

## Case study

### **Efficacy of Ayurveda based ischemia reversal program in management of patients with ischemic heart disease with history of recent MI: a report of 3 cases.**

#### Abstract

**Aims:** Ischemia Reversal Program (IRP) is a Panchakarma and allied therapeutic combo. There is paucity of data regarding effect of IRP in patients of ischemic heart disease in the form of myocardial infarction. Here we report three cases of IHD with history of MI who were treated with IRP.

**Case presentation:** 3 patients of 60,60- and 49-years years came to Madhavbaug clinic with chief complaints ranging from dyspnea on exertion NYHA grade II, nocturia, pedal edema since 1 month. Case 1 had history of myocardial infarction 1.5 years back, while case 2 had history of cigarette smoking, regular alcohol intake and myocardial infarction 2 months back and was a known case of diabetes mellitus since 20 years. Cases 3 was a known case of hypertension. Their stress test revealed inferolateral ischemia at 3 Mets, inferolateral ischemia at 3.4 Mets and inferior ischemia at 4.6 Mets, respectively. Echocardiography revealed changes ranging from diastolic dysfunction, left ventricular wall motion abnormalities to reduced left ventricular ejection fraction.

**Discussion:** In order to assess the IRP's efficacy in IHD, we discovered that it improved VO<sub>2</sub>max, DBP, and SBP (with strong statistical significance) from the start of the trial to the end of the follow-up period. SBP has been one of the prognostic indicators for IHD patients. SBP reduction is linked to a prognostic factor in IHD because it decreases ventricular afterload and enhances endothelial function.<sup>10</sup> Most notably, we discovered that after 90 days of treatment, IRP significantly reduced patients' reliance on typical allopathic medications.

**Conclusion:** We reported 3 cases of IHD which were successfully treated with IRP therapy. IRP reduced systolic and diastolic blood pressure, heart rate which are important prognostic parameters in these patients. The positive effects of IRP therapy was seen in echocardiographic and ECG findings as well.

**Keywords:** Ayurveda, Myocardial Infarction, Panchkarma, Ischemia Reversal Program.

**Comment [s1]:** Need to add methodology in abstract section.

**Comment [s2]:** ?? no need of references in abstract.

**Comment [s3]:** Avoid using we, me like words.

**Introduction:** In India, IHD is the leading cause of CVD-related mortality (>80%). This IHD-related death rate is much greater than the global average. IHD is responsible for 1/5th of all fatalities and 1/10th of life years lost in India, a measure of premature mortality that considers young deaths above elderly deaths.<sup>1</sup>

The therapeutic function of medications used to treat IHD is related to a correction of the disparity between oxygen demand and supply to the heart, normalizing blood pressure (BP) and heart rate (HR) platelet aggregation reduction, hypolipidemic action, antioxidant impact, and so on.<sup>2</sup> Due to the negative effects of traditional medications like headache, dizziness, weakness, hypotension, loss of appetite etc., patients are less likely to take them i.e. adherence to therapy is poor. Increased therapeutic costs are the primary cause of higher morbidity and death in individuals with IHD, as well as increased health-care costs.<sup>3,4</sup> As a result, new therapy options must be investigated in order to successfully address IHD.

Ischemia Reversal Program (IRP) is a Panchakarma and allied therapeutic combo. Swedana, or passive heat therapy, Snehana, or oleation, and Basti, or per rectal medication delivery, are the procedures employed in Panchakarma under this curriculum. These treatments are well-known for their ability to detoxify the body.<sup>5</sup> Anxiety, sadness, a diminished sense of personal strength, a worse quality of life, and other symptoms have been linked to IHD in a research.<sup>6</sup> There is paucity of data regarding effect of IRP in patients of ischemic heart disease in the form of myocardial infarction. Here we report three cases of IHD with history of MI who were treated with IRP.

**Comment [s4]:** Add English translation using namste portal.

### **Case Presentation:**

**Case 1:** A 60 years old female who was a homemaker came to Madhavbaug clinic with chief complaints of dyspnea on exertion NYHA grade II, nocturia, pedal edema since 1 month. Patient had a history of myocardial infarction 1.5 months back, for which she was advised coronary angiography, which she denied due to fear of complications and monetary issues. She was obese and a known case of hypertension since 15 years, hypothyroidism since 4 years, and type 2 diabetes mellitus was detected recently before visiting our clinic. Stress test revealed inferolateral ischemia at 3 Mets while echocardiography had revealed type 2 diastolic dysfunction, left ventricular wall motion abnormalities and reduced left ventricular ejection fraction. A diagnosis of IHD with DM with HTN was made.

