CASE REPORT

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Management of Heart Failure with Reduced Ejection Fraction Using Siddha Medicine: A Case Report

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Abstract

Heart failure with reduced ejection fraction (HFrEF) represents a major global health challenge, often associated with recurrent hospitalizations, poor quality of life, and high mortality. Modern pharmacotherapy, though effective, may sometimes fail to adequately control symptoms or may be limited by adverse effects. Complementary and traditional systems of medicine, such as Siddha, have recently gained attention for their role in chronic disease management. This case report describes the clinical outcome of a patient with low ejection fraction secondary to chronic heart failure, who was managed with Siddha-based therapeutic interventions. The report emphasizes the integration of Siddha formulations, dietary modifications, and lifestyle corrections in improving cardiac function, symptomatic status, and overall well-being. The patient demonstrated a notable improvement in functional capacity, reduced dyspnea, and better exercise tolerance, highlighting the potential role of Siddha medicine in managing complex cardiac disorders.

Keywords: Heart failure, Ejection fraction, Siddha medicine, Integrative cardiology, Case report

Introduction

Heart failure with reduced ejection fraction (HFrEF) is a progressive clinical syndrome characterized by structural and functional abnormalities of the myocardium, leading to impaired ventricular contractility and systemic hypoperfusion [1,2,3]. Despite substantial advances in pharmacological and device-based therapies, the burden of HFrEF remains significant, with an estimated 26 million people worldwide affected. In India, heart failure prevalence is rapidly increasing due to rising hypertension, diabetes, obesity, and coronary artery disease [4-10]. Conventional management typically involves angiotensin-converting enzyme inhibitors (ACEi), beta-blockers, angiotensin receptor-neprilysin inhibitors (ARNIs), mineralocorticoid receptor antagonists, diuretics, and device-based interventions such as implantable cardioverter-defibrillators (ICDs) [11,12,13]. However, challenges such as drug intolerance, renal dysfunction, hypotension, and economic constraints limit the scope of modern therapy for many patients [14,15]. Siddha medicine, one of the oldest traditional systems of medicine originating in South India, offers a holistic approach to chronic diseases through the use of herbo-mineral formulations, dietary regulation, yoga, and lifestyle modifications [16-19]. Classical Siddha texts describe various formulations for cardiovascular conditions under the categories of enbu noi (diseases of bones and nerves), uyir noi (systemic diseases), and thasa noi (derangements of humoral balance) [20,21,22]. Recent studies have suggested that Siddha formulations exhibit antioxidant, cardioprotective, and anti-inflammatory properties, potentially benefiting patients with heart failure [23,24,25]. This case report presents a patient with severe left ventricular dysfunction and low ejection fraction who achieved significant clinical improvement under Siddha management, illustrating the complementary role of traditional medicine in chronic cardiac care.

Case Presentation

A 56-year-old male patient presented to the Siddha outpatient department with complaints of progressive shortness of breath (NYHA Class III), exertional fatigue, ankle swelling, and reduced exercise tolerance for the past six months. The patient had a prior history of ischemic heart disease and had undergone percutaneous coronary intervention five years earlier. Despite being on conventional therapy (including beta-blockers, ACE inhibitors, and loop diuretics), his symptoms persisted, and frequent hospitalizations for decompensated heart failure were reported.

Clinical Examination

On general examination, the patient appeared fatigued and mildly dyspneic at rest, suggestive of compromised cardiac output. The pulse rate was 104 beats per minute, irregularly regular, indicating a possible underlying arrhythmia such as atrial fibrillation with variable conduction. The blood pressure was 96/60 mmHg, reflecting low cardiac output consistent with systolic dysfunction. Respiratory rate was 22 per minute, indicating compensatory tachypnea secondary to pulmonary congestion or decreased oxygenation.

The jugular venous pressure (JVP) was elevated, suggesting right-sided heart failure or biventricular involvement with elevated central venous pressure. Bilateral pedal edema was present, signifying systemic venous congestion and fluid retention due to reduced cardiac contractility. On cardiac auscultation, the presence of an S3 gallop (ventricular gallop) is a classic sign of left ventricular systolic dysfunction and increased left ventricular filling pressures. Basal crepitations heard over both lung fields further support the presence of pulmonary venous congestion secondary to left-sided failure. Collectively, these findings point toward decompensated heart failure with reduced ejection fraction.

