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Epidemiological study of asymptomatic inflammatory bowel disease: the identification of cases during a screening programme for colorectal cancer

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SUMMARY **An asymptomatic population of 37 000 people in the Nottingham area were offered faecal occult blood tests in a screening study for colorectal cancer. Seventeen thousand nine hundred and thirty people completed the tests and 481 individuals with positive tests underwent full investigation of the colon. Eight people with previously undiagnosed inflammatory bowel disease were identified. In five cases there was total ulcerative colitis; in one a proctitis and in two Crohn's disease. Two further patients with ulcerative colitis were identified; they had been lost to follow up for 25 and 45 years respectively. The combined prevalence of inflammatory bowel disease was 56/10^5 and it is likely that current studies of the epidemiology of these conditions may underestimate the true prevalence by between 27% and 38%.**

All epidemiological studies are bedevilled by the problem of undetected cases and this is especially so in inflammatory bowel disease, where all previous studies have been based on patients diagnosed in hospital. In Nottingham the existence of a screening programme for colorectal cancer provided an opportunity for apparently asymptomatic cases of inflammatory bowel disease to be identified and their prevalence in the population to be assessed.

Method

PATIENTS

Between 1983 and 1987 37 000 patients aged between 50 and 75 years in 39 general practices within the Nottingham area were offered faecal occult blood testing (FOBT) as screening for colorectal cancer. General practitioners were asked to exclude patients with known bowel disease including ulcerative colitis, and Crohn's disease. Screening was performed with either a chemical guaiac test (Haemoccult) or an immunological test for human haemoglobin (Feca-EIA) over three or six days. Individuals with a positive test were investigated by either colonoscopy or flexible sigmoidoscopy and double contrast barium enema.

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Results

Of the 37 000 patients offered screening, 17 930 accepted and 481 had a positive FOB test. Investigation of these patients revealed 15 in whom gastrointestinal bleeding could be attributed to inflammatory bowel disease. Five patients had ulcerative proctocolitis which had been diagnosed within the past 10 years and were still under active hospital follow up and as such should have been excluded from the study. In two other patients (Table 1) the diagnosis of ulcerative colitis had been made 25 and 45 years earlier. Neither patient had been followed up, although they had evidence of colitis on endoscopic examination of the colon.

Six patients, four men and two women, were found to have ulcerative colitis (Table 2) and in five of the cases histological abnormalities were found throughout the colon. Two further patients (Table 2) had Crohn's disease. Two patients admitted to loose bowel motions, the remainder were completely asymptomatic. None of the patients had sought medical advice because of abdominal pain, diarrhoea or rectal bleeding.

Table 1 *Patients with inflammatory bowel disease lost to medical follow up*

Patient	Age	Sex	Symptoms	Diagnosis	Investigations	Extent of colitis	Histology
JS	56	F	None	Ulcerative colitis: 25 years ago had one episode	Double contrast barium enema and colonoscopy	Total	Severe active colitis with acute or chronic changes
HS	75	M	None	Ulcerative colitis: 45 years ago had one episode	Double contrast barium enema and colonoscopy	Total	Chronic non specific changes

The prevalence of these two cases who were lost to follow up for more than 20 years was 11·2/10^5 (95% confidence interval 0–44·6/10^5).

Table 2 *Undiagnosed inflammatory bowel disease identified during a survey of colorectal bleeding*

Patient	Age	Sex	Symptoms	Diagnosis	Investigations	Extent of colitis	Histology
1 JP	70	M	None	Ulcerative colitis	Colonoscopy	Total	Severe active colitis
2 AA	56	M	Occasional diarrhoea for 2 years	Ulcerative colitis	Colonoscopy	Total	Moderate active colitis
3 BR	53	M	None	Ulcerative colitis	Colonoscopy	Total	Moderately severe acute on chronic colitis
4 CS	65	M	None	Ulcerative colitis	Colonoscopy	Endoscopy changes limited to rectum histological abnormalities throughout colon	Mild active colitis, most severe in rectum
5 HM	75	F	None	Ulcerative colitis	Colonoscopy	Rectum and sigmoid colon	Mild active colitis
6 IF	67	F	Some loose motions	Ulcerative colitis	Colonoscopy	Rectum	Severe acute on chronic proctitis
7 DF	61	F	None	Crohn's disease	Colonoscopy, barium enema and laparotomy	Ileocaecal	Crohn's disease
8 JP	60	F	None	Crohn's disease	Colonoscopy, barium enema, gastroscopy and laparotomy	Two localised ileal strictures	Crohn's disease

Eight patients with inflammatory bowel disease were identified during a screening programme for colorectal cancer.

