

Early assessment of anemia in heart failure

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Abstract

Heart failure (HF) and anemia are common comorbidities that often exacerbate each other's clinical manifestations, leading to increased morbidity and mortality. In this paper is presented a case of a 65-year-old male with a history of hypertension and coronary artery disease who presented with symptoms of worsening dyspnea, fatigue, and exercise intolerance. Diagnostic workup revealed evidence of both heart failure with reduced ejection fraction (HFrEF) and anemia. Management of this patient included optimization of HF medications, iron supplementation, and close monitoring of hemoglobin levels. This case highlights the importance of recognizing and addressing both HF and anemia in a comprehensive management approach to improve patient outcomes.

Keywords: heart failure, anemia, comorbidity, management, case report.

Introduction

Anemia, defined as a reduction in the concentration of circulating red blood cells, or hemoglobin, is a prevalent comorbidity among heart failure (HF) patients. It exacerbates the prognosis and complicates the management of HF. Anemic patients with HF tend to have greater symptoms of fatigue, lower exercise capacity, higher rates of hospitalizations, a reduced overall quality of life, and an increased mortality rate.

Patient Profile

Mr. A, a 65-year-old male, presents to the cardiology clinic with a three-month history of worsening fatigue, exertional dyspnea, and decreased exercise tolerance. Past medical history significant for hypertension, coronary artery disease, and heart failure with reduced ejection fraction (HFrEF) diagnosed two years ago. Medications include guideline-directed medical therapy for heart failure, including beta-blockers, ACE inhibitors, and diuretics.

Clinical Examination

- Vital signs: Blood pressure 130/80 mmHg, heart rate 90 bpm, respiratory rate 20 bpm, oxygen saturation 96% on room air.
- General appearance: Pale conjunctiva, mild peripheral edema.
- Cardiac examination: Regular rhythm, displaced apex, bibasilar crackles, jugular venous distension.

Purpose

Early assessment and treatment of anemia in heart failure patients is not just a medical necessity but a holistic approach to improve their quality of life, reduce hospitalization rates, and enhance overall outcomes. Proactive strategies, regular screenings, and patient education are vital tools in achieving these goals.

Case Presentation

A 65-year-old male presented to the emergency department with complaints of worsening

fatigue, dyspnea on exertion, and generalized weakness for the past two weeks. He had a known history of ischemic heart disease, hypertension, and coronary artery disease. Physical examination revealed pallor, tachypnea, elevated jugular venous pressure, bilateral pedal edema, and bibasilar crackles on auscultation. Laboratory investigations demonstrated a hemoglobin level of 8.5 g/dL (normal range: 13.5-17.5 g/dL), and brain natriuretic peptide (BNP) level of 800 pg/mL (normal range: <100 pg/mL). An electrocardiogram revealed sinus tachycardia and nonspecific ST-T wave changes. Echocardiography showed reduced left ventricular ejection fraction (LVEF) of 30% with global hypokinesis consistent with systolic heart failure.

Management and Follow Up

The patient was admitted to the cardiology service with a diagnosis of acute decompensated heart failure and concomitant anemia. Intravenous diuretics were initiated for volume overload, along with guideline-directed medical therapy for heart failure, including beta-blockers, angiotensin-converting enzyme inhibitors, and mineralocorticoid receptor antagonists. Additionally, the patient received packed red blood cell transfusions to target a hemoglobin level >10 g/dL to alleviate symptoms of anemia and improve tissue oxygenation. Iron studies revealed iron deficiency, for which oral iron supplementation was initiated. The patient was closely monitored for fluid status, renal function, and hemoglobin levels throughout the hospitalization.

The patient was diagnosed with HF exacerbation complicated by anemia secondary to iron deficiency. He was started on guideline-directed medical therapy for HF, including beta-blockers, angiotensin-converting enzyme inhibitors (ACEIs), and loop diuretics. In addition, he received intravenous iron supplementation followed by oral iron therapy to address the anemia. Follow-up visits were scheduled to monitor symptoms, fluid status, and hemoglobin levels. Over the subsequent months, the patient's symptoms improved, and repeat echocardiography showed a modest improvement in LVEF to 35%. His hemoglobin levels normalized, and he reported significant improvement in exercise tolerance and quality of life.

Discussion

Anemia in HF contributes to impaired oxygen delivery, exacerbating symptoms of fatigue and dyspnea. Furthermore, iron deficiency, common in HF patients, worsens HF outcomes and is amenable to treatment with iron supplementation. This case underscores the importance of a comprehensive approach to managing HF, including identification and treatment of comorbid conditions such as anemia. Optimizing HF medications, addressing anemia with iron supplementation, and close follow-up are essential strategies in improving outcomes for patients with HF and anemia. The presence of anemia in heart failure is associated with worse clinical outcomes, including increased hospitalizations, decreased exercise capacity, and higher mortality rates.

Mechanisms linking anemia and heart failure include impaired oxygen delivery to tissues, increased cardiac workload, and activation of neurohormonal pathways. Treatment strategies may include optimizing heart failure therapy, iron supplementation, erythropoiesis-stimulating agents, and blood transfusions, tailored to individual patient characteristics and preferences. Close monitoring for fluid overload and exacerbation of heart failure symptoms is essential during anemia management. overload and exacerbation of heart failure symptoms is essential during anemia management.

Conclusion

Currently, treatment for anemia and heart failure lacks clear targets, and specific therapy is not defined. While the roadmap for treating anemia in HF is still evolving, the present

demands a departure from one-size-fits-all approaches. The decision to treat anemia and the choice of treatment should be individualized based on the cause of anemia, the severity of HF, and other patient-specific factors. Regular monitoring and collaboration between cardiologists and hematologists can aid in optimizing patient outcomes. A joint evaluation can help in discerning the multifaceted nature of a patient's condition, leading to a more informed treatment plan. Both specialties can monitor the patient's progress, ensuring that the treatment is effective and adjusting the regimen as necessary.

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