

CROHN'S DISEASE AND DIETARY TREATMENT: WHERE ARE WE NOW?



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Crohn's disease (CD) is a chronic inflammatory autoimmune condition, exhibiting transmural lesions, which can affect any area of the gastrointestinal tract. Currently 87,000 people in the UK live with CD and the yearly incidence is increasing (1). The aetiology of CD is poorly understood, but there is a genetic component and environmental causes, including diet, are implicated in its development. These patients have significant morbidity and 70 to 80 percent (1) will have surgery, which can have considerable affect on nutritional status, particularly if gastrointestinal resections are substantial. This article discusses current treatment of adult CD with dietary therapy.

Access to a dietitian is vital in the treatment of patients with CD as malnutrition is common. Along with protein-energy malnutrition, it has been reported that there is also inadequate intake of iron, zinc, vitamins A, B6, C, D, E folate and B12 in IBD (2). This fact has been recognised and access to dietetic services is included in the inflammatory bowel disease audit (3) which reported that access to dietetic services is good. However, an inpatient questionnaire (4) reported that 50 percent of adults with IBD received no dietetic visit; the authors concluded that there may be a need to ensure that patients have better access to available services.

studies showed a lack of superiority of steroids over diet, but exclusion reduced the power of the research. This paper has directed recent treatment for CD and liquid diet does remain a secondary consideration, particularly in adults, where palatability and concordance are still sited as major drawbacks in treatment (1). However, corticosteroids and 5-ASA have not been shown to maintain remission (6) and the side effects and risks from steroids and other treatments do need to be considered, particularly in the younger patient who may have years of treatment ahead, in this relapsing, remitting condition. Liquid diet therapy can maintain nitrogen balance and reduce risks of development of osteoporosis in the long term in adult females, when compared with steroids (7) and has also been found to maintain remission (6). Liquid diet therapy also should be discussed where patients don't tolerate medical treatment and obviously patient choice is of primary importance. It is suggested by professional opinion that liquid diet therapy is most successful in terminal ileal disease, which represents approximately 30 percent of patients, although no direct research evidence to date is available to back up this claim. Careful consideration of which patients may benefit from this therapy is important and those with good family support and motivation are usually those who do very well. Guidelines (8) recommend that provision of this therapy should be discussed with the IBD team.

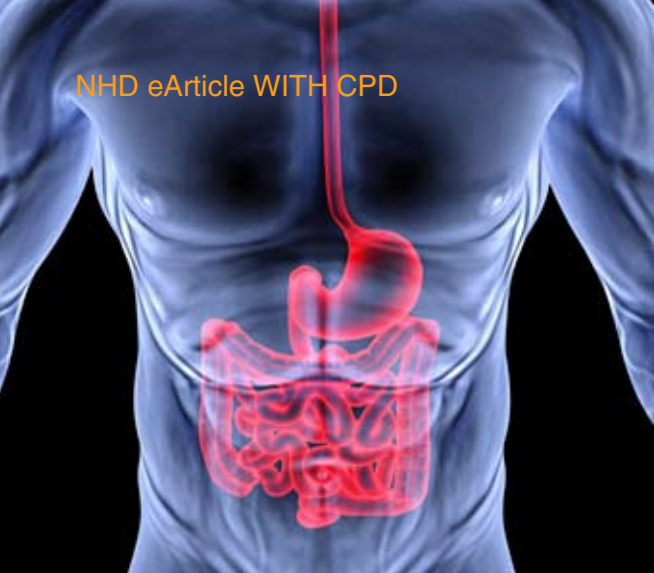
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SHOULD ENTERAL LIQUID DIETS BE USED AS THERAPY?

