

"INTEGRATIVE AYURVEDIC MANAGEMENT OF ISCHEMIC HEART DISEASE WITH REGIONAL WALL MOTION ABNORMALITY: A CASE REPORT"

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Abstract:

This case report showcases the effective management of ischemic heart disease (IHD) with regional wall motion abnormality (RWMA) through an integrated Ayurvedic treatment approach. A 60-year-old male with a history of IHD, dyslipidaemia, and hypertension experienced significant improvements in both subjective and objective parameters following two admissions and a treatment regimen consisting of oral medications and Panchakarma therapies. Subjective improvements included the alleviation of exertional breathlessness and notable enhancements in physical endurance as measured by the 6-Minute Walk Distance (6MWD) and cardiovascular efficiency (VO₂MAX). Objective assessments revealed the resolution of RWMA, improvements in left ventricular function, and an increase in left ventricular ejection fraction (LVEF). The treatment approach involved preparatory detoxification, targeted Panchakarma therapies, and specific oral medications addressing dyslipidaemia and cardiovascular function, such as Kostashodana, Basti therapies, and herbal formulations like Arogyavardini Vati and Prabhakar Vati. This case underscores the potential of Ayurveda as a complementary approach in the comprehensive management of cardiovascular conditions, offering holistic benefits that extend beyond mere symptomatic relief.

Keywords: *Ischemic heart disease, Regional wall motion abnormality, Traditional medicine, Integrative approach, Heart function*

Introduction

Regional wall motion abnormality correlates either directly or indirectly with myocardial ischemia¹. The association of regional wall motion abnormality and pathologically proven myocardial infarction has been established in both human and animal studies. It is an important finding on 2-D echocardiography since it correlates well with pathologically demonstrated myocardial infarction. Although the severity of the lesion may vary, the presence of it is associated with either a transmural infarction, subendocardial infarction, or combined infarction with ischemia². Regional wall motion abnormality has a 95% predictive value for coronary disease in patients with left ventricular dysfunction and normal left ventricular size with a sensitivity of 83% and specificity of 57%³. Importantly, regional wall motion abnormality may be the surrogate of

such complications as congestive heart failure, arrhythmogenic discharge, or cardiomyopathy-all of which affect the life expectancy of the patient in addition to consuming scarce health-care resources.⁴

The presence of qualitative WM abnormalities has been demonstrated to be an independent predictor of cardiovascular events and may also occur without history or clinical and ECG signs of coronary artery disease.⁵ Abnormal ventricular wall motion abnormality (WMA) is one of the strongest clinical predictors of sudden cardiac death due to arrhythmia in patients with heart disease. Wall motion abnormalities were also associated with an about 2.5 times higher risk of both cardiovascular events and death during an 8-years follow-up (2). The presence of qualitative WM abnormalities has been demonstrated to be an independent predictor of cardiovascular events in groups of patients with myocardial infarction (MI), unstable angina, typical chest pain, and congestive heart failure (CHF).⁶

We describe a case of ischemic heart disease, hypertension with regional wall motion abnormality treated with ayurvedic treatment protocol which includes oral and panchakarma treatment and improvement were observed in subjective and objective criteria

CASE REPORT

A 60-year-old male patient presented with complaints of exertional breathing difficulty, left-sided chest heaviness, generalized weakness, and body heaviness. These symptoms, gradually worsening over the last 6-7 months, significantly impacted his mobility, limiting his walking distance to no more than 200 meters without requiring rest. His medical history is notable for having undergone percutaneous transluminal coronary angioplasty (PTCA) twice, once on 27 March 2016 and again on 13 March 2019. Furthermore, he is known to suffer from ischemic heart disease (IHD), dyslipidaemia, and hypertension and is currently on medication, including antiplatelet, lipid-lowering, and antihypertensive agents. A post-PTCA echocardiogram (dated 14 March 2019) indicated IHD with an acute inferior wall myocardial infarction, PTCA + DES to RCA, fair left ventricular systolic function with an LVEF of 50% at rest, and evidence of hypokinesia in the basal posterior wall, basal septal, and basal inferior wall.

