Constipation in Childhood Coeliac Disease

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Egan-Mitchell, B., and McNicholl, B. (1972). Archives of Disease in Childhood, 47, 238. Constipation in childhood coeliac disease. Twelve of 112 infants and children with coeliac disease were constipated at some time before diagnosis. Of the 12 children 9 had faecal impaction when first seen, and in 3 of them coeliac disease was not suspected at the first investigation; 3 children had a history of constipation alternating with mild diarrhoea; 4 had no diarrhoea at any time, and steatorrhoea was found only in 3 of 9 cases. Over 30% of children with active coeliac disease did not have steatorrhoea at the time of diagnosis when on diets containing usual amounts of fat. Constipation was probably due to anorexia, normal or increased ileal function, and decreased intestinal motility.

Material and Methods

Constipation in children with active coeliac disease has been mentioned in reports described from this hospital by Chen et al. (1964) and McNicholl and Egan (1968), and also by Anderson (1966) and Dyer and Dawson (1968), in children and adults, respectively. In two recent large series of coeliac disease, totalling 152 cases (Hamilton, Lynch, and Reilly, 1969; Young and Pringle, 1971), constipation is not mentioned, though cases without diarrhoea are described. We have reviewed our case material to assess the incidence of this not generally recognized feature of coeliac disease. By constipation we mean the passage of stools of harder consistency than normal, or the clinical observation of impaction of abnormal amounts of hard (usually pale) faeces in colon and rectum.

One hundred and twelve children were thought to have coeliac disease according to criteria described previously (McNicholl and Egan, 1968) but principally because of undernutrition and retarded growth accompanied by Grade 2/3 or Grade 3 jejunal mucosal damage according to our classification; (normal mucosa is graded 0, mild non-specific change 1; grades 2 and 3 correspond to moderate and severe villous atrophy). Growth retardation was assessed on the graphs of Tanner and Whitehouse (1959) and subsequently confirmed by catch-up growth following treatment with gluten-free diets. Faeces were collected between carmine markers given at 5-day intervals, their fatty acid content being measured by the method of van de Kamer, ten Bokkel Huinkink, and Weyers (1949). Fat intake was not measured but diets were designed to contain from 35 g fat daily under 1 year to over 65 g daily in the older children; the diet, containing adequate amounts of gluten, was fed for 7 days or longer before faecal collections were started.

Results

Twelve children were constipated at some stage before diagnosis, details being given in Table I. Of the 9 children presented with constipation and faecal impaction; of these, 5 had had intermittent diarrhoea and constipation, but 4 (Cases 2, 4, 5, and 11) never had diarrhoea, and Cases 2, 4, and 5, who presented at around 1 year of age with anorexia, vomiting, failure to thrive, and faecal impaction are described elsewhere (McNicholl and Egan-Mitchell, 1972). Case 3 was admitted to a surgical ward with suspected subacute intestinal obstruction because of vomiting and faecal impaction. 3 children, Cases 7, 9, and 11, had been investigated by us between 4 months and 2 years previously for constipation, growth retardation, and faecal impaction, one also having mild iron-deficiency anaemia, but were not then suspected of having coeliac disease; we consider it almost certain that these 3 children had active coeliac disease when first seen. Case 12 had been referred from another hospital 9 months previously with a provisional diagnosis of Hirschsprung's disease because of growth retardation, abdominal distension, faecal impaction, anaemia, and a large colon on x-ray; Hirschsprung's disease was discounted, but coeliac disease was not diagnosed. At subsequent investigation, grade 3 mucosal changes were found, as also in Cases 7, 9, and 11. The 3 children who did not have faecal...
impaction when investigated had histories of constipation alternating with mild diarrhoea, and all these had been given laxatives frequently for their constipation. Though a description of the colour of the faeces was not recorded in every case, descriptions by parents and hospital staff were almost always of a pale or 'putty-like' colour.

Accepting the criterion of Anderson (1966) for steatorrhoea, as a daily faecal fat excretion of 4:5 g or more, only 3 of the 12 constipated children, Cases 10, 11, and 12 had steatorrhoea, and Case 7 with 4 g daily would be regarded with suspicion. The 3 children with mild steatorrhoea were older than the remainder and their disease was of longer standing. The faecal fats were not estimated until the time of diagnosis in Cases 7, 11, and 12, and were not estimated at all in Cases 1, 6, and 9; nevertheless, we feel confident of the diagnosis in the latter 3 on the basis of the mucosal changes and the response to treatment. A full faecal analysis was done in one case only (Table II).

### TABLE I
Details of 12 Cases of Coeliac Disease with Constipation

| Case No. | Age (mth) | Sex | Constipation | 5-day Faeces | Biopsy | Length or Height Centile |
|----------|-----------|-----|--------------|-------------|--------|-------------------------|
|          |           |     | Impacted     | History     | Wt (g/dy) | Fat (g/dy) | Grade | Initial | Latest |
| 1        | 6         | F   | +            | _           | —       | —           | 3     | 25      | 70     |
| 2        | 11        | F   | +            | _           | 36      | 0-6         | 3     | 20      | 65     |
| 3        | 13        | F   | +            | _           | 40      | 2-8         | 3     | <3      | 37     |
| 4        | 13        | M   | +            | _           | 45      | 1-7         | 3     | 40      | 97     |
| 5        | 13        | M   | +            | _           | 25      | 2-0         | 2/3   | 40      | 50     |
| 6        | 14        | M   | +            | _           | —       | —           | 3     | 5       | 55     |
| 7        | 15        | M   | +            | _           | 59      | 4-0         | 3     | 30      | 50     |
| 8        | 18        | M   | +            | _           | 27      | 1-2         | 3     | 15      | 30     |
| 9        | 30        | F   | +            | _           | —       | —           | 3     | 10      | 45     |
| 10       | 48        | M   | +            | _           | 102     | 5-6         | 3     | 10      | 40     |
| 11       | 84        | F   | +            | _           | 114     | 7-5         | 3     | 10      | 50     |
| 12       | 102       | F   | +            | _           | 90      | 4-5         | 2/3   | <3      | 20     |