Enteral liquid diets have been provided as treatment in CD, with exclusion of all other food, to reduce inflammation and induce remission by avoidance of presumed dietary antigens. A major paper in CD was published in 2007 (5) suggesting that, whilst evidence was clear that elemental diets induce remission, corticosteroids were more effective in this regard. Evidence was actually unclear that steroids were more effective and some of the studies reported concomitant additional drug therapy with steroids; exclusion of these

The liquid diet ideally needs to be followed for a minimum of four to six weeks to allow for mucosal healing, although benefits have been shown from 10 days onwards (8). Patient choice is an important factor for oral liquid therapy. A starter pack or trial for both elemental and polymeric diet should be provided (polymeric or semi elemental diets have been shown to be just as effective in promoting mucosal healing (8)), with very clear instructions on how feeds should be made. The requirements should be calculated and the feed built up over three days to aid tolerance. It is important to discuss temporary side effects with the patient, such as tiredness, headaches, green stools ▶

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Caution needs to be used with prebiotics and synbiotics as these products may be poorly tolerated; the patient should be informed that their use may increase risks of bloating, diarrhoea and gas, as they contain fermentable carbohydrates.

and bad breath, so that they are prepared. If the patient struggles with the volume of feed; certain products can be concentrated, although osmolality may need to be taken into consideration. Ordering more than one flavour may help with compliance and on hospital discharge it is useful to have the sip feed prescribed more frequently than monthly, as it ensures prompt supply, and reduces costs, if changes are needed. Some dietetic units will allow weak tea and coffee to aid compliance, but there is no current evidence to back up this advice. Having a goal to aim for is useful for patients in order to maintain their motivation whilst following the diet; it is helpful to discuss patient specific goals on the first assessment. Regular review is important (including monitoring inflammatory markers c-reactive protein/erythrocyte settlement rate), to ensure that the patient is tolerating the diet, not losing weight after the initial build up regimen and is achieving the desired result. On review, patients may report feeling very well and this can lead to lapses, so again, discussion of this possibility and encouragement is required. If the patient dislikes the taste, or cannot cope with the volume of feed despite concentrating it, nasogastric (NG) feeding can be discussed and initiated with training at any time during therapy (8).

FOOD REINTRODUCTION DIETS

These diets are used post liquid diet therapy. LOFFLEX (or LOw Fibre, Fat Limited EXclusion diet,) researched by a team at Addenbrooks Hospital (9) is recommended by guidelines (8). Liquid diet can be used as nutrition support during food reintroduction when needed, particularly during the first restricted stage. Planning is key to the success of the diet and recipes and shopping needs to be discussed and considered, prior to LOFFLEX introduction, to facilitate dietary variety (8). The LOFFLEX diet is used for two weeks and then foods are reintroduced to tolerance, initially excluding any foods that the patient has reported as having clear previous symptoms, to make the diet as varied as possible, as quickly as pos-

sible. The initial phase can be increased to four weeks if needed (8). The patient is encouraged to complete food and symptom diaries in both stages. The research is based on a food survey, and very occasionally patients can have reactions to foods in the exclusion phase. If this does occur, it may be necessary to introduce foods one at a time if the culprit food is not identified, which takes longer and is more restrictive. Any relapses due to food may necessitate reverting to the first stage, or if symptoms are severe, liquid diet, to re-induce remission. Close monitoring during this phase is very important, as any offending foods need to be added to the patients' 'foods to avoid' list. Once the reintroduction has been completed, the diet needs to be assessed to ensure nutritional adequacy. In those who have concurrent medical treatment, a stable dose of medical therapy during dietary reintroductions is required (8), as reducing the dose of medical treatment may result in disease exacerbation. It would then be more challenging to address any reintroduction of foods, which may not be practical to achieve from either perspective, so good team working is important during treatment.

