Short Communication | Cell & Developmental Biology | 2020
Vol.9 No.5

Methodical evaluation and system meta-analysis: safety of different intravenous iron preparations for the treatment of iron deficiency anaemia in inflammatory bowel disease- Aysegül Aksan- Interdisciplinary Crohn-Colitis Centre Rhein-Main, Frankfurt, Germany

Aysegül Aksan1,2, Hatice Isik3, Katharina Boettger4, Karima Farrag4, Axel Dignass5, Jürgen Stein1,4

1. Interdisciplinary Crohn-Colitis Centre Rhein-Main, Frankfurt, Germany.
2. Institute of Pharmaceutical Chemistry, Goethe University Frankfurt, Germany.
3. Hacettepe University, Ankara, Turkey.
4. Gastroenterology and Clinical Nutrition, DGD Clinics Sachsenhausen, Frankfurt am Main, Germany.
5. Agaplesion Markus Hospital, Frankfurt/Main, Germany.

Inflammatory bowel disease (IBD) represents a group of intestinal disorders that cause prolonged inflammation of the digestive tract. The digestive tract comprises the mouth, esophagus, stomach, small intestine, and large intestine. It's responsible for breaking down food, extracting the nutrients, and removing any unusable material and waste products. Inflammation anywhere along the digestive tract disrupts this normal process. IBD can be very painful and disruptive, and in some cases, it may even be life-threatening.

Iron deficiency anaemia (IDA) is a common complication of inflammatory bowel disease (IBD) associated with reduced quality of life and increased hospitalisation rates. While the best way of treating IDA in IBD patients is not clearly established, current European guidelines recommend intravenous iron therapy in IBD patients with severe anaemia or intolerance to oral iron compounds. The exact cause of IBD is unknown. However, genetics and problems with the immune system have been associated with IBD.

+

The immune system: The immune system may also play a role in IBD. Normally, the immune system defends the body from pathogens (organisms that cause diseases and infections). A bacterial or viral infection of the digestive tract can trigger an immune response. As the body tries to fight off the invaders, the digestive tract becomes inflamed. When the infection is gone, the inflammation goes away. That's a healthy response. In people with IBD, however, digestive tract inflammation can happen even when there's no infection. The immune system attacks the body's own cells instead. This is known as an autoimmune response. IBD can also occur when the inflammation doesn't go away after the infection is cured. The inflammation may continue for months or even years.

Compare the tolerability of intravenous (IV) iron compounds (ferric carboxymaltose (FCM), ferumoxytol (FOX), iron sucrose/saccharate (IS), iron isomaltoside (ISM) and iron dextran (IDX)) used to treat iron deficiency anaemia (IDA) in patients with inflammatory bowel disease (IBD) in a systematic review and network meta-analysis (NMA).

Treatment

Immune system suppressors : These drugs work in a variety of ways to suppress the immune response that releases inflammation-inducing chemicals in the intestinal lining. For some people, a combination of these drugs works better than one drug alone. Some examples of immunosuppressant drugs include azathioprine (Azasan, Imuran), mercaptopurine (Purinethol, Purixan), cyclosporine (Gengraf, Neoral, Sandimmune) and methotrexate (Trexall).

Antibiotics: Antibiotics may be used in addition to other medications or when infection is a concern — in cases of perianal Crohn's disease, for example. Frequently prescribed antibiotics include ciprofloxacin (Cipro) and metronidazole (Flagyl).

Anti-diarrheal medications: A fiber supplement — such as psyllium powder (Metamucil) or methylcellulose (Citrucel) — can help relieve mild to moderate diarrhea by adding bulk to your stool. For more severe diarrhea, loperamide (Imodium A-D) may be effective.

Pain relievers: For mild pain, your doctor may recommend acetaminophen (Tylenol, others). However, ibuprofen (Advil, Motrin IB, others), naproxen sodium (Aleve) and diclofenac sodium (Voltaren) likely will make your symptoms worse and can make your disease worse as well.

Methods

PUBMED, SCOPUS, Web of Science and Cochrane databases were searched for randomised controlled (RCT) and other prospective trials analysing IV iron therapies for IDA in patients with IBD. Outcome was the total of drug-related AEs and SAEs. Bayesian NMA was performed after bias analysis

This work is partly presented at Joint Event on 20th International Conference and Exhibition on Pharmaceutics & Novel Drug Delivery Systems March 18-20, 2019 at Edinburgh, Scotland

and the MCMC method used to calculate relative tolerability of each therapy. Heterogeneity was tested with I2. Analyses were conducted using Rgemtc. DIC was used to compare fixed and random effect models (REM). NMA was expressed as OR with 95% CrI.

Results

Of 2730 studies found, after duplication removal and detailed review, 4 RCTs (NMA) and 21 other trials (systematic review only) remained. No eligible studies for FOX and no RCTs for IDX were found. NMA was performed. The REM fit the data adequately with no evidence of inconsistency; all p-values were ≥5%. No statistically significant difference in AE rate was found between different IV iron products vs. oral iron (OR=0.87,95% CrI [0.43;1.7] for FCM; OR=0.80, 95%CrI [0.36;1.8] for IS; OR=1.5,95%CrI [0.64;3.7] for ISM). The systematic review (n=2619) showed AE rates of 83/1028(8.1%) for FCM, 78/481(16.2%) for IS, 89/475(18.7%) for ISM and 10/83(12%) for IDX. Drug-related SAEs occurred at pooled rates of 0.1%/2.2%/0.0%/1.1% for FCM/IS/IDX/ISM respectively. AE/SAE rates for oral iron were 22.6%/1.4%.

This work is partly presented at Joint Event on 20th International Conference and Exhibition on Pharmaceutics & Novel Drug Delivery Systems March 18-20, 2019 at Edinburgh, Scotland