*Original article*

# The epidemiological profile of inflammatory bowel disease in different parts of North-West Greece

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## SUMMARY

**The epidemiological profile of Inflammatory Bowel Disease (IBD) is a topic of great interest because of the differences in incidence, prevalence, sex and age distribution of the disease among countries. North-West Greece (NWG) includes 6 prefectures (Ioannina, Arta, Preveza, Thesprotia, Corfu and Lefkas) and it is an area with a great homogeneity in the population because of its geographical morphology.**

**A retrospective epidemiological study was conducted in this area including all hospitals and private doctors and resulting in the epidemiological registry of 484 patients, the largest in Greece. The peak age is 35-54 years with a very small number of patients under 25 years. Men are more affected than women (2:1) and Corfu patients have the most severe extraintestinal manifestations. The mean annual incidence of IBD in NWG has an approximate 2-fold (1,86) increase from 1992 to 1997 (7,45x $10^5$ Inhabitants) compared with the years 1982-1991 (3,99 x $10^5$ Inhabitants) with Ioannina and Corfu presenting the greatest increase. In addition the gap between ulcerative colitis and Crohn's disease is decreasing because of Crohn's more increasing rate. It is also suggested an East-West (Ioannina, Arta, Preveza, Thesprotia, vs Corfu and Lefkas) or an island-mountain profile of IBD is also suggested. Prevalence of IBD is increasing with Ioannina and Corfu presenting the highest numbers and being the most industrialized and tourist regions.**

**This changing profile of Crohn's disease strengthens the hypothesis that some environmental factor(s), probably in correlation with the genetic factor(s), are responsible for the expression of IBD.**


**Key words:** Inflammatory bowel disease, Crohn's disease, ulcerative colitis, indeterminate colitis, epidemiology, incidence.

## INTRODUCTION

Epidemiological studies of Inflammatory Bowel disease (IBD) have generally found the incidence to be higher in Northwest than in South Europe.[1-4] Over the years it has been realized that IBD is a disease with changing profile and surveys conducted in areas with homogenous population have shown great interest and validity. Recently an epidemiological survey troughout Europe showed some differences in several epidemiologic parameters of IBD between Northern and Southern study centers.[5]

The study of the epidemiology of IBD serves three purposes. It allows first the measurement of the size of the problem that IBD presents in the community, and secondly the way in which it is changing in frequency, or is associated with specific environmental features.

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Thirdly, it may provide clues to the etiology of the disease, which is purly understood. Areas of proven or probable high incidence of IBD include Scandinavia, the UK, North America, Australia and much of Northwestern Europe in general. Incidence rates are generally higher for ulcerative colitis than for Crohn's disease. Within Europe incidence rates for ulcerative colitis appear to vary by at least five fold, although there must be unevenness in recording the lesser varieties of disease. The frequency of Crohn's disease also appears to vary at least six fold, with the areas of high incidence being the industrialized North-West European and North American countries, as well as Australia and South Africa. Areas of probable low incidence are Greece, Japan, Israel, Spain and Italy and many other areas, although dependebility about hospital databases in case identification makes confident assertions difficult. Herein we present the first population based study for IBD in a well defined area of Greece (North-West Greece).

## METHODS

A retrospective epidemiological survey was conducted in Northwest (NW Greece) for the years 1982-1997. NW Greece has 6 prefectures Ioannina, Arta, Preveza, Thesprotia, Lefkas and Corfu, the last two of them being famous tourist islands and the first four consisting the region of Epirus. This region (NWG) is very well separated geographically by mountains and sea from other parts of Greece resulting in a very high homogeneity of the population; about 80% of the population lives and works in the area of origin. Patients' origin was 65% from urban areas, 15% from semi-urban areas and 20% from rural areas.

The health care system is of mixed type including both a National Health Service and a private sector. The National Health Service consists of health centers, 6 general and one University Hospital. However the University hospital is the main IBD reference center having the only Hepato-Gastroenterology Division in NW Greece.

