Update on Intravenous Iron Therapy

Adverse events (AEs) associated with allogeneic blood transfusion and oral iron have focused attention on intravenous (IV) iron therapy. The previous risk of anaphylaxis with IV iron has been reduced, but little is known about other important AEs, in particular the theoretical risk of infection, say researchers from Royal Perth Hospital and the University of Western Australia, both in Perth, Australia. Their findings, though, suggest that IV iron may have broad benefits in treating hospital patients with anemia and in reducing the need for allogeneic red blood cell (RBC) transfusions.

The researchers conducted a meta-analysis of 72 studies involving 10,605 participants to evaluate the safety and effectiveness of IV iron. In 59 studies (7,610 participants) that reported the change in hemoglobin (Hg) concentration before and after treatment, IV iron therapy was associated with a significant increase in standardized mean Hg concentration (6.5 g/L; 95% confidence interval [CI], 5.1-7.9 g/L) compared with oral iron or no iron supplementation. In 22 studies (3,321) that reported on the risk of requiring allogeneic RBC transfusion, IV iron therapy was also associated with a significant reduction in risk (risk ratio 0.74; 95% CI, 0.62-0.88), thus reducing the risk of serious AEs, including death.

The researchers found no significant difference in mortality or AEs between IV iron and oral iron or no iron. In the 32 studies that reported on anaphylaxis, 8 patients of 2,186 receiving IV iron developed anaphylaxis.

Their findings are in keeping with recent advances in the understanding of iron metabolism, the researchers say. Intravenous iron is more effective than oral iron, particularly in acute or chronic inflammation, by bypassing the effects of hepcidin, an inhibitor of gastrointestinal iron absorption.

Intravenous iron was associated with a higher risk of all-cause infection in 24 studies (4,400 participants) that reported data on the risk of infection. The researchers found no interaction between baseline ferritin, transferrin saturation, iron per dose, or erythroid-stimulating agents and the risk of infection. They say infection was not a predefined endpoint in many pooled studies; therefore, it is possible that missing data could have created an unmeasured bias in their analysis.

The researchers note that free iron has been shown to potentiate bacterial growth in vitro. However, clinical evidence of the association between IV iron therapy and infection has been inconclusive. Until randomized controlled trials are adequately powered for patient-centered outcomes, they conclude, it might be preferable to use IV iron preparations with relatively low free iron concentrations. ●

Source: Litton E, Xiao J, Ho KM. *BMJ.* 2013;347:f4822. doi: 10.1136/bmj.f4822.