

## Successful Administration of Iron Sucrose in a Patient with an Anaphylactic Reaction to Ferric Carboxymaltose

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Dear Editor,

Hypersensitivity reactions to intravenous (IV) iron are rare but potentially life-threatening. A previous reaction to an iron infusion is a significant risk factor for hypersensitivity reactions and poses a therapeutic challenge to the clinician caring for these patients. It is a unique report of a patient who developed hypersensitivity to ferric carboxymaltose (FCM) and was subsequently administered iron sucrose (IS) successfully. The patient gave informed consent for publication.

A 60 years old woman with diabetic nephropathy, hypertension, and end stage renal disease, was hospitalized with uremic symptoms. She had a hemoglobin of 5 g/dl, and red cell indices were microcytic and hypochromic (mean corpuscular volume of 76 fl, mean corpuscular hemoglobin of 25.7 pg and increased red cell distribution width of 18.5%), serum urea 189 mg/dl and creatinine 11.8 mg/dl. Iron studies showed serum iron 45 µg/dl, transferrin saturation of 14%, serum ferritin of 36 µg/dl suggestive of iron deficiency and serum C-reactive protein was not elevated. There was no history of any bleeding. She was treated with three sessions of hemodialysis and transfused two units of packed red blood cells. The patient had poor tolerance to oral iron, therefore treated with IV iron, vitamin B12, and folic acid. She was being administered IV iron FCM 1 g in 250 ml of normal saline over 30 min. Within 2–3 min of infusion with only about 15–20 ml of the infusion gone, the patient developed an anaphylactic reaction, pulse and blood pressure became

unrecordable. The infusion was discontinued. She was resuscitated with injections of antihistaminic chlorpheniramine, hydrocortisone, and adrenaline. The infusion was abandoned because of severe hypersensitivity reaction. The patient was discharged and advised with a plan to try IV iron sucrose (IS) administration to follow up. Two weeks later IS was administered as 500 mg in 200 ml of normal saline IV over 3 h after a test dose. The administration was uneventful. A repeat infusion of IS 500 mg in 200 ml of normal saline IV over 3 h was also uneventful. A month later complete blood count revealed a hemoglobin of 9.2 g/dl and normocytic red blood cell indices.

High dose IV iron is essential when rapid replacement of iron stores is desired or when iron therapy is given along with erythropoiesis-stimulating agents. FCM is an innovative nondextran iron complex that has been developed for rapid IV administration in high doses up to 1000 mg over 15 min. It lacks the hypersensitivity associated with iron dextran and does not require administration of a test dose. Still in clinical trials hypersensitivity including anaphylactic reactions to FCM has been reported in about 0.1–1% patients [1]. IS has a favorable safety profile and lacks the hypersensitivity, it has to be given in the form of small IV infusions to avoid the release of free iron that can provide a dose of 1000 mg, IS needs to be given in the form of 5 doses of 200 mg each over a 14 days period [2]. However, an accelerated regimen of high-dose IS 500 mg in 200 ml of normal saline administered IV over 3 h for two consecutive days, which has been found to be safe and effective in restoring iron stores, potentially saves time and improves patient adherence in CKD, was used in the index case [3]. Though the risk compared to FCM is not known, the risk of anaphylaxis is the lowest for IS at first exposure to IV iron [4].

Further, IS has been found to be safe and effective in patients sensitive to iron dextran and ferric gluconate [5, 6].

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We conclude that when confronted with patients experiencing an anaphylactic reaction to FCM infusion, IS administration can be safely attempted on them. Such attempts are safe and effective, provided they be executed in a health care setting by a well-trained medical and nursing staff with meticulous planning.

#### Compliance with ethical standards

**Conflict of interest** The authors declare that they have no conflict of interest.

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