28/08/2020	29/09/2020	31/10/2020
Cholesterol (mg/dl)	134	166	193	153
low-density lipoproteins (mg/dl)	80	110	80	69.88
high-density lipoproteins (mg/dl)	33.9	35	56	48.2
Triglyceride(mg/dl)	100	104	130	174.6

TMT was conducted before the treatment and after the treatment. The reports taken before the treatment showed that the patient could exercise for 11.12mins achieving a work level of maximum metabolic equivalents of task (METs) 6.3. The resting heart rate initially was 86 bpm increased to a maximum heart rate of 132 bpm. Resting BP was 120/80mm of hg and increased to a maximum BP of 190/100mm of hg. The stress test showed signs of inducible ischemia with average effort tolerance, and approximate VO₂ max of 22.05ml/kg/min. The reports taken after the treatment showed that the patient could exercise for 15.00 mins achieving a work level of maximum metabolic equivalents of task 9.4. The resting heart rate initially was 63 bpm increased to a maximum heart rate of 117 bpm. Resting BP was 110/70mm of hg and increased to a maximum BP of 130/90mm of hg. The stress test showed signs of inducible ischemia with average effort tolerance, and approximate VO₂ max of 32.9ml/kg/min.

The patient had elevated HTN (Systolic blood pressure (SBP)/diastolic blood pressure (DBP):123/74) according to the ABMP report which was reduced post-intervention (SBP/DBP:109/66). The patient also showed hypokinetic anterior wall left ventricular according to the 2D Echo report while the post-intervention 2D Echo report showed no regional wall motion abnormality.

DISCUSSION

The present study involves a case report of 60 years old male patient with myocardial ischemia and known history of HTN and hypercholesterolemia. The patient was administrated with IRP, dietary modification, and Ayurveda-based medicines. The treatment was conducted for 95 days with regular follow-ups. Since several herbal medicines have been discovered to have therapeutic effects comparable to those of allopathic medicines, Ayurveda can be a promising therapy option for myocardial ischemia. *Panchakarma* therapy is administered by Ayurvedic physicians to treat myocardial ischemia.^[8] Patients with myocardial ischemia receive dietary modifications in addition to three-step *Panchakarma* in the form of *Swedana*, *Snehana*, and *Basti* as part of IRP. IRP may work by reducing sympathetic over-activity (lower blood pressure) via *Snehana's* anxiolytic action, *Swedana's* reduction of sodium and water load (preload of the heart), and *Basti's* assistance in releasing nitric oxide from vascular endothelium, which is a coronary vasodilator, as well as by having antioxidant and anti-inflammatory effects through decoction.^[9]

Here, after the treatment, significant changes were observed in the basic parameters of the body. Weight, BMI, and ABG were reduced. The pulse rate

and BP were within the normal limits. The lipid profile values were also in good agreement with the normal values.

VO₂max is a measurement of a person's maximum capacity to use oxygen during strenuous physical activity. Diastolic dysfunction causes it to be lowered in myocardial ischemic patients, which manifests clinically as a decrease in work capacity.^[10] A MET represents the amount of oxygen consumed and is the metabolic rate when at rest. It is a multiple of the resting metabolic rate and shows the amount of energy expended during physical activity.^[11] In this study, the TMT test shows an increase in VO₂max and METs value with an increase in exercise after the treatment. This shows that IRP may help improve the exercise capacity in patients with myocardial ischemia who are suffering from other comorbidities such as HTN and hypercholesterolemia.

The ABMP report shows improvement in SBP and DBP values. Since SBP and DBP are prognostic indicators for myocardial ischemia, a large drop in both in our current study indicates a favourable prognosis since it lowers the after-load of the ventricles, which lowers the heart's need for oxygen.^[12]

The 2D Echo report showed hypokinetic anterior wall left ventricular. The presence of embolic signals in the middle cerebral arteries is associated with segmental LV anomalies in the form of hypokinesia in individuals with myocardial ischemia, which may have clinical implications as a risk factor for stroke.^[13] The post-intervention 2D Echo report showed no regional wall motion abnormality. Thus, IRP treatment may be helpful in the treatment of the condition of hyperkinesia in myocardial ischemic patients. Most importantly, we discovered that after 95 days of therapy, IRP significantly decreased patients' reliance on conventional allopathic medication. Hence, the findings of our study suggest that the IRP *Panchakarma* therapy is a helpful treatment for myocardial ischemia in patients with HTN, hyperkinesia, and hypercholesterolemia. But for the results of our study to be applied to a larger population, similar studies should be conducted on a national basis, most likely with a bigger sample size and longer periods of follow-up.

CONCLUSION

The findings of our study suggest that IRP which includes Ayurveda-based *Panchakarma* therapy along with dietary modifications can serve as treatment for patients with myocardial ischemia and other comorbidities like HTN, hypercholesterolemia, and hypokinesia since it significantly reduces VO₂max, METs, SBP, DBP, and reversal of left ventricular hypertrophy. Also, it significantly reduces the

allopathic dependency of patients, which is added benefit.

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