Ferric Carboxymaltose Versus Ferrous Fumarate in Anemic Children with Inflammatory Bowel Disease: The POPEYE Randomized Controlled Clinical Trial

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Objective To determine whether intravenous (IV) or oral iron suppletion is superior in improving physical fitness in anemic children with inflammatory bowel disease (IBD).

Study design We conducted a clinical trial at 11 centers. Children aged 8-18 with IBD and anemia (defined as hemoglobin [Hb] z-score < −2) were randomly assigned to a single IV dose of ferric carboxymaltose or 12 weeks of oral ferrous fumarate. Primary end point was the change in 6-minute walking distance (6MWD) from baseline, expressed as z-score. Secondary outcome was a change in Hb z-score from baseline.

Results We randomized 64 patients (33 IV iron and 31 oral iron) and followed them for 6 months. One month after the start of iron therapy, the 6MWD z-score of patients in the IV group had increased by 0.71 compared with −0.11 in the oral group (P = .01). At 3- and 6-month follow-ups, no significant differences in 6MWD z-scores were observed. Hb z-scores gradually increased in both groups and the rate of increase was not different between groups at 1, 3, and 6 months after initiation of iron therapy (overall P = .97).

Conclusion In this trial involving anemic children with IBD, a single dose of IV ferric carboxymaltose was superior to oral ferrous fumarate with respect to quick improvement of physical fitness. At 3 and 6 months after initiation of therapy, no differences were discovered between oral and IV therapies. The increase of Hb over time was comparable in both treatment groups. *(J Pediatr 2023;256:113-9)*.

Trial registration NTR4487 [Netherlands Trial Registry].

Anemia is a frequently observed extraintestinal manifestation in patients with inflammatory bowel disease (IBD). The prevalence is higher in children compared with adults (70% and 35%, respectively).[1-3] Anemia is associated with adverse health effects such as decreased physical fitness and fatigue.[4] There is debate about the route of iron administration in patients with IBD.[2,5,6] Oral iron therapy is inexpensive and noninvasive, but absorption may be reduced during active inflammation and gastrointestinal side effects may compromise drug adherence.[7] Additionally, unabsorbed iron entering the colon may cause dysbiosis with unfavorable effects on the intestinal host-microbiota interface.[8,9] Parenteral iron therapy partially bypasses gut-related concerns, but iron-restricted erythropoiesis and blunted hemoglobin (Hb) response may still occur due to inflammation-driven iron retention in the reticuloendothelial system.

AEs	Adverse Events	PUCAI	Pediatric Ulcerative Colitis Activity Index
FCM	Ferric Carboxymaltose		
Hb	Hemoglobin	PCDAI	Pediatric Crohn's Disease Activity Index
IBD	Inflammatory Bowel disease		
ICC	Intraclass Correlation Coefficient	RCT	Randomized Controlled Trial
IV	Intravenous	RR	Relative Risk
I^2	Assessment of heterogeneity	sTfR	Soluble Transferrin Receptor
MCID	Minimum Clinically Important Differences	TSAT	Transferrin Saturation
		6MWD	6-Minute Walking Distance
NNTB	Number Needed to Treat for an additional Beneficial outcome		

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International treatment guidelines recommend treating patients with mild anemia and disease remission with oral iron supplementation and reserve intravenous (IV) iron for those with marked anemia or active disease.[2,6]

Ferric carboxymaltose is available for the IV treatment of iron deficiency anemia and is approved for use in adults. Uncontrolled pediatric studies suggest that ferric carboxymaltose is safe in young patients who had failed oral iron therapy.[10-12] Randomized trials comparing oral and IV iron therapy in children have not been performed. Use of ferric carboxymaltose in children < 14 years is off label.[13]

In the POPEYE trial (Prospective Open label study of Parenteral vs Enteral iron in Young IBD patients and Effect on physical fitness) we assessed the efficacy of a single dose IV administered ferric carboxymaltose as compared with a 12-week course of oral ferrous fumarate in anemic, pediatric patients with IBD.