In the private sector there are 8 gastroenterologists working in NW Greece who are affiliated with the University department of Gastroenterology for IBD research. The study was performed retrospectively. Each gastroenterogist was asked in January 1997 to complete a special epidemiological card for every IBD patient he was responsible for. Meanwhile all the archives of our Hepato-Gastroenterology Section were revised.

Only cases that met the diagnostic criteria (Table 1) at least twice in a time span of six months or more were included in this study. For patients with ulcerative colitis (UC) the extent was recorded at the time of maximal colonic involvement; (1) pancolitis (entire colon affected or involvement proximal to transverse colon), (2) left colitis (no involvement proximal to the splenic flexure), (3) proctitis (no involvement proximal to the rectum or the first 15 cm).

**Table 1.** Inclusion criteria for ulcerative colitis and Crohn's disease

| | *Ulcerative colitis* | *Crohn's disease* |
|---|---|---|
| History | Patients with diarrhea or rectal bleeding, or both for more than 2 weeks or repeated episodes | Patients with diarrhea or rectal bleeding, or both and weight loss for more than 4 weeks, or repeated episodes |
| Laboratory tests | Exclusion of infectious diseases | Exclusion of infectious diseases |
| Radiological signs | Ulcerations with or without speculated granulated inner surface of the return or colon, or both | Stenoses and prestenotic dilatations in the small or large bowel, segmental findings, burrowing ulcerations, stictures or the formation of fistulas |
| Endoscopy | Typical sigmoidoscopic or colonoscopic picture with granulated, friable mucosa or ulcerations or both, of the surface mucosa | «Cobblestone» appearance of affected segments of the bowel or aphthoid ulcers, or both |
| Histology | Inflammatory changes indicative of ulcerative colitis | Signs of inflammatory changes indicative of Crohn's disease or epithelial granulomata, or both |

The severity of UC was classified according to the criteria of Truelove and Witts[6] and of Crohn's disease according to the criteria of Harvey and Bradshaw.[7] All patients with ulcerative colitis had at least one colonoscopy done throughout these years while all patients with Crohn's disease had at least one colonoscopy and enteroclysis at the same period.

The referral population was estimated according to the 1981 and 1991 census (446.004 and 468.431 inhabitants respectively, National Statistical Organisation). The study was divided into two periods: 1982-1991 and 1992-1997 in order to compare the epidemiologic parameters. A similar study for IBD epidemiology was conducted in the prefecture of Ioannina for the years 1982-1991 by our Section on Hepato-Gastroenterology[8] and was used for comparison.

## STATISTICAL ANALYSIS

Confidence intervals were calculated at the 95% level of significance using the form of the normal distribution or an exact method based on the Poison distribution when the number of cases was equal or less than 20.

The referral population was calculated for every prefecture and for every year using annual estimated numbers derived from the 1981 and 1991 census. All numbers were calculated for every $10^5$ inhabitants and included annual incidence, prevalence and specific incidence of sex and age distribution for every prefecture, for Epirus (Prefectures of Ioannina, Arta, Preveza and Thesprotia) for Ionian Islands (Corfu and Lefkas) and for the whole of NW Greece.[9]

## RESULTS

By the 31 December 1997 the study was over and an assessment was made of the total numbers of patients with UC, CD or indeterminate colitis (IND). The total number of IBD patients was 484 and among them 394 patients resided in Northwest Greece. The remaining patients had a different origin and residence than that of Northwest Greece and were only medically followed up by the regional gastroenterologists. Of these 394 patients, 331 had UC, 43 CD and 20 IND while 249 of them were men.

