Original Research Article

Study in Efficacy of Ayurvedic Panchakarma Therapy with Lifestyle Modification in Management of Patients with Inducible Ischemia

ABSTRACT

Aim: Despite comprehensive management recommendations for ischemic heart disease, the prevalence of ischemic heart disease continues to rise. The Ischemia Reversal Program (IRP)addresses this issue by combining Panchakarma with nutrition therapy.
Methods: This retrospective, observational, single center study was conducted from 2018 to 2022. A total of 84 patients diagnosed with inducible ischemic heart disease by stress test and were included in the IRP therapy were included in this study. Data was compared between day 1, day 90, and 1 year 1 day.
Results: Mean age of the patient population was 58.83 ± 12.29 years. Males comprised 29 (34.5%) patients of the study population. Mean weight decreased significantly (day 1: 66.43 ± 11.71 kg, day 90: 61.04 ± 9.99 kg, and 1 year 1 day: 61.95 ± 10.92 kg). Body mass index decreased significantly (day1: 25.87 ± 4.55, day 90: 23.84 ± 3.87, 1 year 1 day: 24.12 ± 4.09). Vo2 max increased significantly (day 1: 14.59 ± 6.99, day 90: 25.83 ± 8.47, and 1 year 1 day: 25.46 ± 9.05).
Conclusion: Ayurvedic Panchakarma in the form of IRP therapy showed significant short-term and long-term results in management of patients diagnosed with ischemic heart disease patients.

Keywords: Ayurveda, ischemic heart disease, Panchakarma, stress test

1. INTRODUCTION

Cardiovascular disease, predominantly comprising ischemic heart disease and stroke, is a leading cause of mortality in India. A National Mortality Study from 2000–2015 revealed that in the age group 30–69 years, 0.9 million cardiovascular deaths were attributed to ischemic heart disease. Furthermore, the probability of death due to ischemic heart disease in this age group increased from 10.4% to 13.1% in men and from 4.8% to 6.6% on women between 2000 and 2015 in India [1].

Pharmacotherapy alone is the mainstay treatment strategy, however poor adherence to medication and high costs significantly impedes the effective and economical treatment of ischemic heart disease in India. Therefore, there is a need to explore novel therapeutic options to combat this disease [2]. The therapeutic role of drugs used in the treatment of ischemic heart disease included balancing oxygen demand and supply to the heart, reducing blood pressure, decreasing platelet aggregation, exerting hypolipidemic action, and providing antioxidant effects [3]. Similar actions have been found in several herbal drugs, making them interesting targets for new therapeutic options for treatment of ischemic heart disease [2].

Ayurveda, a traditional Indian medicine system, is used by many physicians to treat various diseases. Panchakarma and allied therapies are integral to Ayurveda and provide relief for numerous diseases. The Ischemia Reversal Program (IRP) which combines Panchakarma and allied therapies is one such integrative approach for managing ischemic heart disease [4]. This study aims to assess the efficacy of Ayurvedic Panchakarma therapy combined with lifestyle modifications in the managing patients with inducible ischemia.

2. MATERIAL AND METHODS

2.1 Study Design &Patient Population

A retrospective, observational, single center study was conducted from 2018 to 2022. A total of 84 patients aged 18 years and above, diagnosed with inducible ischemia on stress test of 6 min walk test were included in this study. Patients with resting unstable angina, significant arrythmia, or normal stress according to the modified Bruce protocol were excluded from the study. All patients provided written informed consent. The study was conducted in accordance with the Declaration of Helsinki [5], Good Clinical Practice [6], and applicable regulatory requirements.

2.2 Procedure

The Ischemia Reversal program (IRP) is a combination of Panchakarma and allied therapy. This therapy is performed on the patients after a light breakfast. One session of the procedure lasted approximately 65–75 mins. It is a 3-step procedure, the techniques used under this program are Snehana, Swedana, and Basti. Snehana is oleation in a centripetal manner with upper strokes directed towards the heart. The centripetal oleation helps improve cardiac output. Swedana is passive heat therapy. This reduces inflammation and causes the loss of excessive salts and water by sweating Basti is per rectal drug administration. This reduces lipid, water overload and oxidative stress of the body. Further details are given in **Table 1**. The patients followed a diet plan of 1200 calories/day. The diet kits consumed are displayed in **Figure 1**.

