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IS FERRIC CARBOXYMALTOSE A SAFER OPTION COMPARED TO IRON SUCROSE?

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INTRODUCTION

Anemia is one of the major health problems worldwide. Intravenous iron therapy has been shown to be superior to oral iron in achieving a sustained haematological response in patients with chronic heart failure, chronic kidney disease, and IDA of various etiologies, including hemodialysis, heavy uterine bleeding, pregnancy, and inflammatory bowel disease. Specific IV irons have historically been associated with unacceptably high levels of anaphylaxis and anaphylactic-type reactions, but these concerns were overwhelmingly driven by events in patients treated with older products that are no longer available. Ferric carboxymaltose is colloidal, composed of iron (III) hydroxide complexing with different carbohydrates, and their ability to be administered quickly at high doses sets them apart from iron sucrose.

AIM

This meta-analysis aimed to compare the safety and tolerability of ferric carboxymaltose (FCM) and iron sucrose (IS) in the treatment of iron deficiency anemia (IDA) in adult patients.

METHOD

A systematic literature search was performed through Ovid MEDLINE, EMBASE, Web of Science, Pubmed and The Cochrane Central Register of Controlled Trials (Cochrane CENTRAL), all from inception to June 8, 2022 to identify randomized controlled trials comparing FCM and IS in adult patients with IDA.

The primary outcomes of interest were hypersensitivity reactions. Summary effect measures of the primary outcomes were obtained by pooling the risk ratio data with an inverse variance–weighted random-effects model. The overall risk of bias assessment was conducted by using the Cochrane Risk of Bias 2 tool.

PROSPERO registration number: CRD42022337858.

RESULTS

Thirteen randomized controlled trials with a total of 4,638 participants were included in the analysis. FCM was found to be associated with a higher incidence of hypersensitivity reactions compared to IS, with a pooled risk ratio of 2.97 (95% CI: 1.72–5.14, P < 0.01). However, there was no significant difference between FCM and IS in terms of serious or severe adverse events (risk ratio: 1.03, 95% CI: 0.98–1.09, P = 0.20), any adverse events (risk ratio: 0.97, 95% CI: 0.62–1.51, P = 0.86), risk of hypophosphatemia (risk ratio: 2.84, 95% CI: 0.62–13.00, P = 0.14), or withdrawal from the trial due to adverse events (risk ratio: 1.62, 95% CI: 0.76–3.47, P = 0.17).

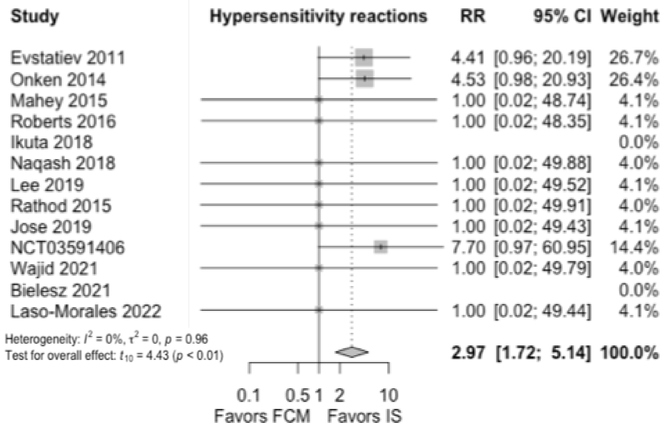


Figure 1. Effect of FCM and IS on hypersensitivity reactions in patients with IDA.

Outcome	Relative Effect (95% CI)	Number of participants	Number of studies
Hypersensitivity reactions	2.97 (1.72; 5.14)	4.360	11
Serious or severe AEs	1.03 (0.98; 1.09)	4.638	13
Any AEs	0.89 (0.59; 1.35)	4.336	9
Hypophosphatemia	2.84 (0.62; 13.00)	3.531	6
Withdrawal due to AEs	1.62 (0.76; 3.47)	1.225	7

An assessment of risk of bias across the included studies revealed that one study had low risk, six studies had some concerns, and six studies had a high risk of bias for hemoglobin-related outcomes. Subgroup analyses by risk of bias were consistent with main analyses.

CONCLUSIONS

This meta-analysis suggests that IS is a safer alternative to FCM in terms of hypersensitivity reactions when treating IDA in adults. The two treatments showed similar effects on serious or severe adverse events, any adverse events, risk of hypophosphatemia, and withdrawal rate due to drug-related adverse events. These findings have important clinical implications for the management of IDA in adult patients. Healthcare professionals should consider the safety profile of both FCM and IS when making treatment decisions for IDA.

REFERENCES

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Characteristics of included studies.

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