Methods

We conducted an investigator-initiated multicenter open label trial to detect a difference in physical fitness after IV ferric carboxymaltose or oral ferrous fumarate (POPEYE study). The study was registered in the Netherlands Trial Registry (NTR4487) before recruitment of the first participant. The trial was conducted according to the principle of the Declaration of Helsinki (64th version, October 2013) and in accordance with the Dutch Medical Research Involving Human Subjects Act. The Medical Ethical Committee approved the study protocol (NL42995.096.12). Secondary approval was obtained from all participating centers. There were no important protocol amendments after the study commenced. Clinical Trial Center Maastricht was responsible for on-site monitoring of all study sites. All parents or legal guardians and participants aged 12-18 years provided informed consent prior to randomization. The first patient was included in June 2015 and the follow-up of the last patient ended in November 2019. The CONSORT statement with checklist and flow diagram were used for systematic reporting (**Table I**, available at www.jpeds.com).[14]

Participants

Patients between 8 and 18 years old were recruited in 9 Dutch and 2 Belgian hospitals.

They were eligible for inclusion in the study if they had IBD (diagnosed according to the revised Porto criteria)[15] and anemia (defined as Hb > 2 SDs [Z] below the mean of the WHO reference values)[16] less than 3 weeks prior to study. They were considered iron deficient when their ferritin levels were low (below 12 μg/L for children younger than 5 years of age, and below 15 μg/L for children aged 5 years and above).[5,17,18]

We excluded patients with a history of allergic reactions to IV ferric carboxymaltose, who had hemochromatosis or hemoglobinopathy, who had iron therapy in the previous 3 months, and who had a Pediatric Ulcerative Colitis Activity Index (PUCAI) > 65 or a Pediatric Crohn's Disease Activity Index (PCDAI) > 30, indicating severe disease activity.

Randomization

Patients were stratified by center and disease phenotype and equally randomized into 2 treatment groups with a validated variable block randomization model (https://CRAN.R-project.org/package=blockrand). The study design was open label, so participants and investigators were not masked to group allocation.

Interventions

Patients who were assigned to the ferric carboxymaltose group received a single IV infusion of 15 mg/kg (with a maximum of 750 mg) over 15 minutes.[13] Patients who were assigned to the ferrous fumarate group received 9 mg/kg/day (with a maximum of 600 mg) divided in 2 doses for 3 months. As we used tablets of 100 and 200 mg, the daily dose was rounded off to the nearest 100 mg (**Table II**, available at www.jpeds.com), resulting in a dose that varied between 7.7 mg/kg and 10.7 mg/kg daily.

Follow-Up Assessments

Trial visits were planned at study baseline (defined as the time of the administration of the first study medication), and 1, 3 and 6 months thereafter (**Figure 1**).

At these time points, physiotherapists assessed physical fitness by means of the 6-minute walking test. The outcome of interest was the distance a person can walk at a constant, uninterrupted pace in 6 minutes. Age-based reference values have been published and allowed to convert individual walking distances into z-scores.[19-21]

Blood sampling, assessment of disease activity, and measurement of fecal calprotectin were performed at every visit. Disease activity was assessed with PUCAI[22] or Pediatric Crohn's Disease Activity Index-scores.[23] Any change in medication and the occurrence of any adverse event was noted in the electronic case report file.

Outcomes

Primary End Point. The primary end point of this study was improvement of physical fitness, defined as an increase from baseline 6-minute walking distance (6MWD), and expressed as z-score to adjust for age and sex.

Secondary End Points. The main secondary end point was an increase in Hb z-score over time. Other outcomes included the proportion of patients with active disease from baseline to study ending 6 months later and occurrence of adverse event (AEs). Safety end points included the occurrence of hypophosphatemia or liver test abnormalities.

Definitions

Age-related reference values for phosphate were 1.22 -2.08 mmol/L (1-3 years); 1.18-1.79 mmol/L (4-11 years); 0.93-1.73 mmol/L (12-15 years); and 0.86-1.5 mmol/L (16-19 years).[24]

A composite score of noninvasive markers was used to distinguish children with significant inflammation from those with inactive disease. Patients with Crohn's disease