Table 1.Study treatment: Ischemia Reversal Program (IRP)

Step	Type of therapy	Herbs used for therapy	Duration
Snehana	Massage or external oleation	100 ml [80% Sesame oil + 20% Lavender oil]	30–35 mins
Swedana	Passive heart therapy	Dashmool (collection of 10 herbal roots) with steam at ≤40°C	10–15 mins + 3–4 mins of post procedure relaxation
Basti	Per rectal drug administration using a rectal solution	Like warm GHA decoction 100 ml	15 mins

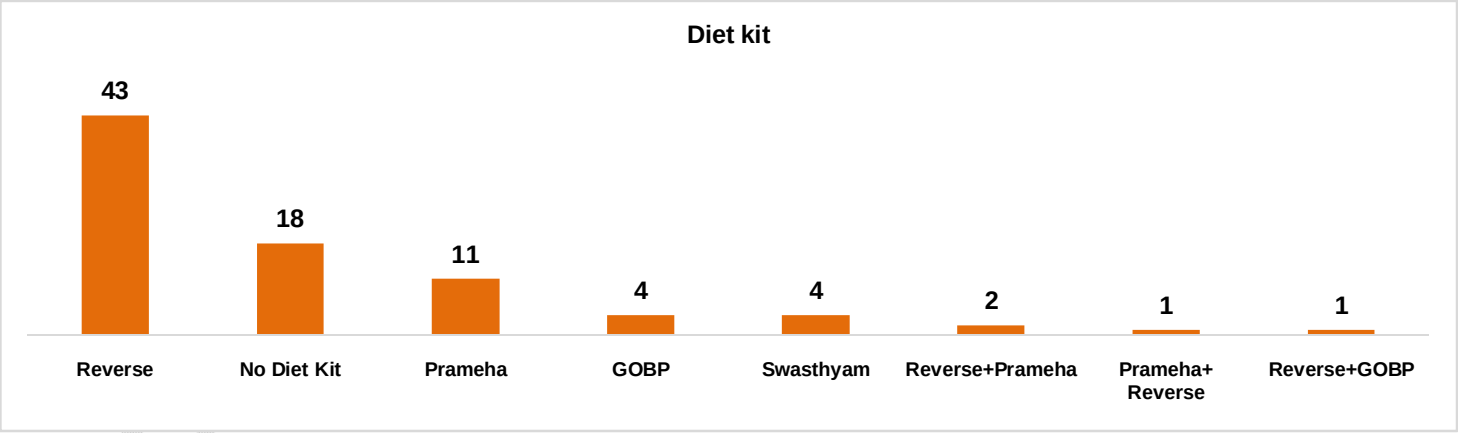

Fig 1. Diet kit

2.3 Data Collection

Data for patient demographics, anthropometrics, Vo2 max and medications were collected and analysed from patient medical records. On day 1 of IRP, a detailed patient history, anthropometric

measurements, and Vo2 max were documented. Details of concomitant standard anti-ischemic medication was also recorded. The activity was repeated on the 90 day and 1 year 1 day follow-up. Data of only those patients who had completed a total of 14 sessions was collected and analysed.

2.4 Statistical Analysis

All patient data were collected and coded in a Microsoft Excel sheet. Software R 3.4.4 was used to analyze data. Continuous data are expressed as the mean ± standard deviation, whereas categorical data are expressed as number (frequency). Paired t-test was used to analyze the difference in various parameters at baseline and 90-day follow-up. A p-value <0.05 was considered as statistically significant.