The prevalence of previously undiagnosed ulcerative colitis in this population aged between 50 and 75 years was at least 33·5/10^5 (Table 3). It is likely that this is an underestimate as it is improbable that all cases were detected by the FOB test. If the two patients lost to follow up were included as well as the asymptomatic cases the prevalence rose to 44·6/10^5 (95% confidence interval 22·3–89·2). The prevalence of asymptomatic Crohn's disease was 11·2/10^5, a third of that reported for symptomatic Crohn's disease from other centres.

Table 3 *Prevalence of inflammatory bowel disease in an asymptomatic population aged 50–74*

	Cases (n)	Population	Prevalence (cases/10^5 population and 95% confidence interval)
Ulcerative colitis	6	17922	33·5 (11·2–78·1)
Crohn's disease	2	17922	11·2 (0–44·6)

Eight previously undiagnosed patients with inflammatory bowel disease were identified during a screening programme for colorectal cancer.

Discussion

The true prevalence of any disease state is difficult to determine. This is the first study to identify previously undiagnosed asymptomatic cases of inflammatory bowel disease in the community. This has only been possible because of the existence of a large population screening study for the detection of colorectal neoplasia using FOBT. Most studies suggest that the combined prevalence of symptomatic ulcerative colitis and Crohn's disease lies between 90/10^5 and 150/10^5. In 1980 Devlin *et al*[1] in a study from North Tees, England reported the com-

Table 4 *Reported prevalence of symptomatic inflammatory bowel disease*

	Prevalence (cases/10^5 population)	
Study centre	Crohn's disease	Ulcerative colitis
Oxford[1]	9	80
North Tees[1]	35	99
Cardiff[4]	56	
High Wycombe[5]		70
Copenhagen County[6]	32	117

The prevalence of symptomatic inflammatory bowel disease as reported in Britain and Scandinavia.

bined prevalence was 134/10^5. Ulcerative colitis in general has a prevalence about twice that of Crohn's disease[2] and in this study of asymptomatic patients the rate was similar at about three to one. The overall prevalence of symptomatic ulcerative colitis in Britain has been reported as between 70 and 99/10^5 (Table 4) compared with 33·5/10^5 asymptomatic cases reported in this study. The prevalence of Crohn's disease is between 35 and 56/10^5 (Table 4) and data from Cardiff suggest that the prevalence in those aged 50 to 75 years is about 48/10^5. The prevalence of asymptomatic Crohn's disease in this study was 11·2/10^5. It seems likely that studies which are based on symptomatic patients diagnosed in hospital may underestimate the true prevalence of inflammatory bowel disease by between 27% and 38%. Such findings are of considerable importance to our understanding of the epidemiology of these diseases.

It is unlikely that the increase in incidence that has recently been reported in many countries[2 8] is the result of increased detection of apparently asymptomatic patients. It is interesting that even on direct questioning most of the patients identified in this study denied symptoms of inflammatory bowel disease, despite the extent of their disease. The only two patients who admitted to any gastrointestinal symptoms considered them minimal and of no consequence.

In seven of the eight patients with ulcerative colitis there was total involvement of the colon. This identification of a high proportion of patients with total colitis and only one case of proctitis may be a reflection of the technique used to detect blood loss rather than a true reflection of the pattern of asymptomatic disease in the community. The modified guaiac test relies on the presence of haemolysed blood in faeces to produce a positive result. Previous studies using this technique have suggested that its ability to detect bleeding rectal cancers is less than colonic cancers. Blood shed into the rectum may be insufficiently haemolysed, less uniformly mixed with faeces and so produce a false negative result.[9] This could explain our failure to identify more than one patient with proctitis.

This study highlights concern about the accuracy and completeness of case detection of inflammatory bowel disease. The existence of unrecognised cases of inflammatory bowel disease especially ulcerative colitis is of particular concern in view of the premalignant nature of this disease. It suggests that further study should be directed towards the early identification of such patients.

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