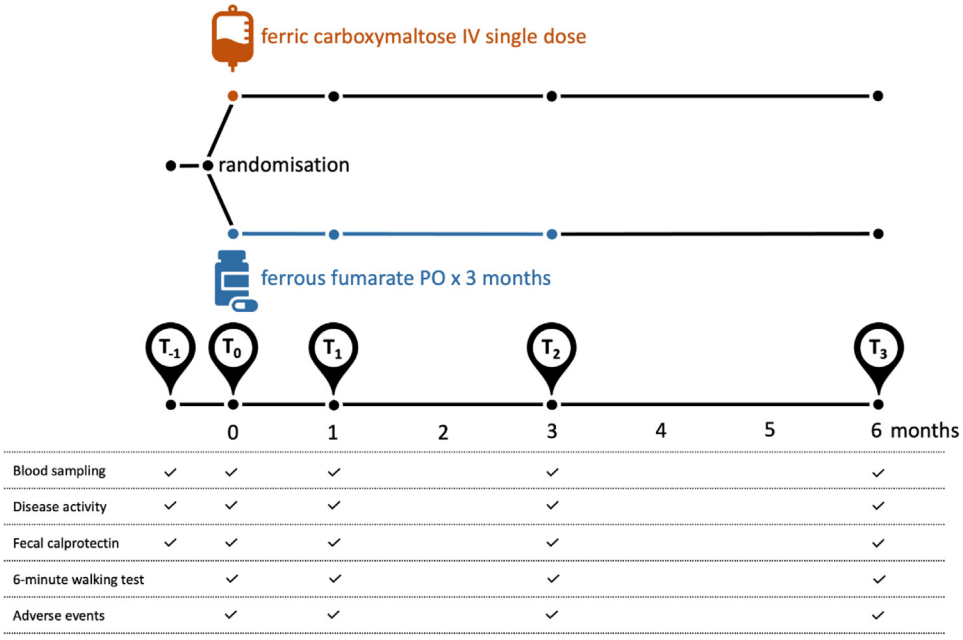

Figure 1. Study overview.

were considered to have active disease when the mucosal inflammation noninvasive index score was ≥8.[25] Patients with ulcerative colitis were considered to have active disease when the PUCAI score was ≥ 10 and fecal calprotectin was ≥ 250 μg/g.

Sample Size

The sample size calculation was based on an increase in 6MWD z-score. Assuming a two-sided significance level α of 0.05, 45 patients per group were required to detect a standardized effect size of 0.6 with 80% power. To account for the baseline difference and assuming a correlation between repeated measures of 0.5, the residual variance decreased with a factor of $(1\text{-}0.5^2) = 0.75$. As a result, the required sample size decreased to 34 per group. Taking possible attrition in account, we calculated that we needed 36 participants per group.

Statistical Analyses

The primary analysis was conducted on the intention-to-treat dataset. The primary end point was analyzed using a linear mixed model with treatment, visit, and treatment*visit to assess the effect at different time points with correction for the difference in outcome at baseline. In addition, disease activity, and IBD phenotype were included as fixed factors as well. To account for the nesting of patients within centers, a random intercept on study center level was included in all models. As for repeated measures within a patient, different random effects on patient level were considered. Based on Bayesian information criterion we checked whether the random intercept and slope model with difference covariance structures (unstructured, variance components) or random intercept only model best fitted the data.

Similar linear mixed model analyses were used to assess the longitudinal effects for other laboratory measures including Hb, where age and sex were added to the fixed part of the model. No missing outcome data were imputed as a likelihood-based approach was used, assuming missingness at random.

We used the minimum clinically important difference to rationalize clinical relevance of 6MWD output. A distribution-based approach was used meaning multiplying the estimated SD at baseline by the square root of 1 minus the estimated reliability coefficient (0.92). The SD values used for this calculation were from the composite baseline population which included all patients who completed a 6-minute walking test at baseline. The estimated reliability coefficient was based on the data of McDonald et al.[26]

Results

Figure 2 (available at www.jpeds.com) shows that 147 patients were screened in the period between June 2015 and May 2019, of which 64 were eligible and randomly allocated to IV ferric carboxymaltose (n = 33) or oral ferrous fumarate (n = 31). For reasons indicated in the figure the final analyses were performed with data of 32 and 29 patients, respectively. Crohn's disease was the most prevalent disease phenotype. **Table III** shows that the 2 trial arms were well balanced with respect to demographic, laboratory, and disease characteristics. One patient in the ferric carboxymaltose group was included in our trial 22 days after diagnostic endoscopy. All other patients were included after an interval of at least 3 months. Follow-up of the last participant ended in November 2019.

Table III. Baseline characteristics of participants allocated to ferric carboxymaltose or ferrous fumarate