3. RESULTS AND DISCUSSION

3.1 Patient demographics

The mean age of the patient population was 58.83 ± 12.29 years. Males comprised 29 (34.5%) patients of the study population. Mean weight decreased significantly (day 1: 66.43 ± 11.71 kg, day 90: 61.04 ± 9.99 kg, and 1 year 1 day: 61.95 ± 10.92 kg). Body mass index decreased significantly (day1: 25.87 ± 4.55, day 90: 23.84 ± 3.87, 1 year 1 day: 24.12 ± 4.09). Vo2 max increased significantly (day 1: 14.59 ± 6.99, day 90: 25.83 ± 8.47, and 1 year 1 day: 25.46 ± 9.05). The demographics are detailed in **Table 2**.

Table 2. Demographics of patient population

Variable	Day 1	Day 90	1 Year 1 Day	p value
Mean age, years		58.83 ± 12.29		
Males, n (%)		29 (34.5%)		
Weight, kg	66.43 ± 11.71	61.04 ± 9.99	61.95 ± 10.92	0.00
Body mass index	25.87 ± 4.55	23.84 ± 3.87	24.12 ± 4.09	0.00
Vo2 max	14.59 ± 6.99	25.83 ± 8.47	25.46 ± 9.05	0.00
Heart rate, bpm	84.38 ± 14.26	77.85 ± 11.36	77.60 ± 11.18	0.00
Systolic blood pressure, mmHg	132.00 ± 18.33	128.54 ± 20.09	117.19 ± 27.79	0.00
Diastolic blood pressure, mmHg	93.60 ± 24.37	79.27 ± 13.98	80.35 ± 13.06	0.00

All data are expressed as number (percentage) or mean ± standard deviation.

3.2 Vo2 max according to weight and body mass index

Vo2 max increased for low-risk (day 1: 24.98 ± 5.20, day 90: 32.55 ± 3.78 and 1 year 1 day: 31.26 ± 6.18), intermediate risk (day 1: 14.36 ± 1.74, day 90: 28.67 ± 7.31, and 1 year 1 day: 28.20 ± 8.19), and severe risk (day 1: 8.67 ± 1.89, day 90: 19.39 ± 6.83, and 1 year 1 day: 19.64 ± 7.76) patients. Weight according to Vo2 max decreased for low-risk (day 1: 69.39 ± 40.44 kg, day 90: 64.33 ± 8.21 kg, and 1 year 1 day: 65.07 ± 9.33 kg), intermediate-risk (day 1: 65.80 ± 10.43 kg, day 90: 59.76 ± 8.10 kg, and 1 year 1 day: 61.33 ± 8.96 kg), and severe-risk (day 1: 65.25 ± 13.11 kg, day 90: 60.23 ± 11.86 kg, and 1 year 1 day: 60.66 ± 12.83 kg) patients. Body mass index according to Vo2 max decreased for low-risk (day 1: 25.92 ± 4.86, day 90: 24.07 ± 3.93, 1 year 1 day: 24.17 ± 4.15), intermediate-risk (day 1: 26.29 ± 3.91, day 90: 23.87 ± 2.95, 1 year 1 day: 24.49 ± 3.43), and high risk (day 1: 25.48 ± 4.85, day 90: 23.68 ± 4.48, and 1 year 1 day: 23.76 ± 4.53) patients. The Vo2 max according to weight and body mass index is detailed in **Table 3.**

Table 3. Vo2 max according to weight and body mass index

All data are expressed as mean ± standard deviation.

