

Increase in the Number of IBD Surgical Resections at the Puerto Rico Medical Center: A Brief Report

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Objective: There is limited data describing Inflammatory Bowel Disease (IBD) among Hispanics. In Puerto Rico, three studies have been conducted that estimate the prevalence of this disease. Although still rare, these studies coincide that IBD has increased during the last decades. This study aims to describe the IBD surgical resections received in the Pathology Laboratory of the Puerto Rico Medical Center (PRMC) in two periods: 1966-82 and 2002-2008.

Methods: A retrospective review of the Surgical Pathology reports was done. A total of 133 reports complied with the inclusion criteria for IBD out of a total of 314,493 pathologies evaluated. For purposes of comparison, the data was grouped into 3 time periods: 1966-1973, 1974-1982 and 2002-08.

Results: The number of IBD cases per 100,000 pathologies for the period 1966-73 was 15.1, for the period 1974-82 was 19.1 and for the period 2002-08 was 125.0. The number of IBD resections increased 87.9% when comparing years 1966-73 with 2002-2008, with similar increases in Ulcerative Colitis and Crohn's Disease. Although this result was not statistically significant ($p>0.05$), a higher proportion of IBD patients had an IBD resection at a younger age in the 2002-2008 time period. A change in the sex profile of the patients was also identified; the majority of cases (75%) were females in the years 1966-1973 while 50.6% were males in 2002-2008.

Conclusion: Our results confirm an increase in IBD surgical resections at the PRMC. Although not significant, a higher proportion of incident cases are occurring among younger age groups and the distribution of incident cases has become similar between males and females in recent years. [*P R Health Sci J* 2012;4:223-226]

Key words: Inflammatory Bowel Disease, Hispanics, Puerto Rico, Surgery

Inflammatory bowel disease (IBD) includes Ulcerative Colitis (UC) and Crohn's Disease (CD). This disease affects over 1 million patients in the United States, with a stable incidence of 14.3 and 14.6 cases per 100,000 person-years for UC and CD, respectively, in predominantly Caucasian populations in North America and Europe (1) and rising rates in blacks and Hispanic populations where this disease used to be rarely seen (2). The only studies that estimate prevalence rates of IBD in Hispanics have been conducted in different regions of Puerto Rico (1, 3-5). Torres et al estimated the prevalence of IBD among a population of insured patients in 1996 to be 106.1 cases per 100,000 (3). A follow up study by the same group (4), with stricter criteria, including evaluation by a gastroenterologist, estimated the prevalence rate of IBD to be 38.2 per 100,000 in 2005, with increasing rate within the study period (2004-2006). These results contrast with Appleyard's estimated lower prevalence of 24.81 cases per 100,000 in southwest Puerto Rico five years before (5). However, both groups found an increasing prevalence of IBD for each period studied, contrary to stable trends observed in first world populations (2). We aim to contribute to increase the knowledge of IBD among the Hispanic community by describing the surgical resections at the Puerto Rico Medical Center (PRMC). This study aims

to describe the incident cases of surgical resections for IBD received in the Anatomic Pathology Laboratory at the PRMC in two periods: 1966-1982 and 2002-2008.

Methods

Study population

The study population for this retrospective study included all surgical pathology reports archived at the Anatomic Pathology Laboratory of the PRMC between years 1966-1982 and for the years 2002-2008. Reports for 1983-2001 were not available. The

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population studied includes those who had surgical resections at the PRMC, including San Juan City Hospital, Pediatric Hospital, and University Hospital (UDH).

Criteria for inclusion

For segmental bowel resections, the following pathological diagnoses were included: Ulcerative Colitis [1], synonyms Crohn's enterocolitis, Crohn's disease, regional enteritis/ileitis [2], synonyms Inflammatory Bowel Disease and indeterminate colitis [6], and fistula [7]; as well as proctitis [8]. Proctitis were further included in their respective IBD classification. The following specimens were included: synonyms enterectomy, small bowel resection, small bowel segmentectomy [1]; specific enterectomies labeled as: duodenum, jejunum or ileum [2], total colectomy [3]; synonyms colon, large bowel, rectum, segmental or partial resection and subtotal colectomy [4], intestine, Not Otherwise Specified (NOS)[5] and Other [6]. Only surgical resections were included; all biopsies and non bowel specimens tabulated as "other" [6] were excluded. If a patient had more than one surgical resection during the study period, only the first surgical resection was accounted. When there was doubt whether to include a case, the senior pathologist author reviewed the pathology report and the microscopic description to determine if the criteria for inclusion were met.

Data collection

This study was approved by the University of Puerto Rico Medical Sciences Campus (UPRMSC) Institutional Review Board (IRB). Surgical pathology reports of all specimens received at the PRMC from 1966 to 1982 were reviewed manually and the following data was tabulated: pathologic diagnosis, patient's sex and age at the time of the surgery, and specimen type as described above. For 2002-2008, a computer search was performed in the PRMC Pathology Reports database using the same diagnostic and specimen type terminology, with data tabulated as described above.

