**Pernicious anaemia** → **Achlorhydria** → **Hypergastrinaemia** → **Stimulation of ECL cells** → **Multiple gastric endocrine ‘tumours’** → **Hormone secretion** → **Antrectomy** → **Fall in serum gastrin level** → **Regression of ‘tumours’**

Fig. 4. Schematic diagram of the probable course of the patient’s disease.

surgery should be advised since the natural history of these tumours is unknown and malignant transformation may occur. Also, the experience with our patient suggests that regression of these tumours can occur if the gastrin stimulus is removed. If it is felt that the source of the hypergastrinaemia is from the antrum, then antrectomy should be advised. If the hypergastrinaemia does not disappear and if the tumours do not regress on follow-up endoscopy, then we feel that total gastrectomy should be considered.

**REFERENCES**


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**Yersinia enterocolitica** and Crohn’s disease

A case report

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**Summary**

A case of simultaneous infection with *Yersinia enterocolitica* and Crohn’s disease is described. Only 1 similar case has been reported. The similarities between the two conditions and the differentiating features are described.


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*Yersinia enterocolitica* infection in humans, first described in 1939, has become much more common in recent years. Whether this is due to increased awareness and skill in diagnosis or to actual spread of the organism is not known. The role of infective agents in the causation of inflammatory bowel disease is still speculative and it is commonly thought that *Y. enterocolitica* infection does not progress to Crohn’s disease. Patients with Crohn’s disease are in fact reported to be negative for *Yersinia* antibodies.

We present a case in which there is good evidence that *Y. enterocolitica* infection and acute Crohn’s disease occurred simultaneously.

**Case report**

The patient, a 23-year-old white woman with a history of irritable bowel syndrome, had for 3 weeks had watery diarrhoea, pain on defaecation, occasional traces of blood in the stool, postprandial abdominal cramps, loss of appetite, nausea and vomiting. Painful lumps on the legs and swelling of the large joints were noted. On examination she was ill-looking and pyrexial. The abdomen was diffusely tender. Bowel sounds were increased. Rectal examination revealed a painful fissure with a skin tag. She had erythema
nodosum of the lower and upper limbs, and the knee and ankle joints were swollen, red and tender. The conjunctivae were injected.

Initial investigations revealed normochromic, normocytic anaemia; the haemoglobin concentration was 11.1 g/dl, the white cell count 12.2 x 10^9/l with normal distribution, and the erythrocyte sedimentation rate 86 mm/1st h (Westergren). No pathogens were isolated from the stools, blood or urine. \textit{Y. enterocolitica} agglutinins were present to significant titres of 0 1:640 HI: 10 and 4 days later 0 1:320 HI: 10. These titres were of the antigen \textit{Y. enterocolitica} serotype 0:3, biotype 4, phage type 9A. HLA typing was A2, B12 (44) B5 (51) CW5.

The presenting features were considered to be those of acute Crohn's disease, and treatment with intravenous hydrocortisone 100 mg 6-hourly was started. The pyrexia and extra-gastro-intestinal symptoms and signs responded dramatically within 2 days. However, the findings on small-bowel barium enema examination and a large-bowel double-contrast study appeared to be normal (Fig. 1). The antibody titres became available 4 days later and the diagnosis was changed to \textit{Y. enterocolitica} infection. Tetracycline 500 mg 6-hourly was then commenced and the steroids were tailed off. A lateral sphincterotomy was performed and after 2 weeks the patient was discharged relatively asymptomatic, although minor cramps persisted. \textit{Y. enterocolitica} agglutinins were negative, the white cell count was 5 x 10^9/l and the ESR was 50 mm/1st h. Tetracycline was continued for 3 weeks.

\begin{figure}[h]
\centering
\includegraphics[width=\textwidth]{fig1.png}
\caption{Appearance on large-bowel barium enema examination considered at the time to be normal.}
\end{figure}