Characteristic	Ferric carboxymaltose (n = 32)	Ferrous fumarate (n = 29)	Missing	*P*-value
Mean age (SD) in years	13.9 (2.5)	13.3 (2.8)	-	.77
Mean BMI (SD) in kg/m^2	19.4 (4.5)	18.7 (2.4)	1	.11
Percentage (number) females	66% (21)	45% (13)	-	.10
Percentage (number) Crohn's disease	78% (25)	69% (20)	-	.66
Percentage (number) ulcerative colitis	19% (6)	24% (7)	-	.66
Percentage (number) IBD unclassified	3% (1)	7% (2)	-	.66
Median disease duration (years)	1.1 (0.8-2.3)	0.8 (0.6-1.7)		.13
Mean hemoglobin z-score (SD)	−3.0 (1.0)	−3.3 (1.1)	-	.99
Median ferritin (IQR) in μg/L	13.7 (5.8-31.1)	10.0 (5.2-29.4)	-	.44
Median TSAT (IQR) in %	8.0 (5.5-10.3)	5.8 (4.7-8.1)	3	.09
Median sTfR (IQR) in mg/L	4.8 (3.5-5.4)	4.0 (3.4-8.7)	12	1.00
Median ESR (IQR) in mm/hour	16.0 (8.3-23.8)	15.0 (6.5-29.0)	-	.86
Median calprotectin (IQR) in μg/g	495 (63-1210)	735 (136-2182)	10	.53
Median PCDAI (IQR)	8 (5-16)	15 (7-21)	-	.07
Median PUCAI, (IQR)	5 (0-20)	5 (0-25)	-	.63
Percentage (number) with active disease	55% (18)	63% (15)	5	.64
6-minute walking distance Z-score (SD)	−2.0 (1.2)	−1.4 (1.3)	6	.53

BMI, body mass index; *CRP*, C-reactive protein; *ESR*, erythrocyte sedimentation rate; *IQR*, inter quartile range; *PCDAI*, Pediatric Crohn's Disease Activity Index; *PUCAI*, Pediatric Ulcerative Colitis Activity Index; *sTfR*, soluble transferrin receptor; *TSAT*, transferrin saturation.

Follow-Up

Out of the 33 participants assigned to ferric carboxymaltose, one patient did not receive the allocated intervention because prior medical history revealed an allergic response to IV iron (which was not noted until after randomization). Out of the 31 participants assigned to ferrous fumarate, one participant withdrew after randomization. A second patient was withdrawn by the treating physician, as the Hb showed a spontaneous upward trend crossing the critical value of −2 Z-score. All other participants in the study completed 6 months of follow-up.

Primary End Point

After correction for the difference at baseline, 6MWD z-scores 1 month after the start of therapy were significantly higher in the ferric carboxymaltose group than in the ferrous fumarate group (0.71 vs −0.11, difference = 0.82, 95% CI: 0.20-1.44; P = .010) (Figure 3). This difference of 0.82 (which corresponds with approximately 60 m) outscored the minimum clinically important difference of 0.37 and is, therefore, clinically relevant.

At 3- and 6-months follow-up, differences in 6MWD z-score change to baseline between groups were not statistically

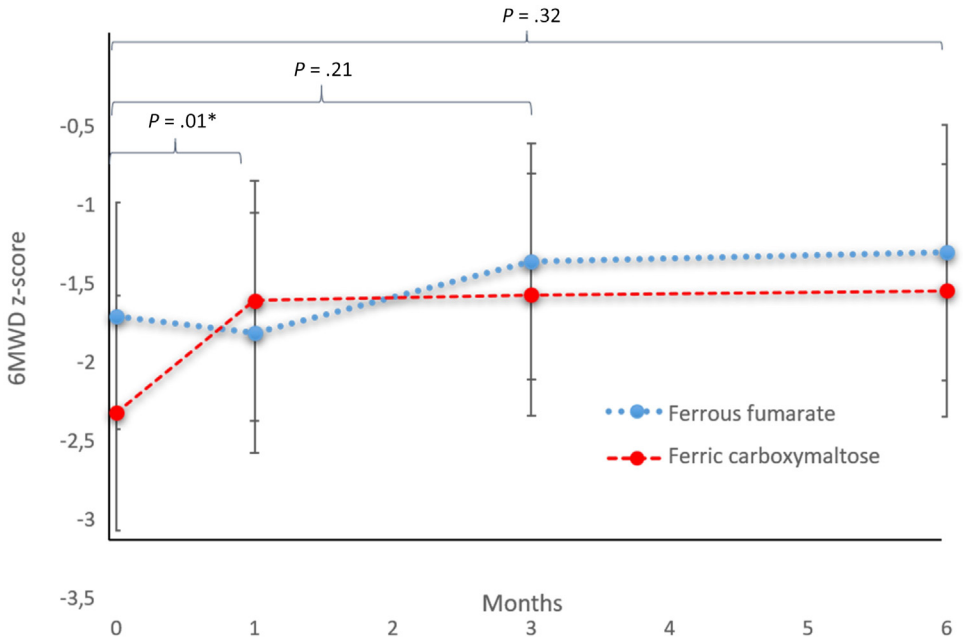

Figure 3. Increase in mean 6-minute walking distance z-score and 95% CIs over time in participants assigned to ferric carboxymaltose (*red line*) and ferrous fumarate (*blue line*). * significant.

significant (difference = 0.40; P = .213 and .37; P = .322, respectively).