The annual incidence for UC, CD, IND and IBD as a total was calculated for every prefecture separately, for Epirus, Ionian islands and NW Greece and a table with the mean annual incidence of the periods 1982-1991, 1992-1997 and 1981-1997 was derived (Table 2 and 2.1). For IND the highest incidence rate was 0,82/10000 inhabitants (Prefecture of Ioannina and the lowest in the island of Lefkas 0,0/100.000 inhabitants. For UC the highest incidence was 5,47 (Pref of Ioannina) and the lowest in the island of Lefkas with 1,66/100.000 inhabitants. Furthermore UC has a higher incidence in Epirus than in the Ionian Islands. For CD in Ionian Islands the highest incidence was 1,0/100.000 (Pref of Corfu) and the lowest in Lefkas 0,0/100.000.

The incidence of CD in the Ionian Islands (Corfu and Lefkas) was almost double than that of Epirus. In numbers this is 0,83 for Ionian Islands to 0,44 for Epirus per 100.000 inhabitants (Table 2). Generally IBD is slowly increasing all over NW Greece affecting $3,99/10^5$ inhabitants for the years 1982-1991 and $7,45/10^5$ for the years 1992-1997 (Table 2, Figures 1,2,3). The highest prevalence is $82,58/10^5$ inhabitants (Pref of Ioannina) and the lowest is Lefkas with $2,39/10^5$ inhabitants (Table 3).

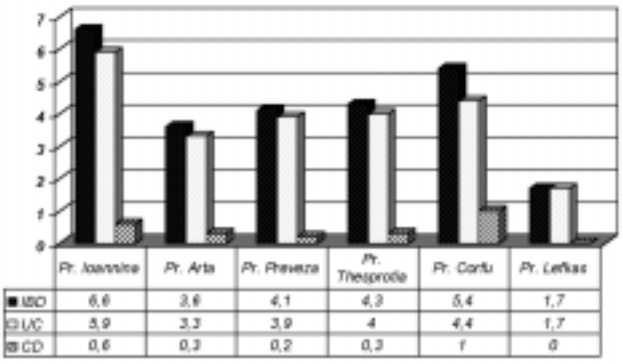


**Fig. 1.** Annual incidence of IBD, UC and CD in prefectures of North-West Greece for the years 1981-97 per 100,000 inhabitants

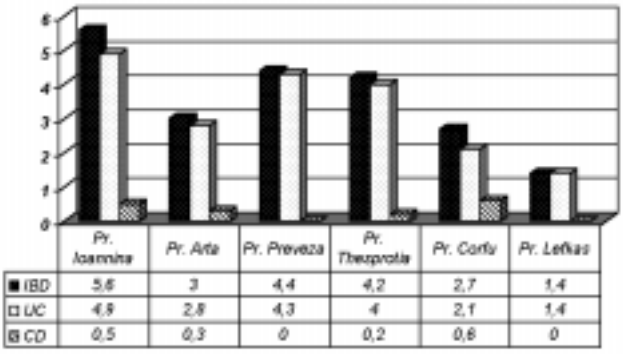


**Fig. 2.** Annual incidence of IBD, UC and CD in prefectures of North-West Greece for the years 1982-91 per 100,000 inhabitants

**Table 2.** Annual incidence of inflammatory bowel disease in North-West Greece in years 1981-1997 for every 100000 inhabitants (numbers in brackets represent the lower and upper limit in the 95% level of significance)

**Annual incidence of ulcerative colitis and indeterminate colitis in prefectures and in total in North West Greece for the years 1981-1997 (for every 100.000 inhabitants)**