Statistical analysis

Frequency distributions for categorical variables and summary measures for continuous variables were used (6). For purposes of comparison, the data was grouped into 3 time periods: 1966-1973, 1974-1982 and 2002-08. The number of IBD cases per 100,000 pathologies was described overall and for each time period. T-tests, Chi-square statistics, and Fisher's exact test were used to evaluate sex, age, and diagnosis differences across the three time periods. Statistical analysis was performed using SAS® version 9.2 for Windows (SAS Institute Inc., 2008). The percent change in the incidence number of IBD surgical resections (per 100,000) between 1966-1973 and 2002-08 was estimated overall and specifically for UC and CD.

Results

A total of 314,493 pathology cases were evaluated, of which 228 cases were tabulated. From these, 95 were excluded because they did not meet the inclusion criteria (67 were biopsies, 23 had other diagnosis, 4 had more than one IBD resection surgery, and 1 was resected in 2001, for a final study population of 133 cases which complied with the diagnostic and specimen type criteria for the time periods evaluated. The number of IBD cases per 100,000 pathologies was 15.1 for the period 1966-73, 19.1 for the period 1974-82, and 125.0 for the period 2002-08 (Table 1). The specimens consisted of 32 enterectomies (24.1%), 12 before 1983; 40 total colectomies (30.1%), 10 before 1983; 41 partial colectomies (30.8%), 17 before 1983; and 20 non specified segments of bowel (15.0%), 3 before 1983. The diagnosis distribution differed by study period ($p < .05$) (Table 2). It was as follows: 54 UC (41.9%), 19 before 1983; 65 CD (47.3%), 14 before 1983; 14 Inflammatory Bowel Disease (IBD) (10.9%), 9 before 1983. Five fistulous specimens were identified before 1983, received in years 1967, 1969, 1971, 1973, and 1979. These specimens were 3 enterectomies from a 68 year old man, a 51 year old woman, and a 39 year old woman; and 2 partial colectomies including a sigmoidectomy from a 56 year old man, which could be fistulizing diverticular disease and a partial colectomy from a 31 year old woman. These cases were included in the CD group, even though they were not strictly diagnosed as CD and could have been other diseases such as complicated peptic ulcer disease, diverticular disease, or other fistulous conditions. These dubious cases were included because we did not want to underestimate potential cases in the first time period, when IBD was so scarcely diagnosed.

Table 1. Surgical Resections in IBD Patients at the Puerto Rico Medical Center

Period	IBD patients with Resection (n)	Total Surgical Pathology Cases (n)	Number of IBD cases per 100,000 pathologies	Percent Change (1966-1973 vs 2002-2008)
1966-1973	16	105,705	15.14	
1974-1982	26	135,989	19.12	
2002-2008	91	72,799	125.00	87.9%
Total	133	314,493		

Legend: IBD: Inflammatory Bowel Disease

The population included 59 men and 73 women. One (1) UC case in the first time period had sex not specified. Age was unknown in 2 UC cases, also before 1983. The patient's age ranges from 12 to 68 years, with a mean of 38.96 ± 16.7 years and a median of 37.0. There was no significant difference in age among genders by pooled T-test.

A higher percentage of patients were younger at their first documented resection in the 2002-08 period: 28.6% were younger than 25 years of age in this period, versus 13.3% in the

1966-73 period, while only 18.7% had their resection at age over 50 years in 2002-08 as compared to 40% during 1966-73; nonetheless, these difference did not reach statistical significance ($p>0.05$) (Table 2). Although the majority of patients in the 1966-73 (75.0%) and 1974-82 (64.0%) periods were females, males equaled females (50.6% and 49.5%, respectively) in the 2002-08 period; neither of these results achieved statistical significance ($p>0.05$) (Table 2).

Table 2. Distribution of IBD cases by age, sex, diagnosis and by period of IBD surgical resection, Puerto Rico Medical Center

	Overall	Surgical Period			X ² (Fishers exact test p-value)
		1966-1973 n (%)	1974-1982 n (%)	2002-2008 n (%)	
Age* at IBD surgical resection (years) (n=131)					p=0.17
≤25	31 (23.7%)	2 (13.3%)	3 (12.0%)	26 (28.6%)	
26-49	69 (52.7%)	7(46.7%)	14(56.0%)	48 (52.8%)	
≥50	31 (23.7%)	6 (37.5%)	8 (32.0%)	17 (18.7%)	
Sex** (n=132)					p=0.12
Male	59 (44.7%)	4 (25.0%)	9 (36.0%)	46 (50.6%)	
Female	73 (55.3%)	12 (75.0%)	16 (64.0%)	45 (49.5%)	
Diagnosis (n=133)					p<0.001
UC	54 (40.6%)	6 (37.5%)	13 (50.0%)	35 (38.5%)	
CD	65 (48.9%)	10 (62.5%)	4 (15.38%)	51 (56.0%)	
IBD	14 (10.5%)	0 (0%)	9 (34.6%)	5 (5.5%)	