Case 2: A 60 years old male came to Madhavbaug clinic with chief complaints of post prandial left precordial chest pain, dyspnea on exertion since 2 months and recently developed constipation. He is a chain smoker, with regular alcohol intake, and eating restaurant food frequently. Patient had a history of myocardial infarction 2 months back and is a known case of type 2 diabetes mellitus since 20 years, and hypertension since 2 months. Patient had undergone coronary angiography but angioplasty could not be done and the patient is denying coronary artery bypass graft. Stress test revealed inferolateral ischemia at 3.4 Mets, while echocardiography revealed type 2 diastolic dysfunction, left ventricular wall motion abnormalities and reduced left ventricular ejection fraction (30%). Based on these findings a diagnosis of IHD with DM with HTN was made.

Case 3: A 49 years old male came to Madhavbaug clinic with chief complaints of burning chest pain, palpitation and headache since 1 month. He is a businessman who is constantly under stress and disturbed sleep. Patient had a history of myocardial infarction 1 month back for which he was thrombolysed; later coronary angiography was done followed by angioplasty but problems persisted one month post angioplasty. The patient had no history of any major disease. Stress test revealed inferior wall ischemia at 4.6 Mets while echocardiography revealed basal left ventricular and inferior wall hypokinesia. Based on these findings a diagnosis of IHD with HTN was made.

The treatment given to all the 3 patients is summarized in table 1.

Intervention	Case 1	Case 2	Case 3
Panchkarma	Ischaemia reversal therapy of 21 sessions weekly twice administered over 2.5 months with a gap of 72 hours between 2 therapies. Virechan karma using medicated ghee followed by sansarjan kram.	Ischaemia reversal therapy of 21 sessions weekly twice administered over 2.5 months with a gap of 72 hours between 2 therapies followed by 11 therapies ,one per month. Virechan karma using medicated ghee followed by sansarjan kram.	Ischaemia reversal therapy of 21 sessions weekly twice administered over 2.5 months with a gap of 72 hours between 2 therapies. Shirodhara with Jatamansi kwath at every session
Diet	Intermittent fasting 12:12 Moong diet for 15 days Prameh diet box - 800 calories for 3 months	Moong diet Reverse diet box -1000 calories for 2 months	Reverse diet box -1000 calories for 2 months
Exercise	Pranayam, Omkar, Sitali, Yogasan, stretching exercise, morning walk, strength	Pranayam, Omkar, spirometric exercise, therabands, balloon inflation Yogasan, stretching exercise, morning walk ,strength training –heart rate	Pranayam, Omkar, Yogasan, stretching exercise, morning walk , suryanamaskar –heart rate being monitored

**Comment [s5]:** What was finding of angiography. Angioplast was needed??

**Comment [s6]:** Mention previous or recent medical history.

**Comment [s7]:** Was patient taking any modern medication after angioplasty?? Whether these drugs were continued during IRP?? And if drug was stopped then mention stopping methodology.

**Comment [s8]:** Treatment protocol is not well mentioned. What is ischemia reversal therapy? Mention it in detail..

**Comment [s9]:** Mention about these diet boxes in detail. What is prameh diet box and what is reverse diet box?

**Comment [s10]:** Mention duration of these all therapy.

**Comment [s11]:** What was the data regarding pre and post monitoring. Mention it.

	training –heart rate being monitored pre and post exercise (depending on cst MHR), meditation	being monitored pre and post exercise, meditation	pre and post exercise, meditation
Others	Fluid restriction 1.5 litre /day, salt and oil restriction, avoid day sleeping	Fluid restriction 1.5 litre /day, salt and oil restriction, family counselling for habits, Til tail abhyanga daily	Fluid restriction 1.5 litre /day, salt and oil restriction, stress management, Til oil abhyanga daily at home daily, goghрут nasya

**Table 1: Ischemia reversal therapy given to 3 patients in present case report.**

Changes in various parameters at different time points after giving IRP is shown in table 2.