| | Pr. Ioannina | Pr. Arta | Pr. Preveza | Pr. Thesprotia | Pr. Corfu | Pr. Lefkas | Epirus | Ionian islands | NW-Greece |
|---|---|---|---|---|---|---|---|---|---|
| 1981-97 | 5,9 (4,6-6,4) | 3,3 (2,2-4,1) | 3,9 (2,5-4,8) | 4,0 (2,5-5,3) | 4,4 (3,3-5,2) | 1,7 (0,6-3,6) | 4,7 (3,9-4,9) | 4,0 (3-4,6) | 4,5 (3,9-4,8) |
| 1982-91 | 5,1 (3,7-5,9) | 2,8 (1,6-3,9) | 4,3 (2,4-5,6) | 4,0 (2,3-6,3) | 2,1 (1,2-3) | 1,4 (0,3-4,1) | 4,3 (3,4-4,7) | 2,0 (1,2-2,8) | 3,6 (3-4) |
| 1992-97 | 8,0 (5,5-8,9) | 4,9 (2,4-6,1) | 3,7 (1,5-5,3) | 4,8 (2,3-7,7) | 8,7 (6-10,3) | 2,4 (0,5-7) | 6,1 (4,9-7,1) | 7,8 (5,5-9,3) | 6,6 (5,3-6,9) |

**Annual incidence of Crohn's disease in prefectures and in total in North West Greece for the years 1981-1997 (for every 100.000 inhabitants)**

| | Pr. Ioannina | Pr. Arta | Pr. Preveza | Pr. Thesprotia | Pr. Corfu | Pr. Lefkas | Epirus | Ionian islands | NW-Greece |
|---|---|---|---|---|---|---|---|---|---|
| 1981-97 | 0,6 (0,4-1) | 0,3 (0,1-0,8) | 0,2 (0-0,7) | 0,3 (0-1) | 1,0 (0,6-1,6) | 0,0 (0-1) | 0,4 (0,3-0,6) | 0,8 (0,5-1,3) | 0,5 (0,4-0,7) |
| 1982-91 | 0,5 (0,2-1) | 0,3 (0-0,9) | 0,0 (0-0,6) | 0,2 (0-1,7) | 0,6 (0,2-1,3) | 0,0 (0-1,7) | 0,3 (0,1-0,6) | 0,5 (0,1-1) | 0,4 (0,2-0,6) |
| 1992-97 | 0,9 (0,4-1,8) | 0,2 (0-1,2) | 0,6 (0-2) | 0,4 (0-2) | 1,8 (0,9-3,2) | 0,0 (0-2,9) | 0,6 (0,3-1) | 1,5 (0,8-2,7) | 0,9 (0,5-1,2) |

**Annual incidence of inflammatory bowel disease in prefectures and in total in North West Greece for the years 1981-1997 (for every 100.000 inhabitants)**

| | Pr. Ioannina | Pr. Arta | Pr. Preveza | Pr. Thesprotia | Pr. Corfu | Pr. Lefkas | Epirus | Ionian islands | NW-Greece |
|---|---|---|---|---|---|---|---|---|---|
| 1981-97 | 6,6 (5,6-7,5) | 3,6 (2,6-4,7) | 4,1 (2,9-5,4) | 4,3 (2,8-5,8) | 5,4 (4,7-6,5) | 1,7 (0,6-3,6) | 5,2 (4,6-5,8) | 4,8 (3,9-5,7) | 5,1 (4,6-5,6) |
| 1982-91 | 5,6 (4,4-6,7) | 3,0 (1,8-4,2) | 4,4 (2,6-6) | 4,2 (2,5-6,6) | 2,7 (1,7-3,7) | 1,4 (0,3-4,1) | 4,6 (3,8-5,3) | 2,5 (1,6-3,3) | 4 (3,4-4,6) |
| 1992-97 | 8,9 (7,1-10,8) | 5,1 (3,1-7,2) | 4,1 (2,3-6,9) | 5,2 (2,8-8,7) | 10,6 (8-13) | 2,4 (0,5-7) | 6,8 (5,6-7,9) | 9,3 (7,1-11,4) | 7,4 (6,4-8,4) |

**Table 2.1.** Incidence of Crohn's disease in Ionian islands and Epirus in North-West Greece

| Region | Ionian islands | Epirus |
|---|---|---|
| Number of cases | 18 | 25 |
| Population | 133,346 | 349,088 |
| Incidence per 100,000 | 0.83 (0.49*-13.20**) | 0.44 (0.26*-0.61**) |

