



LOW EJECTION FRACTION PATIENTS' RESPONSE TO HEART FAILURE REVERSAL THERAPY – A SINGLE CASE STUDY

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ABSTRACT

In India, chronic heart failure (CHF) has increased significantly despite improved medicine therapy. The overall prognosis of CHF patients was found to be unsatisfactory due to a decreased ejection fraction or a low aerobic capacity in CHF patients, resulting in rising mortality and morbidity rates. Perhaps complementary and alternative medications can aid in the treatment of congestive heart failure as an adjuvant. Ayurveda is one approach which can be applied to the treatment. Several studies have demonstrated the efficacy of panchakarma therapy in treating a variety of illnesses, and it can be treated as Heart failure reversal therapy. Heart failure reversal therapy (HFRT) is a unique treatment intended to improve cardiorespiratory endurance in patients with CHF. This study quantifies the maximal aerobic capacity (MAC) of patients with CHF whose mortality and morbidity rates are rising. The objective of the present investigation was to assess the efficacy of HFRT as an adjuvant therapy for patients with CHF and a low ejection fraction. In the present case report, HF was treated for six months with conventional medicine. Then, only Ayurveda treatment was offered, along with lifestyle adjustment, after examining the cause and risk factors for heart disease. This case report thereby describes the beneficial role of Ayurveda in heart failure with poor ejection fraction (35%) in a 65-year-old male with comorbidities who has been treated in our institute for six months.

Keywords: Low ejection fraction, heart failure, reversal therapy

INTRODUCTION

Congestive heart failure (CCF) is a clinically challenging condition. In India, estimations of the prevalence and incidence of chronic heart failure (CHF) are frequently unreliable. However, the annual incidence of CHF is estimated to be between 500,000 and 1.8 million [1]. In CCF, the heart ventricles' capacity to fill or expel blood is compromised. Heart disease, including cardiomyopathy and CVD, ranks first among the five leading causes of death in India. Numerous studies have revealed an increase in the frequency of heart disease-related deaths, with early-age death episodes becoming more common. Although the epidemic is evolving, clinical and public health issues still exist. Because of the numerous risk factors and coexisting conditions, the overall number of patients suffering from heart failure is rising. Dyspnea, orthopnea, oedema, pain from hepatic congestion, abdominal distention from ascites (fluid buildup and exhaustion), and weakness from decreased cardiac output are all signs of heart failure.[2]

Conventionally, ACE inhibitors, angiotensin II receptor blockers (ARB), mineralocorticoid receptor antagonists (MRA), and beta-blockers are considered the fundamental treatment principles in modern medicine. The treatment plan also addresses multimorbidity, chronicity, and risk factor reduction because patients will be living with heart failure for a longer extended period than they have ever lived with it. [3] Although decades have brought about improvements in the conventional treatment of heart failure, patient survival and quality of life remain inadequate. Ayurvedic treatment has been the subject of published clinical trials as an adjuvant therapy for heart failure.

Antioxidant, anti-inflammatory, antiplatelet, and hypolipidemic effects are common in herbal remedies. It is necessary to assess the possible contribution of herbal medicine to heart failure treatment.

Panchakarma therapy for CCF, called Heart failure reversal therapy (HFRT), is a 5-step ayurvedic procedure known to eliminate detrimental toxins from the body, thereby maximising the patient's health [4]. HFRT employs panchakarma techniques, including snehana (massage), swedana (fomentation therapy), and basti (a form of enema), in addition to hrudayadhara (oil dripping therapy) and hrudayabasti (a form of basti).[5-6] A dysfunctional rasa dhatvagni, according to Ayurveda, is a cause of Hrudrog (heart disease). Heart failure is classified as tridoshaja vyadhi in Ayurvedic medicine. Traditional heart failure treatment has improved over the years, yet patient survival and quality of life remain inadequate. Ayurveda treatment as adjuvant therapy in the management of heart failure has been the subject of some published clinical trials. Antioxidant, anti-inflammatory, antiplatelet, and hypolipidemic characteristics are found in many herbal medications. There is a need to assess herbal medicine's potential usefulness in treating heart failure. The presented study is a case of CCF that was first managed using traditional therapy for 12 days for six months in addition to Ayurvedic treatment. Only Ayurvedic treatment is administered after that, along with altering one's lifestyle by assessing the causal and heart disease risk factors based on traditional Ayurvedic medicine.

