CASE REPORTS

Elemental diet in the management of Crohn's disease during pregnancy

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Accepted for publication
4 October 1990

Abstract

Four patients with Crohn's disease were treated with an elemental diet during pregnancy. Two had active disease and two also had symptoms of small intestinal obstruction. All went into a clinical remission within a few days of starting treatment. Treatment periods varied from two to four weeks, and were followed by elemental diet as a supplement to normal food in two patients. At term, all delivered a healthy infant. These patients indicate that elemental diet is a safe form of treatment for Crohn's disease during pregnancy and may be considered as an alternative to conventional drug treatments which carry a theoretical risk of teratogenesis.

The outcome of pregnancy in Crohn's disease is similar to that in the general population, with an 85% overall chance of a normal child,¹ but there is a significant incidence of low birth weight infants. Disease activity at conception, coexistence of severe disease, or the necessity for surgery during pregnancy increase the risk of spontaneous abortion, stillbirth, and premature delivery.²⁻⁴

Although infrequent, exacerbations of Crohn's disease during pregnancy pose problems over drug treatment and the timing of surgical intervention. Treatment with sulphasalazine during pregnancy seems to be safe for the fetus but is relatively ineffective by itself in severe exacerbations of the disease.^{5,6} The use of other conventional medical treatments, namely, corticosteroids, metronidazole and azathioprine, has to be weighed against their theoretical risk of teratogenicity, although it is widely disputed whether corticosteroids are harmful to the developing human fetus.⁷⁻⁹ Nevertheless, it is generally felt that drugs should be used in pregnancy at the minimum dosage compatible with maternal health,¹⁰ which is unavoidably associated with inadequate initial drug doses in a proportion of patients.

There have been a few reports documenting the necessity of treating particularly severe relapses of Crohn's disease during pregnancy with total parenteral nutrition.^{11,12} Although successful, total parenteral nutrition is often associated with significant morbidity including sepsis, catheter thrombosis, etc. Enteral treatment with elemental diets seems to be a safe alternative to total parenteral nutrition.

Details of four pregnant women with Crohn's disease treated with elemental diet

Patient no	Site of disease	Length of history and previous treatment	Gestational age and symptoms at presentation	Details of dietary regimen	Crohn's disease activity score (Harvey Bradshaw) ¹³	Progress after treatment	Details of labour	Progress after delivery
1	20 cm non-strictured terminal ileum	4 years. Occasional sulfasalazine	32 weeks. Abdominal pain, vomiting, weight loss, cessation of fundal growth (Fig 1)	Nasogastric Vivonex × 2 wks. 2700 kcal 55 g protein equivalent	9 → 1 (Fig 1)	Routine diet + elemental supplements (900 kcal/day), well for remainder of pregnancy	Labour induced at term with assisted breech delivery. (BW = 3240 g)	Relapse at 6 mths with spontaneous remission
2	40 cm strictured ileum	3 years. Repeated pulse dose steroids	10 weeks. Abdominal pain, vomiting, tender mass	Nasogastric Vivonex × 2 wks. 3000 kcal 60 g protein equivalent	11 → 4	Normal diet, well for remainder of pregnancy	Labour induced for pre-eclampsia at term + 12 d. Normal vaginal delivery. (BW = 2660 g)	Recurrent subacute obstruction leading to ileal resection (Fig 2)
3	Pan small bowel disease	14 months. Elemental diet corticosteroids, mid-ileal resection for strictures	6 weeks. Nausea vomiting, abdominal pain, diarrhoea	Elemental 028 orally × 2 wks. 2180 kcal 60 g protein equivalent	13 → 3	Relapse at 12 wks, remission on elemental diet + continued elemental supplements (730 kcal/day) throughout pregnancy	Spontaneous labour at term + 1 d. Normal vaginal delivery. (BW = 3160 g)	Recurrent relapses
4	Right colon + 20 cm strictured ileum	5 years. Repeated pulse dose steroids	14 weeks. Vomiting, abdominal pain, diarrhoea, abdominal mass	Nasogastric elemental 028 + Caloreen × 2 wks. 2780 kcal 60 g protein equivalent	10 → 5	Night-time nasogastric supplements (730-1450 kcal/day) throughout pregnancy. Relapse at 32 wks treated as before	Assisted breech delivery at term. (BW = 2950 g)	Recurrent subacute obstruction leading to ileal resection