** = Confidence intervals upper limit using exact test if number of cases ≤20. ** = Confidence intervals lower limit using exact test if number of cases ≤20*

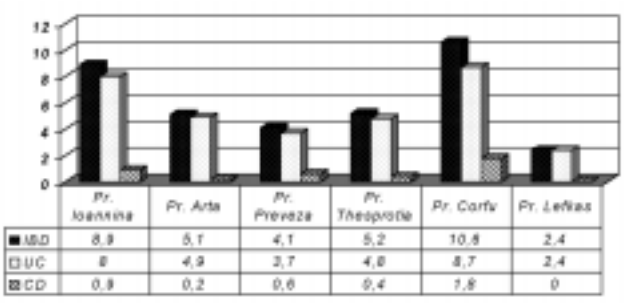


**Fig. 3.** Annual incidence of IBD, UC and CD in prefectures of North-West Greece for the years 1992-97 per 100,000 inhabitants

The number of deaths in this IBD patient cohort seems extremely low with only 5 deaths reported. One patient died from cancer of unknown primary origin (probably colorectal), one from pneumonic emboli, one from cholangiocarcinoma and two patients from toxic megacolon (one before and one after surgery).[10] The rate of cancer in 215 thoronghly overviewed and documented patient clinical records is 3.7% (8 out of 215 patients). The mean age of our patients was 51 years and the mean time of follow up was 7.5 years. From these patients one died from cancer of unknown primary origin (probably colorectal), 3 patients were colectomized because of dysplastic lesions in bowel biopsies, 1 was nephrectomized due to renal carcinoma, one died from cholangiocarcinoma and 2 women were diagnosed with breast cancer.[11]

The prevalence of bowel surgery in 256 well documented and followd up clinical records (215 with UC, 37 with CD and 4 with IND) was 3.2% (7 patients) for UC, 10.8%(4 patients) for CD. Two female UC patients died during surgery for acute toxic megacolon.[12]

Sex distribution of IBD shows a male predominance

**Table 3.** Prevalence of inflammatory bowel disease in North-West Greece in the years 1981-1997 for every 100000 inhabitants (numbers in brackets represent the lower and upper limit in the 95% level of significance)

**Prevalence of ulcerative colitis and indeterminate colitis in prefectures and total in North West Greece for the years 1981-1997 (for every 100.000 inhabitants)**

| | Pr. Ioannina | Pr. Arta | Pr. Preveza | Pr. Thesprotia | Pr. Corfu | Pr. Lefkas | Epirus | Ionian islands | NW-Greece |
|---|---|---|---|---|---|---|---|---|---|
| 1981-97 | 40,1 (36,5-41,7) | 3,3 (2,2-4,3) | 3,9 (2,7-4,9) | 4,0 (2,5-5,3) | 4,4 (3,5-5,8) | 1,7 (0.6-2,6) | 4,7 (4,0-5,2) | 4,0 (3,2-4,9) | 4,5 (4,0-4,8) |
| 1982-91 | 22,3 (19,6-24,8) | 2,8 (1,6-3,9) | 4,3 (2,5-5,9) | 4,0 (2,3-6,3) | 2,1 (1,2-3) | 1,4 (0,3-4,1) | 4,3 (3,5-4,9) | 2,0 (1,2-2,8) | 3,6 (3-4) |
| 1992-97 | 74,0 (66,8-80,9) | 4,9 (2,7-7,8) | 3,7 (1,8-6,1) | 4,8 (2,5-7,8) | 8,7 (6,3-10,5) | 2,4 (0,5-2,4) | 6,1 (4,6-6,9) | 7,7 (5,5-9,6) | 6,6 (5,3-7,4) |