Secondary End Points

One month after the start of therapy, an increase in Hb z-scores was observed in both treatment groups (1.49 in the ferric carboxymaltose group vs 1.33 in the ferrous fumarate group), that is, a between-group difference of 0.15 (P = .62, **Figure 4**). At 3- and 6-months follow-up, Hb z-score change to baseline between groups were 0.06 and 0.04, respectively. No statistical differences between groups were observed.

Proportion of Patients with Active Disease

Disease activity was monitored throughout the trial. The proportion of patients with active inflammation was not different between groups nor was IBD related medication at baseline. Throughout the 6 months study period, medication changes were noted in the electronic case files. Escalation of therapy coincided with iron therapy in 3 patients. In the ferric carboxymaltose group, one patient started with infliximab; in the ferrous fumarate group, one patient started with vedolizumab and one with infliximab. After 6 months, 17 out of the 31 children in the ferric carboxymaltose group had active disease and 15 out of 29 in the ferrous fumarate group (Fischer's exact test with P = .57).

Safety

AEs occurred in 16% of the patients (5 of 32) in the ferric carboxymaltose group and 21% (6 of 29) in the ferrous fumarate group (**Table IV**, available at www.jpeds.com). One serious AE occurred in a patient with Crohn's disease who received ferrous fumarate. The duodenal stenosis was not considered by the site investigator to be related to the trial drug, as the Naranjo-score was low.[27] Hypophosphatemia was not detected.

Discussion

In this randomized controlled trial involving anemic children with IBD, a single dose of IV-administered ferric carboxymaltose was superior to oral ferrous fumarate with respect to inducing early improvement of physical fitness. The difference between groups had disappeared at 3 and 6 months after baseline. The increase of Hb over time was comparable in both treatment groups.

The hematological findings in the POPEYE trial correspond to previous pediatric case series that reported on the effectiveness and safety of ferric carboxymaltose; however, these studies did not use an oral iron control group.[10,11,28,29]

Adult head-to-head iron trials were performed earlier and in the PROCEED study, which involved over 300 adult patients with quiescent or mildly active IBD, 2 different formulations were evaluated: IV ferric derisomaltose and oral ferrous sulfate. Patients were followed for 8 weeks with no measurements between study baseline and close out visit. At week 8 noninferiority of ferric derisomaltose could not be demonstrated, and the authors claimed a trend towards a higher Hb increase with the oral iron compound.[30] In a second adult study among IBD patients IV ferric carboxymaltose and oral ferrous sufhate were compared. The increase in Hb from baseline to week 12 was similar in both treatment arms.[31]