Three weeks after discontinuation of the antibiotic and 7 weeks after her first admission, the patient was readmitted with similar abdominal symptoms, erythema nodosum and polyarthritis. The ESR was 92 mm/1st h, but \textit{Y. enterocolitica} agglutinins and cultures were negative. Small-bowel follow-through examination was again negative, but large-bowel barium enema examination showed multiple discrete ulcers throughout the colon, sparing the rectum (Fig. 2). Colonoscopy 2 weeks after the small-bowel study showed cobblestoning and superficial ulceration on the terminal ileum just proximal to the ileocaecal valve and deep and healing ulcers throughout the colon with skip areas. Biopsies revealed nonspecific chronic inflammatory cell infiltrate. Occasional crypt abscesses and extension into the submucosa was noted. No granulomas were seen.

The response to prednisone 60 mg/d was good. The steroids were gradually reduced over a 4-month period to a maintenance dose of 10 mg/d; the patient also received sulphasalazine 0.5 g 6-hourly. At this stage she was still having occasional cramps and loose stools, but the ESR was 15 mm/1st h.

She has been followed up for 3 years, during which time the disease has run a chronic course with frequent flare-ups of symptoms requiring intermittent courses of steroids.

\begin{figure}[h]
\centering
\includegraphics[width=\textwidth]{fig2.png}
\caption{Large-bowel barium enema examination reveals multiple punched-out ulcers throughout the colon, separated by areas of normal mucosa, and asymmetry of the transverse colon.}
\end{figure}

\section*{Discussion}

\textit{Y. enterocolitica} infection can produce similar clinical and radiological features to those of acute Crohn's disease. It is important to differentiate between the two because the treatment and prognosis differ considerably.

The clinical presentation of \textit{Y. enterocolitica} infection is variable; it often causes mild illness that goes unrecognised. Acute enteritis with fever and diarrhoea is the most frequent clinical syndrome, particularly in children, whereas in adolescents and adults acute terminal ileitis or mesenteric adenitis seems to occur more frequently. Abdominal pain, fever, diarrhoea, malaise, nausea and vomiting are the predomi-
nant features. Polyarthritises and erythema nodosum may also occur. Symptoms usually last 2-4 weeks, but may persist for months, causing confusion with other intestinal diseases. Bowel infection with \textit{Y. enterocolitica} may be complicated by septicaemia. The septicaemic state, which has a poor prognosis, is usually associated with chronic debilitating illnesses, especially those associated with visceral iron overload.
The radiological changes are superficial and occur most commonly in the terminal ileum, with abnormalities of mucosal pattern and ulceration predominating. If marked, they may resemble the 'cobblestone' pattern of Crohn's disease, although stenosis, fistulas and skip lesions are not a feature. Aphthous ulcers may be seen in the colon and rectum, and biopsy reveals micro-ulceration with no granulomas or giant cells. The appearance returns to normal on antibiotic therapy, but radiological changes may persist longer than clinical symptoms.

Our patient was initially diagnosed as having Crohn's disease, but the diagnosis was changed once the positive Y. enterocolitica agglutination results became available. She subsequently developed full-blown ileocolitis confirmed on colonoscopy and barium enema examination, with no evidence of Y. enterocolitica infection at that stage. Histological examination revealed submucosal involvement, a feature more in keeping with Crohn's disease. In retrospect, the initial barium enema examination showed transverse stripes in the ascending colon suggestive of early Crohn's disease (Fig. 3), thus raising the possibility of simultaneous disease.

Simultaneous Y. enterocolitica infection and Crohn's disease has only been described in 1 other case. One case of chronic colitis due to Yersinia infection in an adult is described, but not in detail. One can only speculate as to whether infection with Y. enterocolitica in our patient occurred coincidentally or triggered off an acute attack of Crohn's disease.

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Fig. 3. Close-up view of the ascending colon from Fig. 1. Transverse stripes suggestive of early Crohn's disease are noted.