Progress report

Some aspects of the epidemiology of ulcerative colitis

During the last 20 years attention has focused on the aetiology of Crohn's disease. Numerous epidemiological studies have been conducted and it is now estimated that 20 000 people may be affected by the condition in Britain. Ulcerative colitis is a much commoner disease, affecting as many as 50–60 000 people and interest in its aetiology has recently increased. The disease often affects young people after puberty and medical treatment is empirical. Surgical resection of the colon may be regarded as curative and there are at least 12 000 people with an ileostomy in the United Kingdom, many of whom have difficulty in coping with their stoma.¹ This review examines epidemiological data which may give some indication of possible causal factors.

Studies of incidence and prevalence

Comparison of epidemiological studies is often complicated by the exclusion of patients with proctitis (Table 1). Many patients with proctitis have a mild illness and never attend hospital. As a consequence the diagnosis may not be confirmed and such cases have seldom been considered in epidemiological studies. Before the recognition of campylobacter colitis in the mid 1970s³⁰ it is likely that such cases were occasionally included in some studies. In recent investigations only patients with recurrent attacks of colitis or proctitis have been included.

In most communities of Anglo Saxon origin in north western Europe, North America, and New Zealand the incidence of ulcerative colitis ranges from five to eight cases/100 000/year (Table 1), but in some areas of northern England³ and Scotland⁴ the disease is commoner with figures as high as 11 and 15/10⁵/year. A study from Norway¹² has reported a similar incidence in Bergen. Despite the identification of new bacterial causes of diarrhoea the incidence of ulcerative colitis has either remained constant or even increased gradually over the decades and this is in contrast to Crohn's disease (Table 1).³¹ In Scotland,⁵ Norway,¹¹ Sweden¹⁴ and Iceland¹⁶ studies conducted over periods of up to 30 years have shown a steady rise in incidence. This increased diagnosis of ulcerative colitis in some areas may be due to identification of milder cases rather than a real phenomenon, but further studies of incidence and mortality may resolve the problem.

Ulcerative colitis is uncommon in eastern European countries such as Czechoslovakia¹⁹ and Bulgaria²⁰ and in Southern Europe.²¹ This pattern is

Table 1 *Epidemiological studies of ulcerative colitis and proctitis*

		<i>Incidence</i> (cases/10 ⁵ /year)	<i>Prevalence</i> (cases/10 ⁵ pop.)
<i>Great Britain</i>			
Oxford ²	1951-60	6.5	79.9
North Tees ³	1971-77	15.1	99
Grampian Region ⁴	1967-76	11.3	
Lothian Region ⁵	1968-71	2.6	
	1976-79	4.0	
Cardiff Region ⁶	1968-77	7.2	
<i>Denmark</i>			
Denmark ⁷	1940-61	1.6 (excludes proctitis)	
Copenhagen County ⁸	1961-67	7.3	44.1
Copenhagen County ⁹	1962-78	8.1	117
<i>Norway</i>			
Norway ¹⁰	1946-55	1.2	
Norway ¹¹	1956-60	2.3	
	1964-69	3.3	
Bergen ¹²	1976-80	10	
<i>Sweden</i>			
Malmö ¹³	1958-70	6.4	
Stockholm County ¹⁴	1955	0.9	
	1974	5.7	
<i>Finland</i>			
Finland ¹⁵	1967	4.8	
<i>Iceland</i>			
Iceland ¹⁶	1950-59	2.8	8.4
	1960-69	4.7	
	1970-79	7.6	122.2
<i>Germany</i>			
Marburg/Lahn ¹⁷	1962-75	5.1	48.8
Halle-Wittenberg ¹⁸	1980		23.6 (men)
			26.1 (women)
<i>Czechoslovakia</i>			
North Bohemia ¹⁹	1978	1.3	23.9
<i>Bulgaria</i>			
Bulgaria ²⁰	1981		6
<i>Italy</i>			
Bologna ²¹	1972-73	1.9	
<i>United States of America</i>			
Bessemer Alabama ²²	1952-58	3.1	22
Baltimore ²³	1960-63		
	White men	3.9	
	White women	5.2	
Fifteen Areas Study ²⁴	1973		
	White men	3.7	
	White women	3.4	
Rochester, Minnesota ²⁵	1935-64	7.2	55.3
<i>South Africa</i>			
Cape Town ²⁶	1970-79		
	Whites	2.4	
	Coloureds	1.6	
	Jews	10.4	
<i>Israel</i>			
Tel-Aviv-Jafo ²⁷	1961-70	3.7	37.4
<i>New Zealand</i>			
New Zealand ²⁸	1962	5.5	
Auckland ²⁹	1969-78		
	Caucasians	5.4	
	Polynesians	0.2	

Published reports of epidemiological studies of ulcerative colitis and proctitis throughout the world.

similar to that described for Crohn's disease and international comparisons^{32 33} of mortality rates have shown that where Crohn's disease is common, so is ulcerative colitis. Particular attention in the future will focus on such countries as Spain and Portugal; Central and South America are of interest for similar reasons.