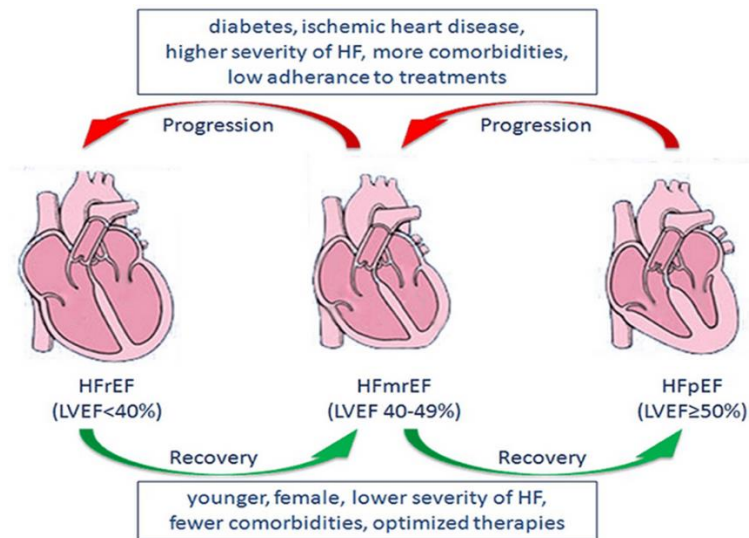


Figure 1. Predictors of changes in LVEF and Transitions among HF rEF, HF m rEF, and HF pEF. LVEF, left ventricular ejection fraction. [7]

Objectives

Investigate the effect of Low ejection fraction patients' response to heart failure reversal therapy.

Ayurvedic Perspective

In Ayurvedic medicine, a patient with heart failure has a condition known as tridoshaja vyadhi. Even though there have been advancements in the traditional treatment of heart failure over the years, patient survival and quality of life are still inadequate. Several published clinical trials have investigated the use of Ayurvedic treatment as an adjunctive therapy in the treatment and management of heart failure [8-10]. Numerous herbal medications exhibit antioxidant, anti-inflammatory, antiplatelet, and hypolipidemic properties. There is a pressing need to conduct research into the potential efficacy of herbal medicine in the treatment of heart failure. The current case report shows that high blood pressure (HF) was treated for three months with traditional Western medicine and Ayurvedic treatment. After determining the root causes of heart disease and identifying potential risk factors, the only treatment option at the time was Ayurveda, which was combined with lifestyle modifications. This case report, therefore, describes the beneficial role that Ayurveda plays in heart failure with poor ejection fraction in a 65-year-old male with comorbidities who has been treated in our institute

for six months. The patient has been receiving treatment for six months.

Material and methods

Case Presentation

A 69-year-old male patient presented to the kayachikitsa outpatient department of the Y.M.T Medical Ayurvedic College and Hospital in Kharghar, Navi Mumbai, with chief complaints of breathlessness, reduced appetite, vertigo, body ache, and bilateral feet oedema for 15 days. When she arrived at our panchakarma centre, she weighed 45.95 kg, had a temperature of 98.4 degrees, had a 22 respiratory rate (RR), had a blood pressure of 140 over 90 millimetres of mercury, and had a pulse of 64 beats per minute. An examination of the patient's physical condition revealed a coated tongue and oedema in their feet. On the other hand, there was no evidence of pallor, clubbing, or cyanosis at all. The central nervous system (CNS) was tired, and the cardiovascular system (CVS) heart sounds were S1 and S2. A loud murmur was heard - +, RS – BAEN, and the patient's abdomen did not feel tender. An ECG performed on a patient with sinus rhythm revealed a left bundle branch block. However, the patient's family history did not include any instances of heart failure. The patient had systolic and diastolic dysfunction, a left ventricular ejection fraction of 35%, and a sign of left ventricular hypertrophy (interventricular septal diam-