Discussion

Though many clinicians are familiar with the occurrence of constipation in coeliac disease, its occurrence is regarded with scepticism in some centres. Two recent series of 42 and 110 cases, Hamilton et al. (1969) and Young and Pringle (1971), while mentioning children without diarrhoea, do not describe constipation or faecal impaction. Apart from occasional constipation, the occurrence of constipation with marked faecal impaction may understandably deflect some clinicians from considering the possibility of coeliac disease. The factors causing constipation in active coeliac disease are probably anorexia, compensatory ileal hypertrophy, and reduced intestinal motility. Frazer (1960) stressed the frequency of anorexia in coeliac disease, and Gent and Creamer (1968) instanced the low fat intake resulting from anorexia as one cause of low or normal fat excretion. MacDonald et al. (1964) and Stewart et al. (1967) showed that the ileum may be relatively or almost completely unaffected in the presence of severe jejunal damage; Dowling and Booth (1967) showed the ability of the rat ileum to hypertrophy and take over jejunal function following jejunal resection. Cameron et al. (1962) were the first to record normal faecal fat excretion in coeliac disease (3 children) and we reported that 14 of 43 children with coeliac disease excreted less than 3-5 g fat daily (McNicholl and Egan, 1968); Stewart et al. (1967) and Gent and Creamer (1968) found normal fat excretion in 19% and 25%, respectively, of adults with coeliac disease. Our continuing experience has been that over 30% of children with active coeliac disease do not have steatorrhoea, at least during a single 5-day period ingesting moderate amounts of fat, as in the diets described above.

It seems reasonable to suggest that the clinical picture in coeliac disease may be influenced by such factors as anorexia and the extent of the mucosal damage. Normal or constipated stools with normal fat excretion may be more likely when anorexia is prominent and the disease mainly affects the upper intestine, loose fatty stools being more likely when
the fat intake is nearer normal and the disease more extensive.

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REFERENCES

Anderson, C. M. (1966). Intestinal malabsorption in childhood. Archives of Disease in Childhood, 41, 571.
Cameron, A. H., Astley, R., Hallowell, M., Rawson, A. B., Miller, C. G., French, J. M., and Hubble, D. V. (1962). Duodenaljejunal biopsy in the investigation of children with coeliac disease. Quarterly Journal of Medicine, 31, 125.
Chen, A. E., Collins, J., DougDeen, R. M., Duignan, N., Dunleavy, D., and McNicholl, B. (1964). Coeliac disease. Journal of the Irish Medical Association, 55, 128.
Dowling, R. H., and Booth, C. C. (1967). Structural and functional changes following small intestinal resection in the rat. Clinical Science, 32, 139.
Dyer, N. H., and Dawson, A. M. (1968). Malabsorption. British Medical Journal, 2, 161 and 225.
Frazier, A. C. (1960). The present state of knowledge of the celiac syndrome. Journal of Pediatrics, 57, 262.
Gent, A. E., and Creamer, B. (1968). Faecal fats, appetite, and weight loss in the coeliac syndrome. Lancet, 1, 1063.

Hamilton, J. R., Lynch, M. J., and Reilly, B. J. (1969). Active coeliac disease in childhood; clinical and laboratory findings of 42 cases. Quarterly Journal of Medicine, 38, 135.
van de Kamer, J. H., ten Bokkel Huinink, H., and Weyers, H. A. (1949). Rapid method for the determination of fat in feces. Journal of Biological Chemistry, 177, 347.
MacDonald, W. C., Brandborg, L. L., Flick, A. L., Trier, J. S., and Rubin, C. E. (1964). Studies in coeliac sprue, IV: the response of the whole length of the small bowel to a gluten-free diet. Gastroenterology, 47, 573.
McNicholl, B., and Egan, B. (1968). Jejunal biopsy in celiac disease. Clinical Pediatrics, 7, 544.
McNicholl, B., and Egan-Mitchell, B. (1972). Infantile celiac disease without diarrhea. Pediatrics, 49, 85.
Stewart, J. S., Pollock, D. J., Hoffbrand, A. V., Mollin, D. L., and Booth, C. C. (1967). A study of proximal and distal intestinal structure and absorptive function in idiopathic steatorrhoea. Quarterly Journal of Medicine, 36, 425.
Tanner, J. M., and Whitehouse, R. H. (1959). Standards for height and weight of British children from birth to maturity. Lancet, 2, 1086.
Young, W. F., and Pringle, E. M. (1971). 110 children with coeliac disease, 1950-1969. Archives of Disease in Childhood, 46, 421.

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