Urban rural differences in the distribution of ulcerative colitis

In 1963 Acheson³⁴ reviewed over 500 American veterans with ulcerative colitis and noted a significant deficiency of those with a farming background. In New Zealand²⁸ the incidence of colitis in towns was significantly greater than country areas. Similar findings have been reported from Baltimore,³⁵ Marburg,¹⁷ Bologna,²¹ the Grampian region,⁴ and Finland,¹⁵ but not Oxford.² The increased urban prevalence of ulcerative colitis is not because of better diagnostic facilities, but its significance is uncertain. In today's society there is a much greater movement between urban and rural communities and it has become difficult to clearly define rural areas.

Immigrant studies

Das and Montgomery³⁶ reported 11 Pakistani and Indian patients with ulcerative colitis who had lived in England for up to 18 years but had largely retained their traditional high fibre diet. Several studies of bowel disease in immigrants are currently underway and preliminary results from Bradford³⁷ suggest that the prevalence of ulcerative colitis in Asian immigrants (59/10⁵) is similar to that seen in other British studies.

Ulcerative colitis has been reported throughout the world from as far apart as India³⁸ and the West Indies.³⁹ It is possible that it is as common in these countries as in western Europe, but the true prevalence is masked by other infectious causes of diarrhoea.

Ulcerative colitis in Jews

Ulcerative colitis is three to five times commoner in Jews compared with other citizens living in western communities (Table 2). In Israel²⁷ the prevalence in immigrants from the West is low at 37/10⁵. The disease is, however, significantly more common in this group than among those born in Asia (18.9/10⁵) or in Israel (28.5/10⁵).^{27 43} The reason for this apparent difference in susceptibility is unknown; but studies in second generation Israelis may provide some clues to aetiology.

Familial prevalence

There have been a number of reports of families in which several members have inflammatory bowel disease and it seems likely that there is a genetic predisposition to these conditions but the magnitude of the risk is uncertain. Binder *et al*⁴⁴ reviewed 152 patients with ulcerative colitis compared with matched controls of the same social class. In eight families a relative was affected compared with only one in the control group. These findings have been confirmed in Stockholm⁴⁵ and suggest that family

Table 2 *Ulcerative colitis in Jews*

	<i>Incidence (cases/10⁵/year)</i>	<i>Prevalence (cases/10⁵ pop.)</i>	<i>Ratios</i>
<i>USA</i>			
Baltimore ²³			
Men	9.3		The ratio is 3 times greater in Jewish men and 4 times greater in women
Women	16.9		
Veterans			
Two hospitals study ⁴⁰			Three times more Jews affected
Army study ⁴¹			Four fold prevalence in Jews
College Students			
Stanford University ⁴²		1000	Five times the prevalence in Gentiles
<i>Britain</i>			
Oxford ²			Five times more than expected
<i>Israel</i>			
Jerusalem ⁴³			Occidental:Oriental Ratio 1.5:1
Tel-Aviv-Jaffo ²⁷		37 19 (Oriental)	2:1

Studies which report the prevalence of ulcerative colitis in Jews and Gentiles.

members are at an increased risk of developing inflammatory bowel disease compared with other members of the community. Twin studies would be useful, but to date there have only been seven case reports.⁴⁶

The relatives of patients with Crohn's disease appear to be at eight to 10 times the risk of developing ulcerative colitis compared with other people. In a community based study in Cardiff⁴⁷ of 867 first degree relatives of patients with Crohn's disease seven had ulcerative colitis (prevalence = 807/10⁵). Similar results have been obtained in Leiden⁴⁸ where the prevalence of ulcerative colitis among the parents and siblings of 379 patients with Crohn's disease was 1194/10⁵.

The relatives of patients with ulcerative colitis and with Crohn's disease are both at an eight-fold risk of developing ulcerative colitis.

Crohn's disease and ulcerative colitis

The distinction between these two conditions may be difficult, but in recent studies ulcerative colitis has been two and three times as common as Crohn's disease (Table 3). This relationship can be important in surveys where a population base is uncertain or even unknown and has been useful in studies of occupational or religious groups such as nurses⁴⁹ and Mormons.⁵⁰ It may be of particular value in countries where the detection of cases is impaired by poor central documentation.

Ulcerative colitis remains as much an enigma as Crohn's disease. There is some evidence that it is immunologically mediated and that some people are genetically susceptible. The roles of cigarette smoking⁵¹⁻⁵⁵ early weaning^{56 57} and dietary factors⁵⁸⁻⁶⁰ remain unclear. It is over 100 years since Sir Samuel Wilkes⁶¹ first described the symptoms and pathology of this condition; perhaps during the next century we will discover its cause.

Table 3 *The ratio of ulcerative colitis to Crohn's disease at various centres*

	Ratio
<i>Great Britain</i>	
1 Oxford	8.0
2 North Tees	2.8
3 Grampian Region	2.3
4 Cardiff Region	1.5
<i>Scandinavia</i>	
1 Copenhagen	3.0
2 Malmo	1.6
3 Stockholm County	1.6
4 Bergen	2.9
<i>Germany</i>	
1 Marburg	1.7
<i>Italy</i>	
1 Bologna	2.3
<i>Israel</i>	
1 Tel-Aviv-Jafo	2.8
<i>USA</i>	
1 Baltimore	2.2

The incidence of Crohn's disease and ulcerative colitis is compared at various centres. The studies have not always been conducted simultaneously and in Oxford² the high ratio was due to a failure to recognise colonic Crohn's disease.

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