Incidence and predictors of hypophosphatemia after Ferric Carboxymaltose use – a 3-year experience from a single institution in Singapore

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Introduction

- Ferric Carboxymaltose(FCM) administration helps reduce transfusion requirements in the perioperative situation which improves patient outcomes and reduces healthcare costs.
- However, there is increasing evidence of hypophosphatemia after FCM use.

Aims

- Determine the incidence of hypophosphatemia (<0.8mmol/L) and profound hypophosphatemia (<0.4mmol/L) after FCM administration
- Elucidate potential factors associated with hypophosphatemia after FCM administration

Methods

- A retrospective review of all FCM administrations in a single institution was conducted from August 2018 - August 2021.
- The effect of each FCM dose was examined up to 28 days post-administration
- Patients' serum phosphate levels within 28 days of FCM administration were benchmarked against their serum phosphate level within 2 weeks before FCM administration.
- Potential associated factors with hypophosphatemia are presented as odds ratios using logistic regression.

Table 1. FCM patient baseline data tabulation

	n (SD)
Number of FCM doses administered	1296
Number of patients who received FCM	1069
Mean doses administered per patient	1.21 (0.48)
Mean baseline haemoglobin (Hb) (g/dL)	7.64 (2.17)
Mean baseline serum phosphate within 28 days before FCM (mmol/L)	1.55 (0.62)
Mean baseline 25-hydroxyvitamin D levels (ng/mL)	20.9 (11.9)

Results

- The incidence of hypophosphatemia (<0.8mmol/L) after FCM administration was **22.7%** (186 of 819 doses recorded).
- The odds of developing hypophosphatemia were **27.7**(CI:17.3-44.2, p<0.0001) if **baseline serum phosphate was less than 1mmol/L**.
- The odds of developing hypophosphatemia were **1.3** (CI:1.08-1.59, p<0.01) if the **change in Hb** levels observed after FCM administration were **more than 4g/dL**.

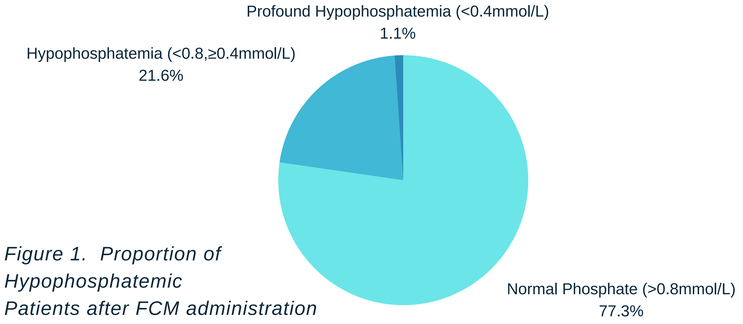


Figure 1. Proportion of Hypophosphatemic Patients after FCM administration

Table 2. Biochemical details of patients up to 28 days after FCM administration

	n (SD)
Mean Hb Improvement	2.45 (1.94)
Mean days to peak Hb	6.33 (8.68)
Number of instances of serum phophate levels <0.8 mmol/L [of 819 doses recorded] (%)	186 (22.7)
Mean days to hypophosphatemia	7.44 (12.4)
Mean serum phosphate after FCM (mmol/L)	1.08 (0.4)
Mean serum phosphate of patients with hypophosphatemia after FCM (mmol/L)	0.615 (0.131)

Figure 2. Comparison of patients with and without hypophosphatemia (<0.8mmol/L) within 28 days after FCM administration

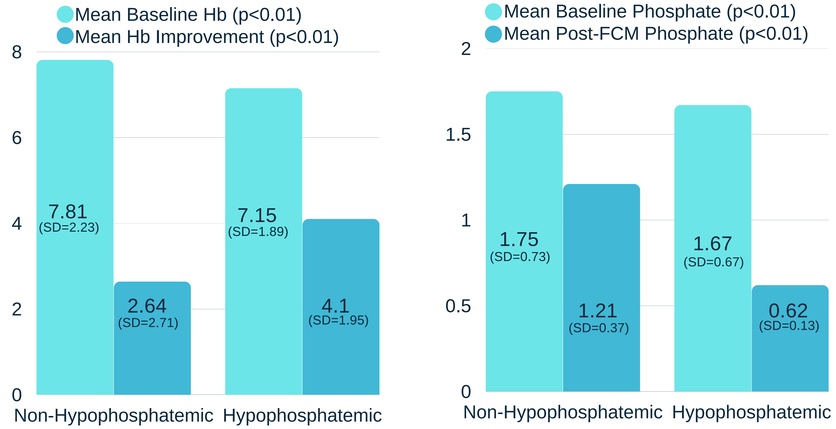


Table 3. Subgroup analysis of 9 instances of profound hypophosphatemia (<0.4mmol/L)

	n (IQR)
Median baseline Hb (g/dL)	7.2 (6.7-8.1)
Median Hb improvement (g/dL)	3.2 (1.7-4.65)
Median number of days to peak Hb	13 (4-16.5)
Median baseline phosphate levels (mmol/L)	1.39 (1.09-1.62)
Median days to hypophosphatemia	15 (6-19)
Median number of phosphate replacements required	2 (1-4)

Conclusions

- Hypophosphatemia after FCM administration is significant and should be used by clinicians with caution.