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Grant awarded £74,655 (2 Years)

Adverse effects of oral iron therapy in IBD prevalence, mechanism and avoidance

Many patients with inflammatory bowel disease (IBD) become anaemic as a result of poor appetite, failure to absorb dietary iron adequately and/or loss of iron due to bleeding from the intestine. Anecdotal experience suggests that treatment of iron-deficient IBD patients with oral iron tablets is poorly tolerated, and may even increase the activity of the intestinal inflammation. One of the mechanisms of tissue injury in patients with IBD is thought to involve overproduction, by white blood cells in the bowel wall, of tissue-damaging chemicals known as reactive oxygen metabolites (ROM). Iron is known to increase the production of a particularly toxic ROM, the hydroxyl radical.

In this project, we plan to compare the prevalence of intolerance to standard oral iron therapy, given as ferrous sulphate for four weeks, in patients with iron deficiency anaemia due to non-inflammatory causes (such as vegetarianism or menstruation), inactive ulcerative colitis (UC), inactive Crohn's disease, active UC and active Crohn's disease. We shall use diary cards to assess symptoms and blood tests to monitor iron replenishment and inflammation. Additionally, we shall assess iron and ROM metabolism in the rectum before and after treatment using sigmoidoscopy, a recently developed filter paper technique and biochemical studies of rectal biopsies. If it becomes available in time, patients intolerant of ferrous sulphate will be switched to a new, more expensive and reportedly better tolerated preparation, ferric trimaltol, and restudied after a further four weeks. Alternatively, ferrous sulphate – intolerant patients will be asked to continue with this treatment if possible, taking, additionally, the antioxidant vitamin E.

With this work we hope to establish 1) what proportion of people are intolerant of oral ferrous sulphate, 2) whether or not standard oral iron therapy really is more poorly tolerated by patients with IBD than other anaemic patients; 3) whether it worsens gut inflammation; 4) if so, whether this is due to increased ROM production; 5) whether symptoms in patients with IBD given ferrous sulphate are due to the increased gut inflammation and 6) whether ferric trimaltol (or co-prescribed vitamin E) gives better tolerance. Resolution of these questions could lead to a substantial improvement in the management of anaemic patients with IBD, and further elucidate the interactions between iron and inflammatory mechanisms in the human intestine. Our findings may also be applicable to anaemic patients with other chronic inflammatory disorders, particularly