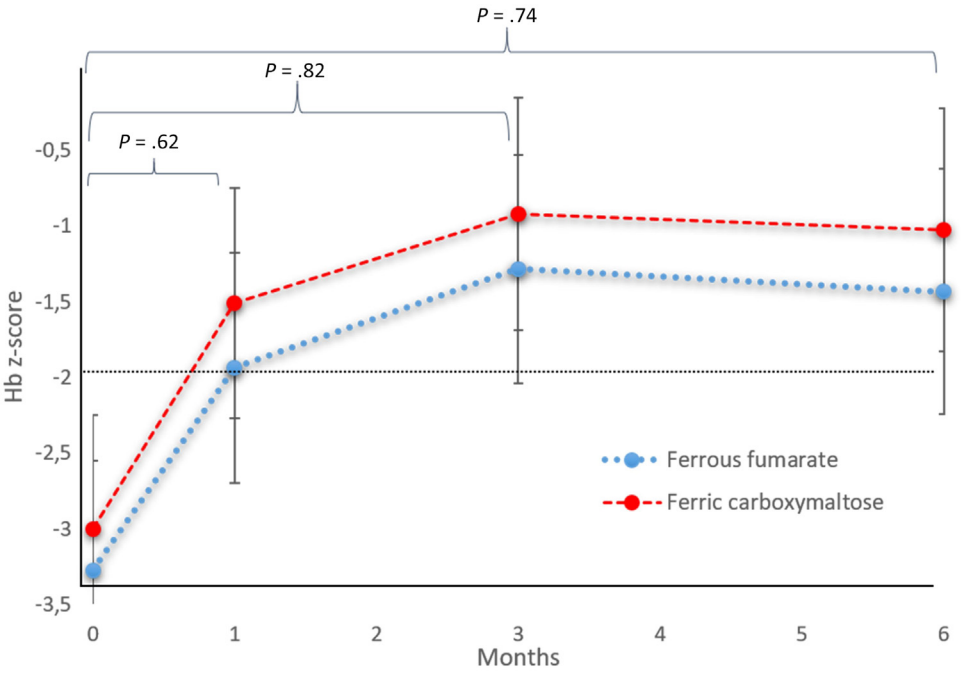

Figure 4. Increase in mean hemoglobin z-score and 95% CIs over time in participants assigned to ferric carboxymaltose (*red line*) and ferrous fumarate (*blue line*).

A Cochrane review combined results of different studies and concluded that IV iron preparations may result in more patient responders compared with the oral preparations (relative risk: 1.17, 95% CI: 1.05-1.31; participants = 927; I2 = 0%, NNTB = 11). The certainty of the evidence is moderate due to low risk of bias and inconsistency due to clinical heterogeneity.[32]

Although we failed to reach the intended sample size (due to slow inclusion) with a consequently smaller study power, we detected a statistically significant and clinically relevant difference in the primary endpoint.

We used a weight-based ferric carboxymaltose dose (15 mg/kg) with a maximum of 750 mg per dose. In general, this method of dosing corresponds well with the Ganzoni method where iron stores are 500 mg if the body weight is over 35 kg, and 15 mg/kg if the body weight is below 35 kg. Study participants weighing over 75 kg would have received larger doses of ferric carboxymaltose with the Ganzoni equation (**Table V**, available at www.jpeds.com).[33] Three of 32 patients in the IV ferric carboxymaltose group were probably underdosed by approximately 100 mg. This may have caused an underestimation of the effect size of IV ferric carboxymaltose.

Since the design of this study in 2016, ferrous fumarate dosing recommendations were updated. In our study a daily dose of 9 mg/kg was used, whereas novel strategies include lower doses and once daily regimens. The effect of our higher oral doses may have caused a counterproductive effect, as it induces hepcidin expression and subsequently decreases intestinal iron absorption.[34,35]

Drug adherence information is lacking in the oral iron group. Thus, our schedule probably reduced the effect of oral iron. It is difficult to estimate which effect influenced study outcome most.

Participants in the POPEYE trial predominantly had quiescent or mildly active disease. The relatively low-inflammatory status facilitates the absorption and utilization of oral iron. Therefore, our results cannot be extrapolated to children with severe disease who are likely to have a reduced iron absorption capacity and disturbed erythropoiesis.

We did not detect hypophosphatemia 1, 3, or 6 months after baseline. Serum phosphate levels; however, were not determined immediately after the administration of ferric carboxymaltose which may have resulted in underestimation of this important side-effect. In a meta-analysis FCM is associated with a high risk of hypophosphatemia not resolving for at least 3 months in a large proportion of affected patients, which makes it less likely not to have found any case of hypophosphatemia in our study.[36] Incidence of AEs in the ferrous fumarate group (21%) was low compared with the 47% reported in a systematic review that included 11 studies and 757 patients.[37] Our study with 64 participants was not primarily designed for safety evaluation.

A single dose of IV ferric carboxymaltose was superior to oral ferrous fumarate with respect to quick improvement of physical fitness; the differences, however, leveled out after the first month. The rate of restoration of Hb is similar irrespective of the route of iron administration in patients with mild to moderate disease activity. We, therefore, advise clinicians shared decision making when an anemic patient presents without reduced physical fitness, and to consider the IV route if their main complaint is reduced physical fitness. ■

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Data Statement

Data sharing statement available at www.jpeds.com.