*Unknown age in 2 UC cases, **Unknown sex in 1 UC case, Legend: IBD: Inflammatory Bowel Disease, UC: Ulcerative Colitis, CD: Crohn's Disease

Discussion

In 1966, the PRMC was established with a centralized Pathology service for the participating Hospitals. Since then, several changes have occurred in the population being served, with decreased volume of surgical pathology specimens. In 1983, the UPR Hospital at Carolina was inaugurated, resulting in an exodus of surgical specimens. Also, the establishment of the Government Health Plan in the year 1994, with complete coverage of the island in 2001 has contributed to a reduced number of surgical specimens received in the Pathology Laboratory. In spite of this reduction in surgical pathology specimens, we have documented an increase in surgical specimens from patients with IBD, which account for only 2% of the surgical pathology specimens at our institution.

This increase in IBD resections is significant even when including questionable IBD cases in the years 1966-1982, with the number of incident cases increasing 87.9% when comparing the period 1966-73 with 2002-08 (Table 1). When stratifying by diagnosis, the percent change of UC increased 88% and 86% in CD, with a Fisher's exact test p value of $p<0.001$.

In addition, although this result was not statistically significant, the population undergoing enterectomy and/or colectomy was younger in the more recent years, which could represent a more aggressive disease, unresponsive to medical therapies. Given limitations in sample size of cases, additional studies should try to evaluate this age trends over longer time periods and taking into consideration other sources of cases. Our results also suggest a change in the sex profile from 1966-

1973, when 75% of the patients were women, to the recent years when there is no gender difference among patients having surgical resections. Although these changes in disease pattern were not significant, they suggest a changing pattern of disease that should also be evaluated by future studies.

Limitations

This study has the following limitations: This is a retrospective review of Surgical Pathology Reports of patients treated at the PRMC. Thus, the results only apply to this center, where the most severe cases are usually referred. Not all the clinical information was present. Pathology Reports from the years 1983-2001 were not available for review, with a gap of data. While the pathologic diagnosis of the 2002-2008 period were more specific, some questionable IBD cases from 1966-

1982 were included even though the diagnosis was not as specific. Also, the decrease in surgical pathology specimens at the PRMC may affect the denominator when calculating the incidence rates. The development of the Specialized IBD team at the UPRMSC and University Hospital in response to an increasing number of patients seen with the disease since 1976, the establishment of a multidisciplinary Center for IBD, and the University of Puerto Rico IBD Registry started in 1995 (7) contribute to increased referrals, introducing a referral bias that may also affect our results.

Conclusion

We have described the population of IBD patients who had surgical resections at the PRMC in the years 1966-82 and 2002-08. Our results confirm the increasing number of IBD surgical specimens at the PRMC, which is consistent with previous studies suggesting an increase in disease prevalence in the population of Puerto Rico (3-5). Although not significant, we also found that patients are undergoing surgical resection at a younger age and a change in the gender proportions, with an equal distribution of males and females observed more recently.

The increased frequency of resections and potential demographic changes of the population served at our center warrant further studies to characterize the evolving disease pattern of IBD in Puerto Rico.

Resumen

Objetivo: Existen pocos datos que describan la enfermedad inflamatoria del intestino (EII) en hispanos. En Puerto Rico se han hecho tres estudios estimando la prevalencia de esta enfermedad que, aunque rara, coinciden en que ha aumentado durante las pasadas décadas. Este estudio pretende describir las resecciones quirúrgicas de pacientes con EII recibidas en el laboratorio de Anatomía Patológica del Centro Médico de Puerto Rico (CMPR) en dos periodos de tiempo: 1966-82 y 2002-08. **Métodos:** Se hizo una revisión retrospectiva de los informes de patología quirúrgica. De un total de 314,493 informes de patología revisados, 133 cumplieron los requisitos de inclusión para EII. Con el propósito de comparación, los datos se agruparon en 3 periodos de tiempo: 1966-1973, 1974-1982 and 2002-2008. **Resultados:** El número de casos de EII por 100,000 patologías fue 15.1 en el periodo 1966-73, 19.1 en el periodo 1974-82 y 125.0 en el periodo 2002-08. El número de resecciones en pacientes con EII aumentó en 87.9% al comparar el periodo 1966-73 con 2002-08, con aumento similar en colitis ulcerosa y enfermedad de Crohn. Aunque este resultado no fue significativo ($p > 0.05$), una mayor proporción de pacientes tuvo su resección a edad más temprana en el periodo 2002-08.

También se identificó un cambio en el perfil del género de los pacientes, ya que en el periodo 1966-73, la mayoría eran mujeres (75%) y en el 2002-08, 50.6% eran hombres. **Conclusión:** Nuestros resultados confirman que las resecciones quirúrgicas en pacientes con EII están aumentando en el CMPR. Aunque no fue significativo, la resección de los pacientes ocurre a más temprana edad con un cambio en el perfil del género de los pacientes, con distribución similar de casos incidentes entre hombres y mujeres en los años más recientes.

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