eter of 14 mm, LV posterior wall diameter of 12 mm). The patient enrolled in the study was currently taking various medications, including Valsartan, Amlodipin, Frusemid, and Digoxin.

Chief Complaint

- Retrosternal chest pain
- Palpitations

Patient history

A 69-year-old male was admitted with the above complaints. The patient was admitted, and necessary investigations were sent. Coronary Angiography was done on 07/01/2023. CAG s/o TVD. Coronary Angioplasty was done on 07/01/2023. PAMI to LAD was done. The patient tolerated the procedure well. Inj. Clexane stopped on 09/01/2023. The patient was treated with IV antibiotics, analgesics, IV fluids, and other supportive medications. The patient improved symptomatically and in general condition, hence being discharged in a haemodynamically stable condition.

Coronary Angiography and Coronary Angioplasty done on 07/01/2023.

- Allergy: None
- Family history: None
- Physical history: Sleep disturbed, difficulty performing daily routines.

Examination of Patient

General Physical Examination

- Pulse: 79/min
- BP: 140/100 mmHg
- Weight: 63 Kgs
- Stool: Satisfactory
- Urine: 2-3/Day
- Spo2: 100%
- Temp: 98f

Ashtavidha pariksha

- *Nadi*: 76 bpm, reg. *Vatapatitik*
- *Mala*: Samyak
- *Jihva*- *Saam*
- *Shabd* - aspect
- *Sparsh*- Anushan shit
- *Drika*- *Prakrut*
- *Akriti*- Stool

Systemic Examination

- CVS – S1/S2, Heard
- CNS – Conscious and well oriented
- RS – AEBE and Clear
- P/A: Soft and Non-tender

Investigations

RT-PCR for COVID-19 – NEGATIVE

Rapid Antigen Test – NEGATIVE

HHH: Non-reactive

- Na- 136,
- k- 4.3,
- Cl- 101,
- Creatinine- 1.1,
- **Hb**- 14.6, **WBC**- 6.7,
- **Platelet**- 152,
- **Trop T**-13.8
- **Creatinine**-0.9
- **Sr. Ck – MB** : 122.2 -H
- **Sr. Trop – I**: 13.846 - H

Previous Medication Given :

Tab Ecosprin 75mg po 0-1-0 Tab Axcer 90mg po 1-0-1

Tab Atorva 80mg po 0-0-1

Inj Pan 40mg iv 1-0-1 Inj Monocef 1 gm iv 1-0-1

Tab Pan 40mg po 1-0-1

Tab Nikoran 5mg po 1-0-1

Tab. Embeta XR 12.5mg po 1-0-1

Inj Lasix 20mg iv 1-0-0 Tab Flavadon 80mg po 0-0-1

Tab Flavedon MR 35mg po 1-0-1

Syp Duphalac 30 ml po 0-0-1

Inj Nikoran 48/50mg iv 2ml/hr

Inj Clexane 40mg s/c 1-0-1

Inj Norad 4/50mg iv @ BP Inj Clexane 60mgs/c

Tab Embeta XR 12.5mg po 1-0-1

v fluids

Differential Diagnosis :

In this particular instance, heart failure due to left ventricular hypertrophy might be the differential diagnosis that comes the closest to being correct. In this specific instance, heart failure may also result from a condition known as left ventricular hypertrophy, which shortens the wall of the heart's primary pumping chamber. However, in addition to that, the patient

also suffers from diastolic dysfunction and anaemia. The patient most likely suffers from dilated cardiomyopathy with a low ejection fraction because all of

these symptoms are present. After the diagnosis, the patient immediately began Ayurvedic treatment, so no further tests were performed on the patient.