Clinical examination revealed a blood pressure of 140/90 mmHg and a respiratory rate of 18 breaths per minute at rest, without the need for accessory muscle use. The patient's height and weight were measured at 154 cm and 72 kg, respectively. An electrocardiogram (ECG) was within normal limits except for left axis deviation, and a heart rate of 80 beats per minute was observed. Respiratory examination did not reveal any added sounds, maintaining normal vesicular breathing at rest. Cardiac auscultation was unremarkable, with normal S1 and S2 heart sounds. However, mild bilateral pitting pedal edema was noted. According to the Medical Research Council (MRC) scale for grading the severity of breathlessness, the patient's breathing difficulty was categorized as grade 3, indicating a need to stop for breath after walking approximately 100 meters or after a few minutes of level walking.

Diagnostic assessments further highlighted the patient's condition. The ECG underscored the left axis deviation and revealed T-wave inversion in leads II and III. A 2D echocardiogram

performed on 26 October 2021 confirmed the post-PTCA status with regional wall motion abnormality (RWMA) showing mild hypokinesia of the basal inferior segment and a fair left ventricular systolic function with an LVEF of 50% (visual estimation). Complete blood count parameters fell within the normal range. However, the lipid profile suggested dyslipidaemia, with total cholesterol at 240 mg/dl, LDL cholesterol at 140 mg/dl, triglycerides at 136 mg/dl, and HDL cholesterol at 36 mg/dl, indicating a need for further management of his lipid levels.

THERAPEUTIC INTERVENTION

The patient's treatment was meticulously planned and executed in two main phases, categorized as the first and second admissions, alongside subsequent oral medication advice.

First Admission: On 26th October 2021, the patient commenced a preparatory phase involving *Kostashodana* with *Eranda taila* at a dosage of 25 ml for three days, during which three *Vegas* were observed. This initial phase was crucial for cleansing and preparing the body for the subsequent treatments. From the 29th of October to the 6th of November 2021, the patient underwent a series of *Panchakarma* treatments designed for deep detoxification and rejuvenation. These treatments included *Sarvanga Abhyanga* using *Kotumchukadi taila*, *Mrudu sarvanga Baspa sweda*, and *Yoga basti*, which comprised *Anuvasan Basti* with *Mahamanjistadi tail* (70ml) and *Niruha basti* with *Manjishyadi kshaar basti*. Additionally, *Hridaya basti* with *Dashamoola Taila* was administered to specifically target heart health. Upon discharge, the patient was advised to take *Tapyadi Loha* twice daily with *Maha-manjishyadi Kashaya* (15ml in the morning and 15ml in the evening with equal quantity of warm water) and *Kaishor Guggulu* twice daily with *Vidangarista* (20ml twice a day), to consolidate the treatment benefits and support recovery.

Second Admission: The patient was readmitted on the 6th of December 2021 for further *Kostashodan* treatment, which was administered for two days using *Eranda taila* (25 ml), with two *Vegas* observed. From the 8th to the 16th of December 2021, the treatment protocol was similar to the first admission, including *Sarvanga Abhyanga*, *Mrudu sarvanga Baspa sweda*, *Yoga basti* (with both *Anuvasan* and *Niruha basti*), and *Hridaya basti* with *Dashamoola Taila*. An additional treatment, *hridayapradesh lepa* with *Krishnadi churna*, was introduced in this phase to enhance cardiovascular health. Upon discharge, the patient was prescribed *Tab. Arogyavardini* (2 tablets twice a day with *Phalatrikadi Kashaya* 10ml twice a day with an equal quantity of water for 30 days), *Chatushparni churna* (6 grams twice a day with honey for 30 days), and *Tab Prabhakar vati* (2 tablets twice a day after food for 30 days).

Follow-Up Medication: On 17th January 2022, the patient continued with oral medications to further support his recovery and manage his conditions. This regimen included *Tab Arogyavardini vati* (2 tablets twice a day after food for 30 days), *Chutushparni churna* (5 grams twice a day with honey before food for 30 days), and *Tab Prabhakar vati* (2 tablets twice a day after food for 30 days).

This comprehensive approach, combining traditional *Panchakarma* therapies with targeted oral medications, was aimed at addressing the patient's specific health issues while promoting overall well-being and enhancing the body's natural healing processes.

RESULT:

The assessments were focused on subjective parameters like exertional breathlessness, measured by the MRC scale, the 6-Minute Walk Distance (6MWD), and the VO2MAX at resting heart rate.

Initially, the patient exhibited a level 3 on the MRC scale for exertional breathlessness, indicating significant difficulty that hindered his ability to perform routine activities without discomfort. However, there was a noticeable improvement following the first admission, with the MRC scale dropping to 2, signifying some relief in symptoms. The most remarkable improvement was observed after the second admission, where the patient's exertional breathlessness was entirely alleviated, allowing him to return to his routine work and perform activities without any discomfort.