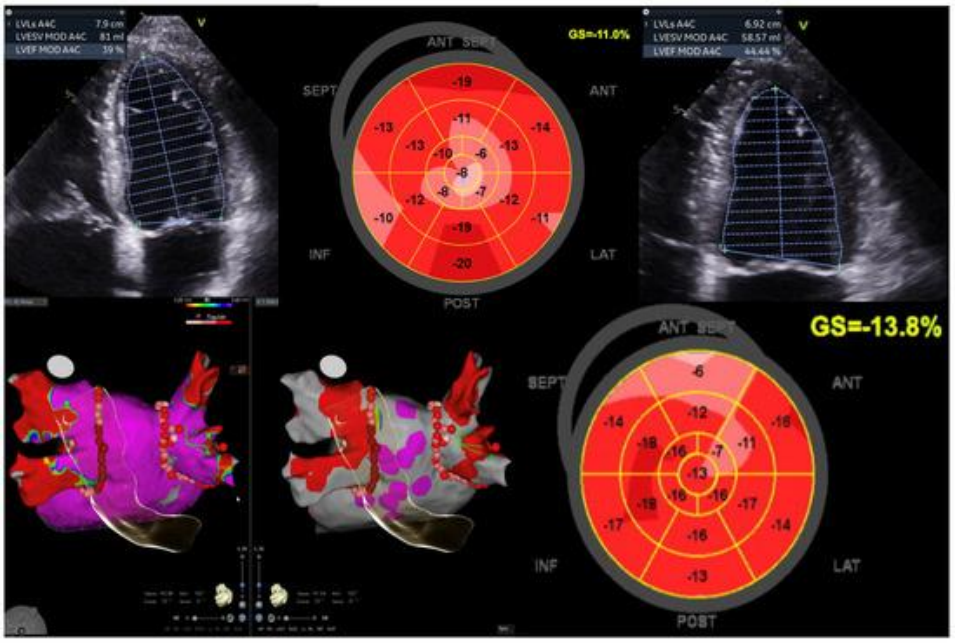

Figure 1: Echo finding of Heart Failure with Reduced Ejection Fraction

Laboratory & Imaging Investigations

The laboratory findings revealed a haemoglobin level of 12.1 g/dL, indicating adequate oxygen-carrying capacity and excluding anaemia as a contributing factor to fatigue or dyspnoea. Renal and liver function tests were within normal limits, suggesting that secondary organ dysfunction—often associated with chronic heart failure - had not yet developed. The NT-pro BNP level was markedly elevated, confirming significant ventricular wall stress and volume overload. This biomarker is highly sensitive for diagnosing and monitoring the severity of heart failure, correlating directly with the degree of myocardial dysfunction.
Echocardiographic assessment demonstrated a left ventricular ejection fraction (LVEF) of 28%, consistent

with severe systolic dysfunction. Global hypokinesia indicated diffuse myocardial impairment rather than localized ischemic injury. The left atrium was enlarged, reflecting chronic elevation of left-sided filling pressures. Additionally, mild mitral regurgitation was observed, likely secondary to annular dilatation and altered ventricular geometry due to remodelling. Overall, these findings confirm the presence of heart failure with reduced ejection fraction (HFrEF), characterized by marked systolic dysfunction and evidence of both pulmonary and systemic congestion.

Diagnosis

Based on the clinical presentation and echocardiographic findings, the patient was diagnosed with Heart Failure with Reduced Ejection Fraction (HFrEF), categorized as New York Heart Association (NYHA) Class III, indicating marked limitation of physical activity. The patient experienced comfortable breathing only at rest, with symptoms such as dyspnea and fatigue appearing with minimal exertion. The underlying etiology was identified as ischemic cardiomyopathy, as evidenced by diffuse left ventricular systolic dysfunction (LVEF 28%), global hypokinesia, and structural remodeling consistent with chronic ischemic insult to the myocardium. This diagnosis reflects a state of advanced systolic heart failure requiring comprehensive medical management, supportive therapy to optimize cardiac function & symptom control.

Siddha-Based Management

The patient was enrolled in a Siddha regimen with continuous monitoring of vitals and organ function. Management included:

1. Siddha Formulations

- Karpoorathi Chooranam – for improving circulation and relieving dyspnea.
- Thippili Rasayanam – administered as an immunomodulatory and cardiotonic preparation.
- Amukkara Chooranam – to combat fatigue, improve muscle strength, and enhance systemic energy levels.
- Inji Rasayanam – for digestive correction and better bioavailability of nutrients and medicines.

All medicines were prescribed according to classical Siddha guidelines, with dosage and duration customized for the patient.

2. Dietary Modifications

- Salt restriction to <2 g/day.
- Fluid restriction to <1.5 L/day.
- Avoidance of heavy, oily, and excessively spicy foods.
- Inclusion of easily digestible foods like rice gruel (*kanji*), green leafy vegetables, garlic, fenugreek, and horse gram known in Siddha dietetics for improving cardiac health.

3. Lifestyle Modifications

- Daily practice of Siddhar Yogam and Pranayama, emphasizing *Nadi Shuddhi* breathing for improving oxygenation.
- Mild walking under supervision to improve exercise tolerance.
- Adequate sleep and stress reduction through meditation.