Treatment:

Table 2: Panchakarma procedures:

Sr. No	Procedure	Duration
1	Deepana	1 to 12 th day for 3 months
2	Pachana	1 to 12 th day for 3 months
3	Sarvanga abhyanga (with Murchit til taila) followed by Bhashpa Swedana (with Dashmoola kwatha)	1 to 12 th day for 3 months
4	Hriday Basti (Kasherukadi Ghritam)	1 to 12 th day for 3 months
5	Niruh Basti (Dashmool Kwath)	1 to 12 days (Alternate Day) for 3 months
6	Matra Basti: Panchatikta ghrita Basti (40 ml)	1 to 12 th day (Daily) for 3 months

Table 2: Ayurvedic Treatment details

Sr No.	Treatment Given	Dose	Anupaan	Days
1.	Nardiya Lashmivilas Ras(250mg)	2 tablets thrice a day	Lukewarm water	30 days
2.	Prabhakar vati (250mg)	2 tablets thrice a day	Lukewarm water	30 days
3.	Syrup Cardomax	20ml thrice a day	Lukewarm water	30 days
4.	Vasant Kusumakar Ras(250mg)	2 tablets thrice a day	Lukewarm water	30 days

DISCUSSION

Heart failure (HF) continues to be one of the leading causes of death, morbidity, and a diminished quality of life. It is a topic that is currently being researched. Heart failure describes a condition in which the heart cannot pump enough oxygenated blood, which is required for the body to maintain its regular metabolic activity. In addition, myocardial dysfunction that leads to heart failure can be caused by high blood pressure, diabetes that is not under control, diseases of the heart valves, and ischemic heart disease. Because patients are affected by dilated cardiomyopathy, heart failure is also regarded as a disease that can result in disability. A significant factor that contributes to HF's status as a debilitating disease is the presence of dilated cardiomyopathy. "cardiomyopathy" refers to any abnormal condition affecting the heart muscle. In its most basic form, it results in the enlargement of the heart, which renders it unable to pump blood effectively. In patients with average wall

thickness of the left ventricle, dilated cardiomyopathy can cause systolic (contractile) dysfunction, which ultimately results in heart failure. The finding of this study that dilated cardiomyopathy is associated with a higher risk of mortality is something to think about.

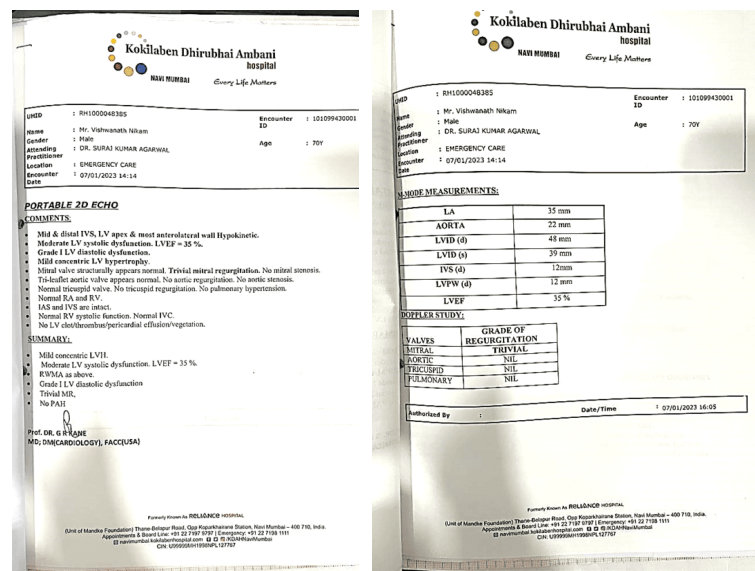
According to Acharya Charak, having vitiated agni causes a person to suffer from disease because it interferes with the body's complete metabolic activity. [11] Hrudrog is the Ayurvedic word for various heart-related conditions. According to Ayurveda, heart disease can be traced back to a dysfunction in the rasa dhatvagni, which leads to a deficiency in the amount of rasa dhaatu that reaches the heart and can result in various heart conditions. The metabolic rate is one way to express this dhatvagni, also known as bioenergy. A connection can, therefore, be made between MAC and rasa dhatvagni. The metabolic activity component (MAC) can be associated with this, as bioenergy, also known as rasa dhatvagni, can be expressed through metabolic rate. [12] A decrease in MAC may lead to rasa dhatvagni maandya or a re-

