Correspondence

Parenteral iron therapy in children with iron deficiency anemia

I read with interest the article by Mantadakis et al entitled "Intravenous iron sucrose for children with iron deficiency anemia: a single institution study".[1] The article has raised a very interesting issue. There are very few published studies on parenteral iron administration in pediatric practice for non-renal indication.[2] Besides, because of reported hypersensitivity, pediatric hematologists are usually reluctant to give parenteral iron formulations. Finally, either European Medicines Agency or Food and Drug Administration does not approve most intravenous iron agents for pediatric use. Thereby, as opposed to countless oral iron preparations, there are only few intravenous iron products for children.

We recently published our single-institution experience in intravenous iron treatment for children with iron deficiency anemia (IDA) who failed to respond to oral iron supplementation.[3] A total of 76 intravenous iron infusions (33 iron sucrose and 43 iron gluconate infusions) were given to 12 children aged from 13 months to 14 years (median: 5.8 years). Five children had no compliance, 2 were intolerant, and 5 were non-responsive to oral iron preparations. Infusions were given every 3 to 7 days (average time: 6.3 days) until required amount was achieved. Daily dosage of the infusion was 5 to 7 mg of elemental iron per kilogram, with a maximum single dose of 200 mg. Before infusion of the first dose to each patient, a test dose was given. Intravenous iron was an effective and safe therapy. The mean pretreatment hemoglobin level was 8.7±1.7 g/dL, and it was elevated to 11.7±1.0 g/dL two months after the first infusion. One mild adverse reaction was due to the infusion; the patient experienced headache and transient mild hypotension after the third intravenous infusion of iron sucrose.

In conclusion, pediatricians should be aware that intravenous iron might be a safe and rapid means to treat children with IDA who fail to respond to oral iron preparations due to intolerance, poor adherence, or iron malabsorption.[4] Patients should be closely monitored for signs of hypersensitivity for at least 30 minutes after each intravenous infusion of an iron preparation. The advantages of intravenous iron products include the use of one or few infusions, which could eliminate the need for prolonged course of oral iron treatment and problems of poor compliance. The disadvantages are higher cost and potential serious adverse effects. Prospective well-designed studies involving larger population are needed to clarify the proper dosage and administration, and to determine the safety and efficacy of intravenous iron therapy in children.

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Intravenous (IV) iron is rarely used as a therapeutic alternative to oral iron for the treatment of iron deficiency anemia (IDA) in children outside the context of chronic kidney disease. Our study[1] and the above letter by Roganovic in this issue show that time has come to challenge the widespread belief that parenteral iron be avoided in children unless severe malabsorption or a life-threatening condition is present. Several small but notable pediatric studies document that IV iron appears to be safe and extremely effective in relieving IDA associated various underlying conditions.[2] Although more pediatric dose-finding, safety, and efficacy studies are needed, off-label front line use of IV iron will in all likelihood increase in the near future, because of the availability of newer IV iron products (ferumoxytol, ferric carboxymaltose and iron isomaltoside) that allow correction of the estimated iron

deficit at a single setting. Moreover, IV iron therapy may prove to be more cost-effective compared to oral therapy because despite higher acquisition costs, it is equally or more effective and is not plagued by poor compliance and/or absorption that are major problems with oral therapy. Provided that the pediatricians ordering and administering IV iron pay close attention to the management of anaphylaxis and to the specific product used, as incorrect selection or substitution of one product for another without proper dosage adjustment may result in serious over- or under-dosing, IV iron should strongly be considered in diseases associated with moderate to severe IDA, particularly in children unresponsive to oral iron and adolescent girls with heavy uterine bleeding.

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