Vo2 max classification	Vo2 max			Weight, kg			Body mass index		
	Day 1	Day 90	1 Year 1 Day	Day 1	Day 90	1 Year 1 Day	Day 1	Day 90	1 Year 1 Day
Low-risk	24.98 ± 5.20	32.55 ± 3.78	31.26 ± 6.18	69.39 ± 40.44	64.33 ± 8.21	65.07 ± 9.33	25.92 ± 4.86	24.07 ± 3.93	24.17 ± 4.15
Intermediate-risk	14.36 ± 1.74	28.67 ± 7.31	28.20 ± 8.19	65.80 ± 10.43	59.76 ± 8.10	61.33 ± 8.96	26.29 ± 3.91	23.87 ± 2.95	24.49 ± 3.43
Severe-risk	8.67 ± 1.89	19.39 ± 6.83	19.64 ± 7.76	65.25 ± 13.11	60.23 ± 11.86	60.66 ± 12.83	25.48 ± 4.85	23.68 ± 4.48	23.76 ± 4.53

3.3 Body mass index according to Vo2 max and weight

Vo2 max increased according to normal body mass index (day 1: 14.23 ± 7.45, day 90: 24.47 ± 8.37, and 1 year 1 day: 23.73 ± 8.55), overweight body mass index (day 1: 15.62 ± 7.17, day 90: 27.69 ± 8.76, and 1 year 1 day: 27.70 ± 9.61), obese 1 body mass index(day 1: 15.49 ± 4.19, day 90: 24.87 ± 7.31, and 1 year 1 day: 26.50 ± 6.96), obese 2 body mass index (day 1: 13.58 ± 1.11, day 90: 33.75 ± 1.95, and 1 year 1 day: 33.37 ± 1.90), and morbid body mass index (day 1: 13.08 ± 6.42, day 90: 24.89 ± 7.79, and 1 year 1 day: 23.79 ± 9.40). Weight decreased according to normal body mass index (day 1: 59.60 ± 6.52 kg, day 90: 56.24 ± 5.97 kg, and 1 year 1 day: 56.95 ± 6.94 kg), overweight body mass index (day 1: 65.55 ± 7.25 kg, day 90: 59.22 ± 6.29 kg, and 1 year 1 day: 60.36 ± 1.09 kg), obese 1 body mass index (day 1: 81.37 ± 8.29kg, day 90: 73.50 ± 8.99 kg, and 1 year 1 day: 76.15 ± 8.79 kg), obese 2 body mass index (day 1: 83.27 ± 2.62 kg, day 90: 73.30 ± 2.97 kg, and 1 year 1 day: 73.57 ± 4.61 kg), and morbid body mass index (day 1: 84.41 ± 10.55 kg, day 90: 75.60 ± 11.10 kg, and 1 year 1 day: 75.80 ± 14.22 kg) patients. Body mass index decreased in normal body mass index (day 1: 22.62 ± 1.82, day 90: 21.43 ± 1.69, and 1 year 1 day: 21.69 ± 2.10), overweight body mass index (day 1: 26.20 ± 0.87, day 90: 23.77 ± 1.35, and 1 year 1 day: 24.06 ± 1.54), obese 1 body mass index (day 1: 29.17 ± 0.42, day 90: 26.37 ± 0.89, and 1 year 1 day: 27.24 ± 0.95), obese 2 body mass index (day 1: 30.95 ± 0.66, day 90: 27.25 ± 0.93, and 1 year 1 day: 27.34 ± 1.54), and morbid body mass index (day 1: 13.08 ± 6.42, day 90: 32.20 ± 4.02, and 1 year 1 day: 32.21 ± 5.11) patients. The body mass index according to Vo2 max and weight are demonstrated in **Table 4**. The adherence to medication is demonstrated in **Table 5**.

