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Case Series

Heme iron polypeptide in treating iron deficiency anemia among patients with inflammatory bowel disease, chronic liver disease, and gastrointestinal bleeding: a case series

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ABSTRACT

Iron deficiency anemia commonly complicates gastrointestinal and hepatic disorders, with standard oral iron therapies often limited by poor tolerability and gastrointestinal side effects. Heme Iron Polypeptide (HIP) offers a potential alternative, providing effective, well-tolerated iron supplementation. In three cases presented, HIP improved hemoglobin levels without adverse events, underscoring its promise as a viable therapeutic option in patients with gastrointestinal and hepatic disorders with iron deficiency anemia who are intolerant to conventional iron therapies.

Keywords: Iron deficiency anemia, Heme iron polypeptide, Chronic liver disease, Cirrhosis, Inflammatory bowel disease, Occult gastrointestinal bleed, Fe daily

INTRODUCTION

Iron deficiency anemia (IDA) is a prevalent complication in patients with various gastrointestinal (GI) and hepatic disorders. Conditions such as chronic bleeding, malabsorption syndromes, and inflammatory processes contribute significantly to the development of IDA in this population. The impact of iron deficiency extends beyond hematologic parameters, adversely affecting physical performance, cognitive function, and overall quality of life.

This case series aims to elucidate the clinical outcomes associated with the use of heme iron polypeptide in improving anemia among patients with underlying GI and hepatic pathologies.[1] As of 2021, anemia impacts approximately 24.3% of the global population, with prevalence varying widely across different demographics and regions. Among adults, about 5% are affected, with gastrointestinal diseases representing a significant underlying cause. Anaemia is a prevalent complication in inflammatory bowel disease (IBD), affecting approximately one-third of patients.[2]

Anemia is observed in approximately 66% to 75% of individuals with liver cirrhosis. Iron deficiency anemia, the most prevalent form, affects 22% of patients with compensated cirrhosis and rises to 78% in those with decompensated cirrhosis.[3] IDA frequently arises from blood loss due to lesions in the gastrointestinal tract, particularly in men and postmenopausal women. It is estimated that 61% of patients with GI bleeding experience IDA.[4] In this group, factors such as chronic bleeding, malabsorption, and inflammation contribute substantially to the development of anemia, underscoring the need for targeted diagnostic and therapeutic approaches within gastroenterology to manage this condition effectively.[5,6]

This case series describes the clinical context and outcomes associated with the use of heme iron polypeptide in the treatment of patients with IDA due to various underlying gastrointestinal and hepatic morbid conditions.

CASE SERIES

Case 1

A 50 years old, male with chronic liver disease (CLD) with portal hypertension and cirrhosis of liver presented with iron deficiency anaemia, evidenced by a baseline hemoglobin level of 7.8 gm/dl. After calculating the patient's iron need, he was started on oral iron with tablet Fe daily (heme iron polypeptide) twice daily dose to address iron deficiency anaemia. The patient was also co-prescribed, vitamin supplementation.

Over the course of oral iron treatment, the patient's haemoglobin levels steadily improved to 9.2 gm/dl after 2 months of treatment (Figure 1), with no reported gastrointestinal or other adverse events, a common concern with other traditional oral iron supplements. The patient tolerated the heme iron polypeptide well, reported enhanced well-being, and continued to take the dose. This case demonstrates the potential efficacy and tolerability of heme iron polypeptide in managing Iron Deficiency Anaemia in CLD with portal hypertension and cirrhosis patients, offering a viable alternative to conventional oral iron therapy.

Case 2

A 38-year-old female with chronic inflammatory bowel disease (IBD) presented with iron deficiency anaemia. Previous attempts at standard iron supplementation were poorly tolerated, leading to suboptimal management of her anaemia, evidenced by a hemoglobin level of 8.0 gm/dl. Consequently, she was transitioned to tablet Fe daily (heme iron polypeptide therapy) administered twice daily, with close monitoring.

After three months of treatment with heme iron polypeptide, her haemoglobin level improved to 11.0 gm/dl (Figure 1). Oral iron was then discontinued, she is happy and maintaining hemoglobin between 11-11.5 gm/dl. The patient reported good tolerance to the new regimen, with no significant side effects or adverse reactions. This case suggests that heme iron polypeptide can be an effective and well-tolerated alternative for iron supplementation in IBD patients with iron deficiency anemia.

Case 3

An 80-year-old, elderly male presented with iron deficiency anemia secondary to an occult gastrointestinal bleed of unidentified origin, with a baseline hemoglobin level of 7.0 gm/dl. Given the challenges associated with standard oral iron supplementation in elderly patients, he was initiated on tablet Fe daily (heme iron polypeptide) administered twice daily. After two months of treatment, his haemoglobin increased to 8.5 gm/dl (Figure 1). The patient tolerated the therapy well, with no reported adverse effects or interruptions in treatment. The patient was continued on oral iron therapy. This case highlights the potential of heme iron polypeptide as a safe and effective alternative for managing Iron deficiency anemia in elderly patients with chronic occult gastrointestinal bleeding.