**Comment [s12]:** C3 reporting after 3 year- why it is NA??

Parameter	Before treatment			Day 90			Day 180			1 year status			2 year status			3 year status		
	C1	C2	C3	C1	C2	C3	C1	C2	C3	C1	C2	C3	C1	C2	C3	C1	C2	C3
Symptoms	DOE II, Pedal edema	DOE II, fatigue	DOE grade III	DOE I	DOE grade I	Nil	DOE I	DOE I	Nil	Nil	Nil	Nil	Nil	Nocturia, fatigue	Nil	Nil	Nil	NA
SBP	132	154	130	126	130	122	120	122	110	110	120	106	108	134	110	110	124	NA
DBP	80	92	84	82	84	80	68	78	70	86	76	70	68	80	76	70	76	NA
HR	96	78	116	74	76	80	58	78	76	68	68	74	74	70	74	68	68	NA
BMI	36.5	25.12	28.26	32.9	22.7	25	29.2	23.5	25	27.8	23.32	24.35	26.2	23.88	24.35	25.1	23.14	NA
TMT (Mets)	3	3.4	4.6	9.48	11.4	13	12.4	12	14	13	13.42	15	13.52	11.2	15	13.48	13	NA
VO2 max	9.1	12.45	13.65	18.2	23.4	23	26.3	24	35	27	27	35.1	28	23	35.1	27.42	26	NA
Angina index	2	2	1	0	1	0	0	0	1	0	0	0	0	0	0	0	0	NA
ST deflection (mm)	-1.9	-2.7	-1.8	0	-1.8	0	0	0	0	0	0	0	0	0	0	0	0	NA
2D Echo	type DD, RWMA, concentric LVH, LVEF40%	dilated LV, akinetic anterior, anteroseptal wall, pulmonary HTn, mild AR	hypokinetic inferior wall	1/3rd apex hypokinetic, LVEF 45%	NA	NA	LVE F60 %	Grade I DD, RWMA	Grade dias tolic dysfunction	LVE F 65%	Grade I DD, RWMA, LVEF 45%	Normal, LVEF 60%	LVEF 60%	WNL	Normal, LVEF 60%		LVEF 62%	NA
NT pro-BNP	NA	3533	NA	NA	NA	NA	NA	NA	NA	NA	233	NA	NA	180	NA	NA	NA	NA
Sr. TSH	6.2	NA	3.2	3.5	NA	2.4	2.42	NA	2.6	1.73	NA	1.6	1.47	NA	1.26	2.42	NA	NA
HbA1c	NA	8.8	5.7	NA	6.2	5.7	NA	6.4	5.4	NA	6.33	5.5	NA	6.7	5.9	NA	6.2	NA
No. of allopathic medications	8	8	3	5	7	3	4	6	2	2	3	2	1	2	0	1	3	NA

**Table 2: Improvement in various parameters after Ischemia Reversal Program (IRP) in 3 cases of present report.**

Where: C1,2,3- cases 1,2,3; SBP-systolic blood pressure, DBP-diastolic blood pressure, HR-heart rate, BMI- body mass index, TMT-treadmill test.

**Comment [s13]:** Mention full form of abbreviation one time in manuscript. DOE- dyspnea on exertion

Treatment were well tolerated in all the three cases.

**Discussion:** In the treatment of IHD, Ayurveda is a powerful and feasible alternative to current medicine. Ayurvedic practitioners use panchakarma as an adjunct therapy for the treatment of IHD.<sup>7</sup> IRP is a three-step process that includes Swedana, Snehana and Basti. IRP's possible mechanism of action is Snehana, Shirodhara-anxiolytic, which lowers sympathetic overactivity thus reducing anxiety and heart rate and hence the workload of heart. Swedana lowers salt and fluid levels, lowering resting preload and potentially lowering myocardial oxygen demand. Nitric oxide liberation from endothelium can be aided by a decoction of Tribulus terrestris, curcumin, and Phyllanthus embelica administered through Basti. It may also have anti-inflammatory and antioxidant properties. By inducing coronary vasodilation, this activity may aid in improving coronary circulation.<sup>8</sup>

According to contemporary theory, the inflammation of the intestinal mucosa causes hyperemia and exudation, resulting in enhanced flow of protein-rich fluids via vessel walls to the intestinal lumen during the Virechana process resulting in a decrease in fluid volume. It is known to reduce secretion of catecholamines as well. As a result, it keeps the excessive blood pressure under control.<sup>9</sup>

In order to assess the IRP's efficacy in IHD, we discovered that it improved VO<sub>2</sub>max, DBP, and SBP (with strong statistical significance) from the start of the trial to the end of the follow-up period. SBP has been one of the prognostic indicators for IHD patients. SBP reduction is linked to a prognostic factor in IHD because it decreases ventricular afterload and enhances endothelial function.<sup>10</sup> Most notably, we discovered that after 90 days of treatment, IRP significantly reduced patients' reliance on typical allopathic medications.

Calorie restricted diet in all the 3 cases resulted in reduction in body mass index in all the cases. In addition, these diets have rich quantities of antioxidants with favorable ORAC values. Intermittent fasting is known to improve insulin sensitivity, lower blood pressure, reduce oxidative stress, improve immune health and promote cardiac health.<sup>11</sup> These factors might help to reduce the ill effects of IHD to some extent. Moreover there was drastic reduction in number of allopathic medications throughout study period which might help to improve patient compliance as well due to reduction in number of tablets, possible adverse effects and cost of therapy.

**Conclusion:** We reported 3 cases of IHD which were successfully treated with IRP therapy. IRP reduced systolic and diastolic blood pressure, heart rate which are important prognostic parameters in these patients. The positive effects of IRP therapy was seen in echocardiographic and ECG findings as well.

**NOTE:**

**Comment [s14]:** What was the parameter to check tolerance of medication?? Any side effect of modern medicine stoppage??

**Comment [s15]:** Rewrite sentence

**Comment [s16]:** Basti is not mentioned in methodology.

**Comment [s17]:** Whether consent of patient was taken prior to treatment?

The study highlights the efficacy of "AYURVEDA" which is an ancient tradition, used in some parts of India. This ancient concept should be carefully evaluated in the light of modern medical science and can be utilized partially if found suitable.

#### References:

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