**Prevalence of Crohn's disease in prefectures and total in North West Greece for the years 1981-1997 (for every 100.000 inhabitants)**

| | Pr. Ioannina | Pr. Arta | Pr. Preveza | Pr. Thesprotia | Pr. Corfu | Pr. Lefkas | Epirus | Ionian islands | NW-Greece |
|---|---|---|---|---|---|---|---|---|---|
| 1981-97 | 4,0 (3,3-4,8) | 0,3 (0-0,8) | 0,2 (0-0,7) | 0,3 (0-1) | 1 (0,6-1,6) | 0,0 (0-1,2) | 0,4 (0,3-0,6) | 0,8 (0,5-1,3) | 0,5 (0,4-0,7) |
| 1982-91 | 1,6 (0,9-2,2) | 0,3 (0-0,9) | 0,0 (0-0,6) | 0,2 (0-1,3) | 0,2 (0,2-1,3) | 0,0 (0-1,7) | 0,3 (0-1,8) | 0,5 (0,2-1) | 0,4 (0,2-0,6) |
| 1992-97 | 8,5 (6,7-10,4) | 0,2 (0-1,2) | 0,6 (0-2) | 0,4 (0-2) | 1,8 (0,9-3,2) | 0,0 (0-2,9) | 0,6 (0-2,1) | 1,5 (0,8-2,7) | 0,9 (0,5-1,2) |

**Prevalence of inflammatory bowel disease in prefectures and total in North West Greece for the years 1981-1997 (for every 100.000 inhabitants)**

| | Pr. Ioannina | Pr. Arta | Pr. Preveza | Pr. Thesprotia | Pr. Corfu | Pr. Lefkas | Epirus | Ionian islands | NW-Greece |
|---|---|---|---|---|---|---|---|---|---|
| 1981-97 | 44,2 (42-46,7) | 3,6 (2,6-4,7) | 4,1 (2,9-5,4) | 4,3 (2,8-5,8) | 5,4 (4,4-6,5) | 1,7 (0,6-2,6) | 5,2 (5,6-5,8) | 4,8 (3,9-5,7) | 5,1 (4,6-5,6) |
| 1982-91 | 23,8 (21,4-26,3) | 3,0 (1,8-4,2) | 4,4 (2,7-6) | 4,2 (2,5-6,6) | 2,7 (1,7-3,7) | 1,4 (0,3-4,1) | 4,6 (3,8-5,3) | 2,5 (1,6-3,3) | 4 (3,4-4,6) |
| 1992-97 | 82,6 (76,9-88,3) | 5,1 (2,4-6,9) | 4,2 (2,4-6,9) | 5,2 (2,8-8,7) | 10,6 (8-13) | 2,4 (0,5-2,4) | 6,8 (5,6-7,9) | 9,3 (7,1-11,4) | 7,4 (6,5-8,5) |

in all prefectures except Lefkas, (Table 4, Figure 4). The ratio male/female ranges from 2,67:1 (Pref. of Corfu) to 1,67:1 (Pref. of Arta). In Lefkas the ratio is 1,98:1 in favor of women but in a small number (6) of patients. The age specific incidence rates reveal a plateau-like peak for the years 35-54 and a smaller peak for ages over 75 (Table 5). Only 27 patients (14%) from those 400 were below 25 years of age.

**Table 4.** Sex annual incidence of inflammatory bowel disease in prefectures and total in NW-Greece for the years 1982-1997 (for every 100000 inhabitants, census 1991)