In terms of physical endurance, as measured by the 6MWD, the patient initially could only cover a distance of 200 meters, which was significantly below the normal limit, representing only 46.635% of the expected distance for a healthy person. There was no improvement after the first admission, but a drastic enhancement was noted after the second admission and the third follow-up. The distance covered increased to 500 meters and then remarkably to 1200 meters, exceeding the average distance a healthy person is expected to cover. This progression reflected an increase to 116.59% and then to an extraordinary 279.8% of the expected distance, indicating a substantial enhancement in the patient's physical endurance and overall health.

Furthermore, the VO2MAX at resting heart rate, an indicator of cardiovascular efficiency and aerobic endurance, showed a progressive improvement. Initially recorded at 33ml/kg/min, indicating a lower efficiency, it improved slightly after the first admission to 34ml/kg/min. A significant improvement was noted after the second admission, with VO2MAX increasing to 38ml/kg/min, suggesting enhanced cardiovascular health and efficiency.

These outcomes highlight the effectiveness of the treatment regimen in substantially improving the patient's cardiovascular health, physical endurance, and overall quality of life, allowing him to perform daily activities without discomfort and significantly exceeding the initial expectations set for his recovery.

Effect on objective parameters: Before beginning treatment on October 26, 2021, the patient was evaluated to have a post-percutaneous transluminal coronary angioplasty (PTCA) status, exhibiting concentric left ventricular hypertrophy (LVH) and regional wall motion abnormalities (RWMA) with basal inferior wall mild hypokinesia. The left ventricular systolic function was deemed fair, and the left ventricular ejection fraction (LVEF) was measured at 50%, indicating reduced heart efficiency. Additionally, the patient was diagnosed with grade 1 left ventricular diastolic dysfunction (lv dd), mild tricuspid regurgitation (TR) without pulmonary arterial hypertension (PAH), and a right ventricular systolic pressure (RVSP) of 32mmHg. The measurements for the aorta (Ao) were 27mm, left ventricular internal diameter in diastole (LVIDD) was 46mm, and in systole (LVIDS) was 35mm, with fractional shortening indicating mildly abnormal heart function at 24%. The interventricular septum (IVS) thickness was 13mm, and the left atrium (LA) measured 30mm.

Following the completion of the treatment regimen by March 6, 2022, significant improvements were observed. The post-PTCA status remained, but the RWMA had resolved at rest, indicating no observable abnormalities in heart wall motion. The patient's left ventricular systolic function improved from fair to good, and the LVEF increased to 55%, reflecting enhanced heart efficiency. The diagnosis of grade 1 lv dd remained unchanged, but the condition of mild TR had improved to trivial TR, still without PAH. The RVSP decreased to 26mmHg, suggesting a reduction in right ventricular pressure. Measurements showed a slight decrease in the aorta size to 26mm, and the LVIDD and LVIDS reduced to 44mm and 26mm, respectively, which indicated an improvement in heart chamber sizes and function. The fractional shortening improved dramatically to 41%, signifying a return to normal heart function. The IVS remained at 13mm, while the LA size increased to 37mm, which could reflect changes in atrial size or volume in response to the overall improvement in heart function.

These improvements highlight the effectiveness of the treatment in not only enhancing the heart's systolic function but also in significantly reducing the structural abnormalities associated with the patient's cardiovascular condition, thereby contributing to a better prognosis and quality of life for the patient.

DISCUSSION

In managing cardiovascular disease (CVD), Ayurvedic treatment adopts an integrated approach combining Panchakarma procedures with specific oral medications. Unlike merely alleviating symptoms, this traditional healing system aims at addressing the root cause of the disease. It focuses on restoring the balance of the body's doshas, detoxifying the system, and enhancing inherent healing abilities.⁷ Detoxification and Restoration of Dosha Balance play a crucial role in Ayurvedic management of CVD.⁸ The initial phase involves Kostashodana with Eranda taila, which serves as a preparatory step for detoxification, aiding in the elimination of Ama (toxins) and balancing Vata dosha. This process is vital for reducing systemic inflammation and oxidative stress, both significant contributors to atherosclerosis and other cardiovascular conditions.⁹ Additionally, treatments like Manjistadi Kshara Basti and Arogyavardhini Vati¹⁰ are known for their detoxification effects, indirectly supporting cardiovascular health by eliminating toxins and impurities.¹¹

