

The Effect of Elemental Diet on Intestinal Permeability and Inflammation in Crohn's Disease

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Studies have confirmed that an elemental diet is an effective treatment for active Crohn's disease without serious side effects. However, the mechanism of action of an elemental diet in Crohn's disease is poorly understood. Also it is unclear whether an elemental diet has a primary effect on disease activity in addition to providing symptomatic relief. As a result, a study was undertaken to examine the effect of treatment with an elemental diet on intestinal permeability and inflammation in active Crohn's disease.

Thirty-four adults with acute Crohn's disease completed a 4 week treatment course with an elemental diet. Intestinal permeability and inflammatory activity were assessed pre-treatment using the intestinal ⁵¹Cr-EDTA permeability test and faecal excretion of ¹¹¹In-labelled autologous leucocytes, respectively. These tests were repeated at 4 weeks when the patients were still on the elemental diet. Disease activity was assessed using the Crohn's Disease Activity Index (CDAI). Clinical remission was defined subjectively as a return to pre-relapse well-being.

Treatment with an elemental diet resulted in clinical remission in 27 (80%) patients. Significant improvements in mean pre and post-treatment erythrocyte sedimentation rate, C-reactive protein and CDAI were observed. Mean pre and post-treatment weight, haemoglobin and albumin did not differ significantly. Typically symptomatic response was achieved within a week. Patients described a sense of wellbeing and loss of nausea on the 4th day. Intestinal permeability was assessed in 20 patients where treatment with an elemental diet was associated with a significant decrease in 24 hour urine excretion of ⁵¹Cr-EDTA from a mean (+/- SE) pre-treatment value of 6.4 +/- 0.6% to 3.4 +/- 0.5%, p<0.001 (normal value <1%). In 11 patients, ¹¹¹In excretion was determined pre-treatment and at both 2 and 4 weeks treatment. ¹¹¹In excretion at 2 weeks was reduced significantly compared with pre-treatment values. However, ¹¹¹In excretion at 2 and 4 weeks did not differ significantly.

"The current study shows for the first time that the treatment with elemental diet alone reduces the acute inflammation in patients with Crohn's disease, showing that the treatment is not just symptomatic."

Key Points

- 80% of patients achieved clinical remission
- 7 days sufficient for a symptomatic response
- 2 weeks for the acute inflammation to subside
- 4 weeks to maintain remission periods comparable to those of steroid treated patients