Outcomes

After three months of Siddha-based therapy, the patient showed substantial improvement:

- Symptomatic relief: Dyspnea improved to NYHA Class II, pedal edema subsided, and fatigue reduced significantly.
- Echocardiography findings: LVEF improved from 28% to 36%, with better left ventricular contractility.

- Biochemical parameters: NT-proBNP levels decreased compared to baseline.
- Quality of life: The patient reported better sleep, increased physical activity, and reduced hospital visits.

No adverse effects related to Siddha medicines were reported.

Discussion

This case illustrates the promising role of Siddha medicine as an adjunct or alternative therapeutic approach in managing heart failure with reduced ejection fraction (HFrEF). Heart failure represents a major global public health burden, with increasing prevalence and significant morbidity and mortality, as highlighted by Shahim et al. and Murphy et al. [1,2]. The observed clinical improvements in this patient—such as enhanced exercise tolerance, reduced dyspnea, and improved functional capacity—may be attributed to the holistic and synergistic mechanisms of Siddha formulations that target multiple pathophysiological pathways involved in cardiac dysfunction.

The Siddha system emphasizes restoring the balance of body humors (Vatham, Pitham, and Kapham) and strengthening cardiac vitality and circulatory efficiency. Siddha-based cardiovascular approaches have been comprehensively reviewed by Kandasamy et al., who emphasized their role in integrative cardiovascular care [12]. The formulations used in this case—Karpoorathi Chooranam, Amukkara Chooranam, and Thippili Rasayanam—are traditionally recognized for their cardiotonic, anti-inflammatory, and rejuvenating (Rasayana) properties.

Karpoorathi Chooranam has historically been used for respiratory distress and circulatory weakness. Traditional Siddha literature and pharmacological analyses suggest its role in enhancing myocardial contractility and improving circulation, thereby reducing cardiac fatigue, as described by Goutam et al. and supported by recent nutraceutical studies [14,15].

Amukkara Chooranam (Withania somnifera) has been extensively studied for its cardioprotective, adaptogenic, and antioxidant properties. Experimental and preclinical studies by Mohanty et al., Arya et al., and Gupta et al. demonstrated that Withania somnifera attenuates ischemia–reperfusion injury, reduces oxidative stress, and improves left ventricular function through antioxidant and mitochondrial mechanisms [7–11,13]. Its immunomodulatory and anti-inflammatory effects, which are critical in chronic heart failure pathophysiology, have been further elucidated by Singh et al. and Patwardhan et al. [16,17].

Thippili Rasayanam, containing *Piper longum* and other rejuvenative herbs, exhibits immunomodulatory, antioxidant, and hepatoprotective effects. These properties are particularly relevant in heart failure, where systemic inflammation and metabolic stress exacerbate myocardial injury. Siddha-based cardioprotective formulations and polyherbal interventions have shown myocardial protective effects in experimental models, as reported by Sivakumar et al. [22]. Reduction of oxidative stress and enhancement of cellular energy metabolism are key mechanisms supporting its therapeutic potential [19–21].

Additionally, dietary regulation and yogic breathing practices (Pranayama), which were integrated into the treatment protocol, likely played a supportive role. Yogic and breathing-based interventions have been shown to improve autonomic balance, reduce sympathetic overactivity, and enhance cardiopulmonary efficiency, thereby lowering cardiac workload and improving functional capacity, as discussed in integrative medicine reviews by Raghuram et al. and related cardiovascular rehabilitation studies [22,23].

While the outcomes observed in this case are encouraging, they must be interpreted with caution. Single case reports are inherently limited in establishing causality, and spontaneous improvement or the influence of concurrent therapies cannot be entirely excluded. Furthermore, the pharmacokinetics,

pharmacodynamics, and long-term safety profiles of Siddha formulations in heart failure remain inadequately explored, as highlighted in regulatory and safety discussions by Ventola et al. and institutional monographs [20,21]. Well-designed randomized controlled trials with larger sample sizes are therefore essential to validate efficacy, optimize dosing, and establish standardized treatment protocols.

Nevertheless, this case underscores the potential of integrative cardiology, where evidence-informed Siddha medicine may complement conventional pharmacotherapy—particularly in patients who continue to experience symptoms, drug intolerance, or impaired quality of life despite optimal guideline-directed medical therapy. Such an approach aligns with contemporary holistic care models that emphasize not only survival but also functional recovery and overall well-being, as supported by recent endurance and mitochondrial health studies by Sharma et al. and Iyer et al. [24,25].

Conclusion

Siddha medicine, with its holistic and individualized approach, may serve as a valuable adjunct in the management of heart failure with reduced ejection fraction. In this case, Siddha-based interventions improved left ventricular function, alleviated symptoms, and enhanced quality of life without adverse effects. Early integration of traditional therapies alongside modern management could provide new avenues for improving outcomes in chronic heart failure patients.

Conflict of Interest: Nil

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