duction in the function of rasa dhatvagni, ultimately resulting in Hrudrog.

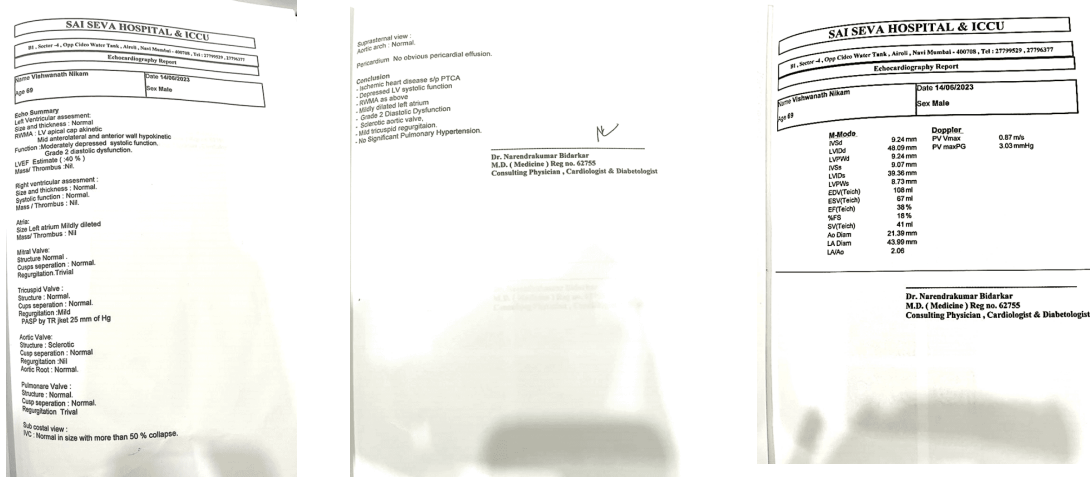
During this comprehensive treatment, we focused on the prognosis of vyan vayu, one of the five energy subdivisions that make up prana, and avalambak cuph, which provides an environment for free expansion and relaxation of the chest organ. This ultimately led to an improvement in sadhak pitta. The heart is the seat of the subdosha known as sadhak pitta, which belongs to the dosha pitta. It is accountable for the regular contraction and relaxation of the heart, which keeps the circulation going smoothly. As a result, miraculously improved values of NT-pro BNP were obtained in the present case after panchakarma, which suggests that the correction of sadhak pita can play a significant role in treating patients suffering from heart failure.

The ayurvedic medicines used in this study, like Nardiya Lashmivilas ras, act on the Heart, Rak-tavahstrotas, and lungs are the site of action and use the Vata's Laggu, Sheet, and Chal Guna to act on the vitiated Vat Dosha specificity and Dushya Acts are Ras, Rakta, Mans respectively. It also acts as a holiday uttejak. Syrup Cardomax is Rasayan, Hrudya, used in Hrudrog, Shhothahar, Prabhakar vati is Deepan, Pachan, and Hrudya, beneficial for chronic heart disease with oedema. [13] Applying Hridya