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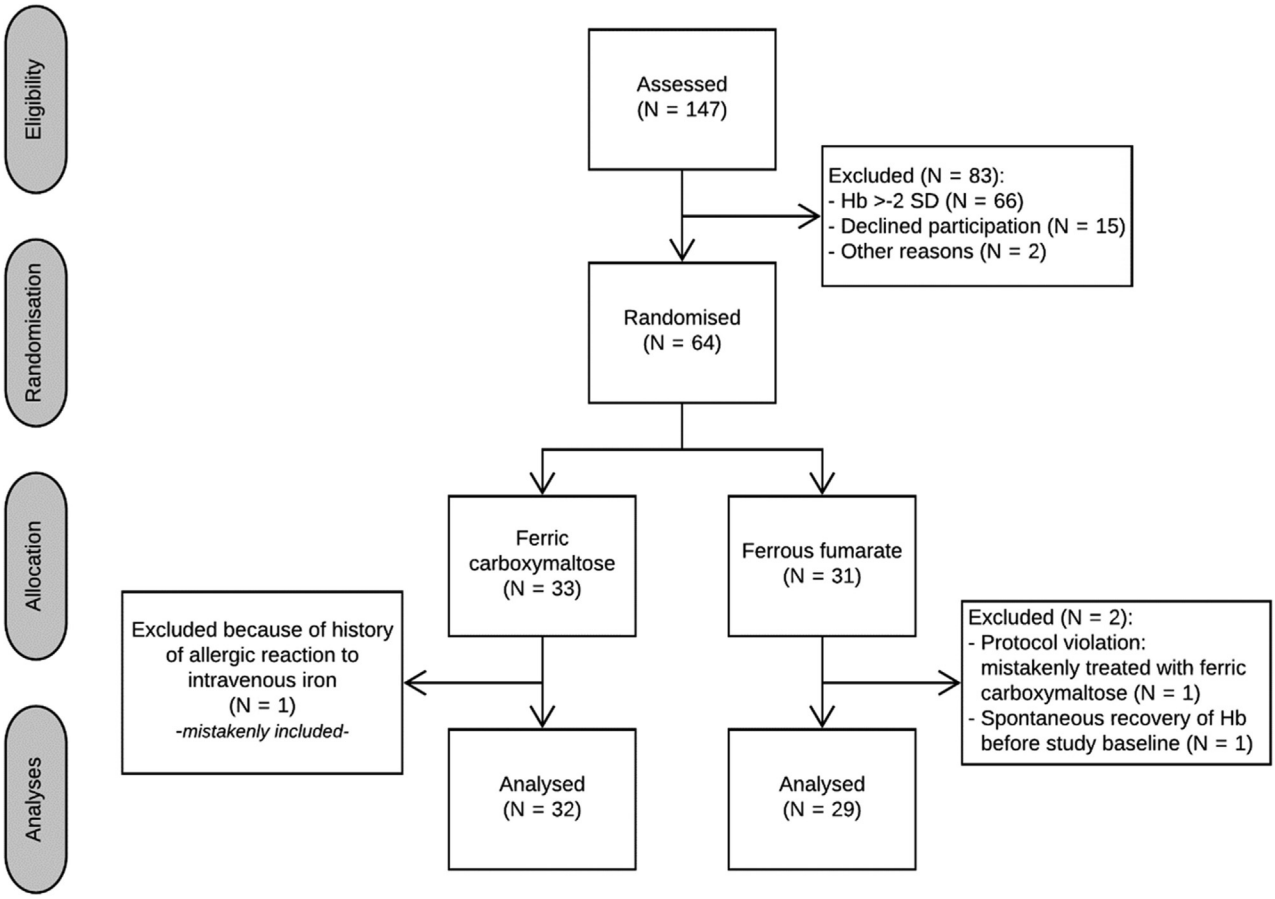

Figure 2. Study flow chart presenting the number of participants who were included in the intention-to-treat analysis.

Table I. The CONSORT statement with checklist and flow diagram

CONSORT 2010 checklist of information to include when reporting a randomized trial