The practice of Yoga Basti, incorporating Anuvasan and Niruha basti with medicinal decoctions, directly influences the gastrointestinal tract, which plays a crucial role in heart health through the gut-heart axis.¹² This regimen is recognized for its Vata-balancing effect, closely associated with heart function in Ayurveda. By restoring Vata dosha equilibrium, Yoga Basti may contribute to regulating heart rate, blood pressure, and enhancing cardiac efficiency. Additionally, Hridaya basti, a localized treatment utilizing Dashamoola Taila, targets the heart directly and is believed to fortify cardiac muscle function, improve myocardial perfusion, and enhance overall heart function. The antioxidative and anti-inflammatory properties found in Dashamoola Taila further bolster its cardioprotective effects¹³. Furthermore, Prabhakar Vati is esteemed for its

cardioprotective properties, containing ingredients such as Arjuna (*Terminalia arjuna*) and Jatamansi (*Nardostachys jatamansi*) known for their beneficial effects on heart health. Arjuna, in particular, has undergone extensive study for its cardioprotective, anti-atherogenic, and anti-hypertensive properties. Moreover, Prabhakar Vati is believed to enhance heart muscle strength and function, potentially leading to improved cardiac output and overall cardiovascular health. Additionally, its calming effects on the nervous system may help alleviate palpitations and irregular heartbeats by stabilizing the autonomic nervous system.¹⁴

Blood Purification is another key aspect addressed in Ayurvedic management of CVD. Procedures like Manjistadi Kshara Basti and medications such as Kaishore Guggulu are believed to purify the blood, aiding in circulation improvement and reducing the risk of cardiovascular diseases associated with blood impurities. Enhancing Microcirculation and Tissue Perfusion is achieved through practices like Sarvanga Abhyanga and Mrudu sarvanga Baspa sweda. These procedures not only aid in detoxification but also improve nutrient and oxygen delivery to the heart and other tissues. Improved microcirculation is crucial for managing conditions like ischemic heart disease by ensuring adequate blood supply to the myocardium.¹⁵

In the realm of cardiovascular disease (CVD) management, addressing dyslipidaemia is crucial, given its significant role as a risk factor. Ayurvedic interventions like the administration of Tapyadi Loha, a formulation containing iron and other herbs, alongside Kaishor Guggulu, a renowned lipid-lowering agent, focus on modulating lipid metabolism. These treatments are thought to effectively reduce serum cholesterol, LDL (low-density lipoprotein) levels, and triglycerides while simultaneously enhancing HDL (high-density lipoprotein) levels, thereby mitigating the risk of atherosclerosis¹⁶. Moreover, various Ayurvedic formulations exhibit lipid-lowering effects. For instance, herbs like Arjuna in Prabhakar Vati have been studied for their capacity to lower LDL cholesterol levels and improve the lipid profile, thus promoting cardiovascular health. Similarly, ingredients such as Guggulu in Kaishore Guggulu are recognized for their lipid-lowering properties, contributing to the reduction of LDL cholesterol levels and potentially lowering the risk of atherosclerosis and coronary artery disease. Additionally, traditional beliefs attribute lipid-regulating effects to certain herbs present in Arogyavardhini Vati, such as Guggulu (*Commiphora mukul*), indicating its potential role in supporting cardiovascular health and reducing the risk of atherosclerosis.¹⁷

The treatment regimen encompasses oral medications like Arogyavardini Vati, for their hepatoprotective, antioxidant, and anti-inflammatory properties. These attributes are pivotal in addressing systemic inflammation and oxidative stress, both significant factors in cardiovascular disease pathogenesis.¹⁷ Furthermore, Manjistha (*Rubia cordifolia*), a key component of Manjistadi Kshara Basti, exhibits potent anti-inflammatory properties. Given the role of chronic inflammation in cardiovascular diseases like atherosclerosis and coronary artery disease, the reduction of inflammation by Manjistadi Kshara Basti may aid in managing inflammation-related cardiovascular conditions.¹⁸ Similarly, Kaishore Guggulu contains herbs like Guggulu (*Commiphora mukul*) and Triphala, renowned for their potent anti-inflammatory properties. By mitigating inflammation, Kaishore Guggulu may indirectly contribute to managing various