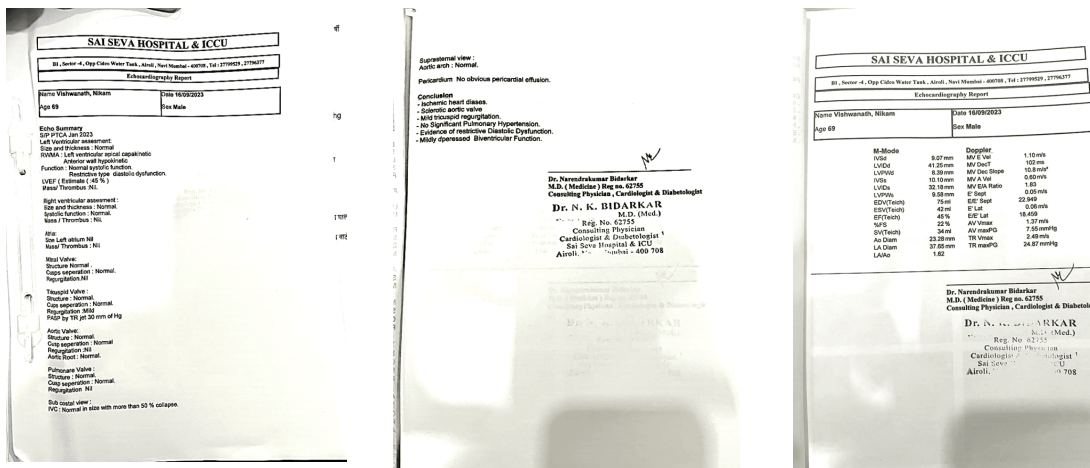
Basti to the chest area gives that specific area continuous heat for a predetermined amount of time, which controls the function of Vyan Vayu. Finally, it leads to appropriate Rasa Samvahana to calm down the agitated Vata. Dosha & provides symptom relief. The primary reason behind Aruchi is Agnimandya and Manovaha's participation in Slokas. Sadhak Pitta functions better when Hridya Basti is present. Avlambak Kapha and Vyan Vayu. Which have a calming influence on Heart-brain communication, allows Manovaha Srotas and Hridya Manovaha Srotas' principal Sthan Similar to how any Mansika Bhava, such as Apriya, Udvega, and Bhaya, also bring on Chardi In this case, Hridya Basti rectifies the vitiated Vata, etc. Bhava Mansika. The role of Ras Dhatu in Hridya Roga is hindered by weakened Doshas in the Hridya. Using Mild Swedana, Hridya Basti is administered to control the vitiated Vata-Kapha, and Rasa Samvahana's role becomes suitable. Additionally, since Vata is the root cause of pain, it relieves it. The primary treatment for vitiated Vata is swedana. The Kasherukadi Ghruta explains that Bis and Granthi have separate meanings, such as "Bis= Lotus root" and "Granthi=Pippalimul (the root of Piper longum)." At the same time, Charaka and Vagbhata clarify that Bisgranthi is a single word, meaning "Bisgranthi=Lotus root."



(A) Before Treatment Reports



(B) Reports during follow-up



(c) After treatment reports

CONCLUSION

Poor quality rasadhātu can be produced by rasadhātvaṅni, which can cause heart disorders. In this instance, low ejection fraction heart failure was reported to be caused by default rasadhātu. According to Ayurveda, panchkarma therapy and the previously mentioned polyherbs can improve heart function or result in a low ejection fraction. The additional cardiac conditioning that the herbs used in this case will provide will benefit patients with heart failure. In this instance, using any polyherb has been demonstrated to improve diastolic and systolic dysfunction. In addition, the ejection fraction improves from 35% to 40% and then to 45%.

Additionally, in this instance, panchakarma therapies were combined with body-nourishing care. We hope that all practitioners of Ayurvedic and conventional medicine, as well as students, researchers, and the general public, will find this case report helpful. It focuses on the role of Ayurvedic treatments in HF patients. This demonstrates that Ayurveda is a reputable medical system with a solid foundation and treatments that can be used independently or in conjunction with traditional medical care.

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