BW = birthweight. Vivonex (Norwich, Eaton), Elemental 028 (Scientific Hospital Supplies), Caloreen a glucose polymer (Roussel Laboratories Ltd). During the first six days of treatment the volume and strength of the feed was increased as tolerated. The aim was to meet the recommended dietary requirements of pregnancy.¹⁷

Figure 1: Maternal weight and fundal height during 21-40 weeks gestation (patient 1) showing weight loss and cessation of fundal growth from 28 to 32 weeks. Weight and fundal growth were restored on introduction of elemental diet (A) and maintained when elemental diet was given as a supplement to normal food (B).

Remission rates with elemental diet in uncomplicated Crohn's disease are reported at 85%, which compare favourably with steroids and total parenteral nutrition.^{13,14} Here we report the successful treatment of Crohn's disease with elemental diet in four patients during pregnancy.

Case histories

All cases of active Crohn's disease treated with an elemental diet at Northwick Park Hospital over a 10 year period were reviewed as previously described in detail.¹⁵ Among 112 patients treated there were four pregnant women who were sufficiently ill to require admission to hospital for their Crohn's disease and whose cases are described below. During the same time no other pregnant patients were admitted for treatment of

their Crohn's disease. Details of these four patients are given in the Table.

Discussion

The basic principles underlying the management of Crohn's disease, namely early medical treatment for exacerbations of the disease and surgical intervention for fixed mechanical obstruction, perforation, and abscess drainage, etc do not change during pregnancy. Nevertheless, there are a number of factors that deserve special consideration and are unique to the pregnant patient with active disease.

Many of the symptoms of early pregnancy especially those of nausea, anorexia, vomiting, and weight loss are often indistinguishable from the symptom complex of active Crohn's disease.

Figure 2: A double contrast barium x ray on the resected specimen from patient 2. This shows severe stricturing of the terminal ileum.

The patient's natural fear of all drugs during pregnancy often delays the reporting of symptoms. When faced with the symptomatic and pregnant patient the physician is often unsure how active the disease is but is unable to use the usual radiological or radioisotopic means of assessment. This uncertainty of disease activity and anxiety that surgery or drug treatment can be hazardous may further delay treatment.

Elemental diet is a safe and effective treatment both in active Crohn's disease and in the short term management of complications which may eventually require surgery. Its mode of action is unknown but it is thought to reduce a variety of gut luminal aggressive factors¹⁸ (bile acids, pancreatic juices, food antigens, and bacterial degradation products) thereby decreasing mucosal exposure to neutrophil chemoattractants, leading to reduction in inflammation and improvement in wellbeing. Although elemental diet improves nutritional status considerably, this does not seem to underlie its beneficial effect in Crohn's disease.¹⁹ A recent comparison between corticosteroids and elemental diet and their effects on protein metabolism and immune function in Crohn's disease showed that while both improved disease activity and increased protein turnover, corticosteroids did so at the expense of body protein stores,²⁰ which is clearly undesirable in patients who are malnourished or pregnant.

This paper describes four patients with Crohn's disease who were successfully managed with elemental diet in pregnancy. All patients had active disease and two had associated subacute small intestinal obstruction caused by stricturing ileal disease.

Elemental diet was a particularly appropriate form of treatment for these women, all of whom, despite reassurance, were concerned about the possible side effects of drug treatment on the fetus. Some 80% of our patients on elemental diet take the drink orally, but three of the four patients reported here needed fine bore nasogastric feeding which reflected our concern to optimise nutritional support during their first week of treatment. The treatment seems particularly suitable in patients with extensive small bowel disease with frequent relapses and compromised nutritional state or in those with tight

strictures and recurrent subacute obstruction, when it may be more appropriate to defer surgery until after delivery.

In summary, elemental diet seems to be a safe and effective means of managing active Crohn's disease during pregnancy. It is effective in inducing remission from active mucosal disease and in delaying surgical intervention until after delivery. Strict supervision by physicians, obstetricians, and dieticians experienced in this form of treatment is, however, essential.

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