Section/topic	Item No.	Checklist item	Reported on page No.
Title and abstract			
	1a	Identification as a randomized trial in the title	1
	1b	Structured summary of trial design, methods, results, and conclusions (for specific guidance see CONSORT for abstracts)	4
Introduction			
Background and objectives	2a	Scientific background and explanation of rationale	5
	2b	Specific objectives or hypotheses	5-6
Methods			
Trial design	3a	Description of trial design (such as parallel and factorial) including allocation ratio	6-7
	3b	Important changes to methods after trial commencement (such as eligibility criteria), with reasons	6-7
Participants	4a	Eligibility criteria for participants	6-7
	4b	Settings and locations where the data were collected	6
Interventions	5	The interventions for each group with sufficient details to allow replication, including how and when they were actually administered	7
Outcomes	6a	Completely defined prespecified primary and secondary outcome measures, including how and when they were assessed	8
	6b	Any changes to trial outcomes after the trial commenced, with reasons	-
Sample size	7a	How sample size was determined	9
	7b	When applicable, explanation of any interim analyses and stopping guidelines	-
Randomization:			
Sequence generation	8a	Method used to generate the random allocation sequence	7
	8b	Type of randomization; details of any restriction (such as blocking and block size)	7
Allocation concealment mechanism	9	Mechanism used to implement the random allocation sequence (such as sequentially numbered containers), describing any steps taken to conceal the sequence until interventions were assigned	7
Implementation	10	Who generated the random allocation sequence, who enrolled participants, and who assigned participants to interventions	7
Blinding	11a	If done, who was blinded after assignment to interventions (eg, participants, care providers, and those assessing outcomes) and how	-
	11b	If relevant, description of the similarity of interventions	-
Statistical methods	12a	Statistical methods used to compare groups for primary and secondary outcomes	9
	12b	Methods for additional analyses, such as subgroup analyses and adjusted analyses	9
Results			
Participant flow (a diagram is strongly recommended)	13a	For each group, the numbers of participants who were randomly assigned, received intended treatment, and were analyzed for the primary outcome	10
	13b	For each group, losses and exclusions after randomization, together with reasons	10-11
Recruitment	14a	Dates defining the periods of recruitment and follow-up	10-11
	14b	Why the trial ended or was stopped	10
Baseline data	15	A table showing baseline demographic and clinical characteristics for each group	10
Numbers analyzed	16	For each group, number of participants (denominator) included in each analysis and whether the analysis was by original assigned groups	10
Outcomes and estimation	17a	For each primary and secondary outcome, results for each group, and the estimated effect size and its precision (such as 95% CI)	11
	17b	For binary outcomes, presentation of both absolute and relative effect sizes is recommended	
Ancillary analyses	18	Results of any other analyses performed, including subgroup analyses and adjusted analyses, distinguishing prespecified from exploratory	-
Harms	19	All important harms or unintended effects in each group (for specific guidance see CONSORT for harms)	12
Discussion			
Limitations	20	Trial limitations, addressing sources of potential bias, imprecision, and, if relevant, multiplicity of analyses	14
Generalizability	21	Generalizability (external validity, applicability) of the trial findings	15
Interpretation	22	Interpretation consistent with results, balancing benefits and harms, and considering other relevant evidence	15-16
Other information			
Registration	23	Registration number and name of trial registry	4
Protocol	24	Where the full trial protocol can be accessed, if available	-
Funding	25	Sources of funding and other support (such as supply of drugs), role of funders	21

Table II. Weight-based dosing of ferrous fumarate

Body weight (kg)	Tablets	Dosage (mg/kg)
24-27	100 mg twice daily	7.7-8.3 mg/kg
28-39	200 mg once daily and 100 mg once daily	7.9-10.7 mg/kg
40-59	200 mg twice daily	8.3-10 mg/kg
60-69	400 mg once daily and 100 mg once daily	8.3 mg/kg
≥70 kg	200 mg 3 times daily	8.6 mg/kg

Table IV. Adverse events

	Ferric carboxymaltose IV (n = 32)	Ferrous fumarate PO (n = 29)
Event	**Number of participants with event**	
Any adverse event (%)	5 (16%)	6 (21%)
Withdrawn because of adverse event	0	1
Hypophosphatemia	0	0
Iron staining of skin	1	0
Tingling, burning sensation of skin	1	0
Hyperactivity	1	0
Migraine attack	1	0
Nausea	0	2
Increased abdominal pain	1	1
Arthralgia	0	1
Candida infection gut	0	1
Duodenal stenosis	0	1

IV, intravenous; *PO*, enternal.

Table V. Weight-based dosing of ferric carboxymaltose and comparison with dosing according to the Ganzoni formula

Body weight (kg)	Weight-based dosing (15 mg/kg; max 750 mg)	Ganzoni formula weight {kg} x (target Hb – actual Hb) {g/l} x 0.24 + iron stores {mg}	Difference compared to study dose (%)
25 kg (128-110 g/L for deficit, 250 mg for iron stores)	375 mg	358 mg	- 5%
35 kg (135-117 g/L for deficit, 500 mg for iron stores)	525 mg	651 mg	+ 24%
45 kg (135-117 g/L for deficit, 500 mg for iron stores)	675 mg	694 mg	+ 3%
55 kg (135-117 g/L for deficit, 500 mg for iron stores)	750 mg	735 mg	- 2%
65 kg (135-117 g/L for deficit, 500 mg for iron stores)	750 mg	781 mg	+ 4%
75 kg (135-117 g/L for deficit, 500 mg for iron stores)	750 mg	824 mg	+ 10%
85 kg (135-117 g/L for deficit, 500 mg for iron stores)	750 mg	867 mg	+ 16%

Hb, Hemoglobin.