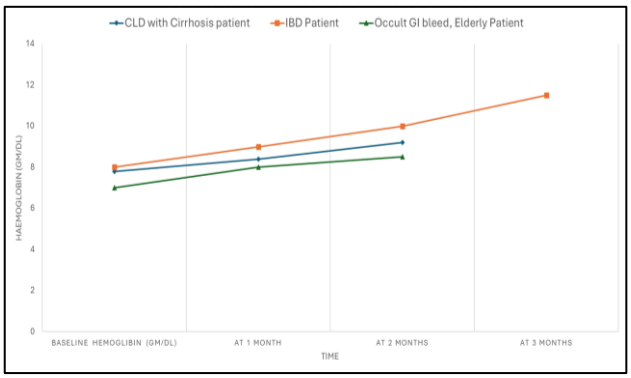

Figure 1: Improving hemoglobin levels with heme iron polypeptide therapy in three cases of iron deficiency anaemia patients with gastric and hepatic pathologies (CLD with cirrhosis, IBD, and occult GI bleed).

DISCUSSION

The treatment approach for iron deficiency anemia (IDA) is guided by the severity and acuity of the patient's clinical presentation. In hemodynamically unstable patients, particularly those with acute gastrointestinal bleeding, red blood cell transfusions may be necessary. However, in chronically anaemia yet hemodynamically stable patients without significant cardiac or pulmonary comorbidities, transfusions should generally be avoided unless hemoglobin levels fall below 7 gm/dl, given the considerable risks and high costs associated with transfusion therapy. IV iron carries the risk of anaphylaxis and CARPA (Complement activation-related pseudo allergy) reactions.

Oral iron preparations, while effective, are often poorly tolerated due to gastrointestinal side effects from non-absorbed iron, limiting their use in many patients. In cases of inflammatory bowel disease (IBD), we propose that the choice between oral and parenteral iron therapy should be primarily based on the severity and acuity of the patient's symptoms, tailoring treatment to optimize efficacy and minimize adverse effects.[7] Iron stores in patients with iron deficiency anemia (IDA) can be replenished using either oral or parenteral iron therapy. In patients who are asymptomatic or have only mild symptoms, oral iron replacement remains the primary therapeutic approach.[8]

Heme iron polypeptide is a novel oral iron formulation that leverages the heme porphyrin ring to deliver iron directly to absorption sites within the intestinal lumen. Compared with standard iron preparations, preliminary evidence suggests that HIP may offer an effective and innovative approach to oral iron replacement therapy.[9] Additionally, heme iron requires a lower daily dosage to effectively

supplement iron, resulting in improved tolerability compared to non-heme iron supplements. Studies indicate that iron absorption from heme-based sources is significantly higher than from ferrous sulphate.[10-12]

Studies comparing heme iron polypeptide with intravenous iron formulations have shown that HIP can achieve comparable efficacy in maintaining hemoglobin levels in patients with chronic kidney disease and other anemia-related conditions. These findings suggest that HIP may offer an effective alternative for anemia management, potentially reducing the need for invasive treatments.[12] HIP demonstrates significantly higher bioavailability and is associated with fewer side effects compared to non-heme iron.

On a milligram-per-milligram basis, HIP has been shown to increase serum iron levels up to 23 times more effectively than ferrous fumarate, highlighting its potential advantages in iron supplementation.[13] Patients using heme iron polypeptide experience fewer gastrointestinal side effects compared to those on standard iron supplements, enhancing its tolerability and suitability for long-term use.[14] Unlike non-heme iron, which is susceptible to absorption inhibitors present in certain dietary components (such as phytates), heme iron polypeptide maintains efficient absorption with minimal interference from food intake, offering a more consistent therapeutic effect.[15]

Heme iron polypeptide has demonstrated effectiveness in treating iron deficiency anemia across diverse patient populations, including those with chronic gastrointestinal bleeding or malabsorption syndromes. In these cases, where traditional oral iron may be poorly tolerated or ineffective, HIP provides a viable therapeutic alternative.[1]

While case series can highlight trends and suggest areas for further research, they have significant limitations. For a comprehensive understanding of HIP's role in managing IDA in IBD, CLD, and GI bleeding patients, larger randomized controlled trials would be necessary to establish clearer conclusions about efficacy, safety, and long-term outcomes.

CONCLUSION

This case series highlights the potential of heme iron polypeptide as a preferred treatment for anemia in patients with underlying gastrointestinal and hepatic disorders. Its favourable tolerability profile and efficacy in increasing haemoglobin levels make it a suitable option, particularly for patients with poor tolerance to standard iron supplementation. Further studies with larger cohorts are suggested to confirm these findings and establish guidelines for broader clinical use.

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