cardiovascular conditions. Moreover, Kaishore Guggulu's inclusion of antioxidant-rich herbs like Triphala helps neutralize free radicals and minimize oxidative damage to the cardiovascular system¹⁹. Additionally, Arogyavardhini Vati contains ingredients with anti-inflammatory properties, potentially reducing inflammation in the cardiovascular system and supporting heart health. Similarly, many herbs in Dashamula Taila possess anti-inflammatory properties, suggesting its potential in managing inflammation-related cardiovascular conditions. Triphala, a primary ingredient of Phalatrikadi Kashayam, exhibits potent anti-inflammatory properties. By addressing chronic inflammation, Phalatrikadi Kashayam may assist in managing inflammation-related cardiovascular conditions. Moreover, the antioxidant properties of Triphala, along with other herbs in Phalatrikadi Kashayam, aid in neutralizing free radicals, thereby protecting against cellular damage and contributing to the management of cardiovascular diseases.²⁰

Prabhakar Vati, a classical Ayurvedic medicine traditionally used for various cardiovascular conditions and respiratory disorders, exhibits anti-hypertensive effects. Given that hypertension is a significant risk factor for cardiovascular diseases, Prabhakar Vati's calming and antihypertensive properties may aid in reducing blood pressure levels.²¹ Jatamansi, one of its key ingredients, has a long-standing tradition of use in managing hypertension.²² Kaishore Guggulu, while not primarily indicated for hypertension, may potentially offer benefits due to its anti-inflammatory properties and potential improvement in blood circulation. However, further research is necessary to establish its efficacy in managing high blood pressure. Furthermore, Phalatrikadi Kashayam contains herbs like Musta with mild diuretic properties.²³ While excessive diuresis can lead to electrolyte imbalances and affect cardiovascular health negatively, the gentle diuretic action of Phalatrikadi Kashayam may assist in reducing fluid retention and maintaining fluid balance without significant adverse effects.

Phalatrikadi Kashayam is traditionally employed to enhance digestive health and regulate bowel movements. Given that good digestive health indirectly influences nutrient absorption and toxin elimination, it plays a vital role in overall well-being, including cardiovascular health. Additionally, a healthy liver is crucial for maintaining optimal cardiovascular function. Arogyavardhini Vati, renowned for its hepatoprotective properties, supports liver health. By enhancing liver function, it indirectly contributes to cardiovascular well-being. Moreover, Ayurveda underscores the significance of healthy digestion for overall health, including cardiovascular health. Manjistadi Kshara Basti promotes gastrointestinal health and proper digestion, indirectly benefiting cardiovascular health. Certain herbs in Phalatrikadi Kashayam, like Triphala and Musta, possess adaptogenic properties that aid in stress reduction and promote relaxation. Chronic stress is a risk factor for cardiovascular diseases, making stress reduction techniques valuable for cardiovascular health. Furthermore, some Ayurvedic therapies, including Basti procedures, are believed to have a calming effect on the nervous system. Stress reduction, promoted by techniques like Manjistadi Kshara Basti, indirectly supports heart health by promoting relaxation and reducing stress levels. Although Dashamula Taila isn't directly indicated for cardiovascular diseases, its therapeutic properties can indirectly impact cardiovascular health.

It offers pain relief, muscle relaxation, and stress reduction through massage therapies, thereby supporting cardiovascular well-being.

CONCLUSION:

The presented case report underscores the potential efficacy of Ayurvedic interventions in the management of ischemic heart disease (IHD) with regional wall motion abnormality (RWMA) alongside comorbidities such as hypertension and dyslipidemia. The integrated approach of Panchakarma therapies and targeted oral medications aimed at addressing the root cause of the disease while promoting overall well-being has demonstrated promising outcomes. Through detoxification, restoration of dosha balance, blood purification, and enhancement of microcirculation and tissue perfusion, Ayurvedic interventions target multiple facets implicated in cardiovascular health. Additionally, the modulation of lipid metabolism, reduction of inflammation and oxidative stress, improvement of liver function, and stress reduction contribute to a comprehensive therapeutic approach. The observed improvements in subjective parameters such as exertional breathlessness, 6-Minute Walk Distance (6MWD), and VO₂MAX, alongside objective measures including resolution of RWMA, improvement in left ventricular systolic function, reduction in right ventricular pressure, and normalization of heart chamber sizes and function, reflect the effectiveness of the treatment regimen.

Overall, this case report provides valuable insights into the potential of Ayurvedic interventions as adjunctive therapies in the management of cardiovascular diseases, emphasizing the importance of holistic approaches that address the interconnectedness of physiological systems for optimal patient outcomes. Further research and clinical studies are warranted to validate these findings and establish Ayurveda's role in contemporary cardiovascular care.

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