PROBIOTICS, PREBIOTICS AND SYNBIOTICS

Bacteria are implicated in the pathogenicity of CD, so the theory suggests that altering gut microbiota will be beneficial. Some patients with IBD use probiotics to try to manage their disease, but less than half of users discuss this use with their healthcare provider (10). There is a lack of evidence that these products have any effects in induction (11) or maintaining remission (12) in CD. If a patient wishes to trial probiotics this should be discussed with the IBD team, particularly in those patients who are prescribed immunosuppressant therapy. Lactobacillus GG showed some adverse effects of nausea and epigastric pain during remission of CD, when used in combination with medical therapy (12). At least one study has shown weak clinical evidence that *Saccaromyces Boulardii*, a yeast, given in conjunction with medical therapy increases remis-



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Without further research, dietary treatment will continue to remain a secondary, though promising option in the treatment of CD.

sion time (13). However, further studies by Rolf et al (12), failed to reach significance. Caution needs to be used with prebiotics and synbiotics as these products may be poorly tolerated; the patient should be informed that their use may increase risks of bloating, diarrhoea and gas, as they contain fermentable carbohydrates (8).

OMEGA-3

Anti-inflammatory effects of omega-3 fatty acids (fish oil) have been suggested to have benefits in reducing inflammation in inflammatory conditions. A Cochrane Review (14) suggested that there was a weak benefit of omega-3 in capsule form, but the included six studies showed significant heterogeneity when pooled and the authors concluded that using omega-3 is probably safe but ineffective in maintaining remission in CD.

GLUTAMINE

Glutamine has been speculated as a treatment in CD because of the hypothesis that glutamine is the primary amino acid that provides some protection of the small bowel mucosa in critical illness, protecting the intestinal barrier, preventing bacterial translocation and providing a fuel for enterocytes. So, theory would suggest that glutamine may be an ideal substrate to aid mucosal healing in CD and animal models have given some evidence of efficacy. However, human trials have so far proved disappointing (15). There is a Cochrane Review planned in the future to further look into this topic.

FUNCTIONAL SYMPTOMS AND DIETARY THERAPY

Some patients do go on to experience functional gastrointestinal symptoms during disease remission. It is important to review inflammatory markers, if available, for patients referred for dietary treatment of functional symptoms, as reported symptoms during both stages may be similar. Recent evidence has shown that reduction of fermentable carbohydrates (FODMAPs) may be successful in treating functional symptoms such as gas bloating and pain during remission. A pilot study (16) has shown that lowering the dietary fermentable carbohydrates resulted in symptomatic improvement in half of participants with IBD. This paper had a higher number of participating CD patients, but it is worth researchers studying CD separately from ulcerative colitis in future research.

STRICTURING DISEASE

The area of reducing fibre or utilising low residue diets to reduce symptoms or prevent bowel obstructions in CD remains an area that has little evidence base, or little clear demarcation as to what constitutes low fibre or low residue (8). Symptom resolution with reducing fibre is often reported anecdotally by patients, but this may be due to global reduction of fermentable carbohydrates and, without research, it remains an area of controversy. It is advisable to follow local guidelines or department protocols with patients who are experiencing strictures and guidelines suggest that fibre is contraindicated in stricturing disease, due to the risk of obstruction (8).

Without further research, dietary treatment will continue to remain a secondary, though promising option in the treatment of CD. Having clear randomised controlled trials is a challenge due to the complex nature of diet, but dietary treatments are an important alternative, particularly to avoid surgery and side effects of medications. Further research is urgently needed, particularly with fibre reducing diets and comparison of diet with other medical treatments, such as immunotherapy.

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Type your answers below and then **print for your records**. Alternatively print and complete answers by hand.

Q.1	What is Crohn's disease (CD) and its aetiology?
A	
Q.2	Why is it vital that CD patients have access to a dietitian?
A	
Q.3	What are the benefits of an enteral liquid diet for CD sufferers?
A	
Q.4	What is the dietetic process for a liquid diet therapy regime?
A	
Q.5	What is LOFFLEX and how is it used to benefit CD patients?
A	
Q.6	What other treatments for CD have been trialled?
A	
Q.7	Describe the benefits of FODMAPS in treating functional symptoms.
A	
Q.8	What is the advice on reducing fibre to aid CD symptoms?
A	

Please type extra notes here . . .