Table 4. Body mass index according to Vo2 max and weight

Body mass index classification	Vo2 max			Weight, kg			Body mass index		
	Day 1	Day 90	1 Year 1 Day	Day 1	Day 90	1 Year 1 Day	Day 1	Day 90	1 Year 1 Day
Normal	14.23 ± 7.45	24.47 ± 8.37	23.73 ± 8.55	59.60 ± 6.52	56.24 ± 5.97	56.95 ± 6.94	22.62 ± 1.82	21.43 ± 1.69	21.69 ± 2.10
Overweight	15.62 ± 7.17	27.69 ± 8.76	27.70 ± 9.61	65.55 ± 7.25	59.22 ± 6.29	60.36 ± 1.09	26.20 ± 0.87	23.77 ± 1.35	24.06 ± 1.54
Obese 1	15.49 ± 4.19	24.87 ± 7.31	26.50 ± 6.96	81.37 ± 8.29	73.50 ± 8.99	76.15 ± 8.79	29.17 ± 0.42	26.37 ± 0.89	27.24 ± 0.95
Obese 2	13.58 ± 1.11	33.75 ± 1.95	33.37 ± 1.90	83.27 ± 2.62	73.30 ± 2.97	73.57 ± 4.61	30.95 ± 0.66	27.25 ± 0.93	27.34 ± 1.54
Morbid	13.08 ± 6.42	24.89 ± 7.79	23.79 ± 9.40	84.41 ± 10.55	75.60 ± 11.10	75.80 ± 14.22	35.92 ± 3.29	32.20 ± 4.02	32.21 ± 5.11

Table 5. Medication adherence

Medicine Name	Day 1 (n)	Day 90 (n)	1 Year 1 Day (n)	Day 1 to 90 (%)	Day 90 to 1 Year 1 Day (%)	Day 1 to 1 Year 1 Day (%)
Angiotensin-converting enzyme inhibitors	6	4	3	-33.33	-25.00	-50
Anticoagulant	51	51	42	0.00	-17.65	-17.65
Anti-platelets	32	21	9	-34.38	-57.14	-71.88
Beta-blockers	27	21	10	-22.22	-52.38	-62.96
Calcium channel blockers	15	6	3	-60.00	-50.00	-80
Diuretic	21	13	4	-38.10	-69.23	-80.95
Nitrate	21	15	11	-28.57	-26.67	-47.62
Statin	46	26	16	-43.48	-38.46	-65.22

Ischemic heart disease is the leading cause of morbidity and mortality among women. This disease affects women and men at the same rate; however, the risk is greater among elderly women [1]. This observation is reflected in the current study as 65.5% of the study patients are women. A hypothesis for this may be that younger woman especially, are subjected to bias that leads to lower rates of diagnosis and inferior management [7]. The Prospective Urban Rurak Epidemiology (PURE) study has documented lower preventive management of cardiovascular risk factors in women compared to men [8]. Body mass index and high blood pressure are among other risk factors for ischemic heart disease. The mean body mass index decreased from 25.87 ± 4.55 to 23.84 ± 3.87 at day 90 and 24.12 ± 4.09 after 1 year 1 day. Similarly, literature states that every 20 mmHg increase in systolic blood pressure doubles the risk of cardiovascular mortality [9]. In the current study systolic blood pressure decreased by 15 mmHg after 1 year 1 day.

Vo2 max measures the maximum oxygen that can be utilized during exercise. Ischemic heart disease patients suffer from diastolic dysfunction, hence Vo2 max is reduced in such cases which manifest clinically as reduced exercise/work capacity. In the present study, the Vo2 max at the 90-day follow-up increased from 14.59 ± 6.99 to 25.83 ± 8.47 at the 90-day follow-up. This is in line with similar earlier studies that reported increase of Vo2 max from 20.29±6.72 to 29.40 ± 6.71 [2], 20.74 ± 7.25 to 29.69 ± 6.62 [4], 17.82 ± 7.23 to 26.65 ± 6.14 [10], and 18.14 ± 7.82 to 27.88 ± 7.31 [11] after 90 days.

Study limitations

The study has a few limitations to consider. First, its retrospective design may limit the depth of insights compared to prospective studies, which could strengthen the existing predominantly retrospective literature. Second, the relatively small sample size restricts the generalizability of the study outcomes.

CONCLUSION

Ayurvedic Panchakarma in the form of IRP therapy showed significant short-term and long-term results in management of patients diagnosed with ischemic heart disease patients.

ETHICAL APPROVAL

All authors hereby declare that all experiments have been examined and approved by the appropriate ethics committee and have therefore been performed in accordance with the ethical standards laid down in the 1964 Declaration of Helsinki

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