| | Pr. Ioannina | Pr. Arta | Pr. Preveza | Pr. Thesprotia | Pr. Corfu | Pr. Lefkas | Epirus | Ionian islands | NW-Greece |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | **MEN** | | | | |
| **Cases** | 102 | 30 | 24 | 21 | 70 | 2 | 117 | 72 | 249 |
| | 8.2 (4.9-11.4) | 4.8 (1.3-8.3) | 5.2 (1-9.4) | 5.8 (0.7-11) | 8.4 (4.4-12.4) | 1.2 (0.1-4.3) | 6.6 (4.6-8.6) | 7.2 (3.8-10.6) | 6.8 (5.1-8.5) |
| | | | | | **WOMEN** | | | | |
| **Cases** | 68 | 18 | 16 | 11 | 28 | 4 | 113 | 32 | 145 |
| | 5.3 (2.7-7.9) | 2.8 (1.7-4.5) | 3.5 (2-5.6) | 3.2 (1.6-5.7) | 3.2 (0.8-5.5) | 2.4 (0.6-6.0) | 4.1 (2.6-5.6) | 3.0 (0.7-5.2) | 3.8 (2.6-5.1) |
| | | | | | **TOTAL** | | | | |
| **Cases** | 170 | 48 | 40 | 32 | 98 | 6 | 290 | 104 | 394 |
| | 6.7 (4.7-8.8) | 3.8 (1.6-6.0) | 4.5 (1.6-7.0) | 4.5 (1.3-7.7) | 5.7 (3.4-8.0) | 1.8 (0.7-3.9) | 5.3 (4.1-6.6) | 5.1 (3.1-7.0) | 5.3 (4.2-6.3) |

***Index**: Number in brackets represent the lower and upper limit in the level of the 95% significance*

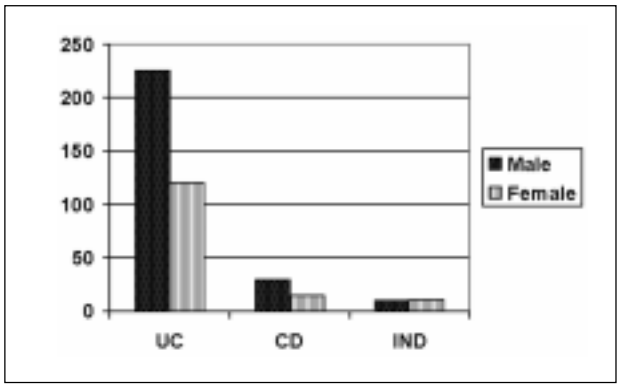


**Fig. 4.** Number of male and female patients with UC, CD and IND in North-West Greece

## DISCUSSION

Our findings show that the incidence of IBD is low, although slowly increasing in NW Greece. The annual incidence of IBD was $4/10^5$ inhabitants for the 1982-1991 period and $7,5/10^5$ for the 1992-1997 period. All prefectures have an increasing IBD incidence except Preveza, which has a stable protype. The highest increasing incidence rates were calculated in Ioannina (from $5,55/10^5$ to $8,94/10^5$) and Corfu $2,69/10^5$ to $10,55/10^5$) for the periods mentioned.

This increase in incidence derives from the increase of the three IBD subgroups; UC, CD and IND. As a remark, we could mention that almost every 3 years there is a peak in increase of new IBD cases. In the whole area of Epirus the «gap» in ratio between UC/CD is getting smaller year by year; 12,3:1 (1982-1991) to 8,01:1 (1992-1997). Meanwhile, in the Ionian Islands the «gap» is stable with the ratio considerably smaller during these periods; 4,14:1 and 4,75:1 respectively. Here it must be emphasized that we compare a decade (1982-1991) with a 6 years period (1992-1997) and we already reveal important differences. Those differences are expected to be clearer in the next 5 years.

It is very important to notice that for Ioannina and Corfu there is a change in the ratio of UC/CD over the years. The ratio UC/CD for Ioannina was 9,17:1 (1982-1991) and has became 7,81:1 (1992-1997) while in Corfu the numbers are 3,65:1 and 4,49:1 respectively. Additionally there is a real decrease in the «gap» between UC and CD in Ioannina, owing to the increasing numbers of CD and an almost stable but considerably smallest «gap» between UC and CD in Corfu. We could postulate that there is in fact a changing Epirus-Ionian islands or East-West prototype IBD ratio in NW Greece with CD playing a major role and being more aggressive in Ionian islands as far the extent of the disease and the extraintestinal manifestations are concerned.

The prevalence of IBD in NW Greece is increasing not only in incidence but also as a result that only 5 reported deaths of our IBD patients. The reference population meanwhile over these years (1982-1997) has kept a very stable profile.The highest prevalence was noted in Ioannina with $82,58/10^5$ inhabitants, followed by Corfu with $10,55/10^5$ inhabitants with less IBD patients but with a higher increasing rate (x3,92) than that of Ioannina (x3,46) for the last 6 years.

The IBD sex distribution in NW Greece reveals another important parameter which differs from that of the current literature.[1] Age specific incidence rate presents 2 peaks; the first peak, plateau-like is between 35 and 54 years, and the second is over 75 years which is a generally accepted protype. The fact that only 14% of our patients are below 25 years of age and the first real peak

**Table 5.** Sex and age specific incidence rates of inflammatory bowel disease in NW Greece for the years 1982-1997 (for every 100000 inhabitants, census 1991)

| Age | Men | Women | Total | N.M. | N.W | T | INCML | INCM | INCMU | INCMU | INCW | INCWU | INCTL | INCT | INCTU |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 0-14 | 45582 | 42878 | 88460 | 1 | 1 | 2 | 0,00 | 0,14 | 0,76 | 0,00 | 0,15 | 0,81 | 0,02 | 0,141 | 0,51 |
| 15-24 | 33975 | 33661 | 67636 | 17 | 8 | 25 | 1,82 | 3,13 | 5,01 | 0,64 | 1,49 | 2,93 | 0,46 | 2,31 | 4,16 |
| 25-34 | 30149 | 29344 | 59493 | 24 | 26 | 50 | 0,91 | 4,98 | 9,04 | 1,19 | 5,54 | 9,88 | 2,28 | 5,25 | 8,22 |
| 35-44 | 32029 | 28972 | 61001 | 44 | 27 | 71 | 3,41 | 8,59 | 13,76 | 1,34 | 5,83 | 10,31 | 3,82 | 7,27 | 10,73 |
| 45-54 | 26160 | 26897 | 53057 | 57 | 27 | 84 | 6,40 | 13,6 | 20,83 | 1,44 | 6,27 | 11,10 | 5,58 | 9,90 | 14,21 |
| 55-64 | 29695 | 31893 | 61588 | 41 | 23 | 64 | 3,24 | 8,63 | 14,02 | 0,75 | 4,51 | 8,27 | 3,25 | 6,50 | 9,74 |
| 65-74 | 19708 | 23666 | 43374 | 39 | 22 | 61 | 4,45 | 12,4 | 20,29 | 0,86 | 5,81 | 10,76 | 4,29 | 89,79 | 13,29 |
| 75+ | 13562 | 19698 | 33260 | 26 | 11 | 37 | 2,58 | 12 | 21,38 | 1,74 | 3,49 | 6,24 | 2,38 | 6,95 | 11,52 |
| Total | 230072 | 238359 | 468431 | 249 | 145 | 394 | 5,05 | 6,76 | 8,48 | 2,54 | 3,80 | 5,07 | 4,20 | 5,26 | 6,32 |

**Index:** N= number, M= men, W= women, T=total, INC= incidence, L= lower limit, U= upper limit

occurs at the age of 40 can imply that IBD in NW Greece is affecting our population a decade or more later than it is usually expected according to numbers of the first peak.

In conclusion the IBD profile is slowly changing in NW Greece (Figures 1,2,3), although Crohn's disease still remains rare, a bridging of the gap between UC and CD could be starting, owing to the increasing incidence of CD, a hypothesis that was suggested few years ago[8]. The changing profile of Crohn's disease strengthens the hypothesis of some environmental factor(s) which, probably in correlation with the genetic factor(s) may responsible for the expression of IBD.

The Epirus-Ionian protype (or island-mountain protype) proposed here, the mild clinical profile of the disease in our region except for Corfu, the absence of CD in Lefkas and the relatively low incidence of IBD below 25 years of age, are parameters that need further investigation.

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