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Original article

Clinical Characteristics, Progression, and Outcomes of Patients with Crohn's Disease Treated at a Referral Hospital in Colombia: Longitudinal Case Series Analysis

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Abstract

Objective: To describe the two-year clinical outcomes of a Crohn's disease (CD) care program at a referral hospital in Colombia. **Materials and methods:** This longitudinal study was based on a case series of patients managed by a specialized CD program in Colombia between 2013 and 2023. Clinical characteristics, disease activity at program enrollment (Crohn's Disease Activity Index [CDAI]), treatment adjustments, and CDAI changes during subsequent follow-ups (6, 12, 18, 24, and 30 months) were reported. **Results:** A total of 22 patients were included, with a median age of 44 years (interquartile range [IQR]: 32–64); 10 (45%) were men. At enrollment, 14 patients (63.4%) were in remission, while 8 (36.6%) had mild to moderate disease activity. The median CDAI at enrollment was 124 (IQR: 52.7–211.2), with a significant reduction observed at 12 months (CDAI: 50, IQR: 10–115) and 24 months (CDAI: 24, IQR: 10–117) ($p < 0.05$). At the end of the follow-up period, 12 patients (80%) were in remission, 3 (20%) had mild to moderate disease activity, 7 (31.8%) were lost to follow-up at two years, and 14 (93.3%) were on biologic therapy. **Conclusion:** This study highlights the clinical characteristics, therapeutic approaches, and outcomes of a specialized CD care program. The findings suggest that the program effectively reduces CD activity, potentially due to the use of biologic therapy. Future studies are needed to confirm the potential benefits of specialized care programs.

Keywords

Crohn's disease, biologic therapy, remission.

INTRODUCTION

Crohn's disease (CD) is a chronic inflammatory disease of the gastrointestinal tract characterized by episodes of activity that lead to significant morbidity due to progressive damage. This impacts quality of life and results in disability[1]. Fifty percent of patients require surgical treatment within 10 years of diagnosis[2]. However, in the past decade, early diagnosis and the advent of biological therapy have improved the disease's prognosis, reducing costs associated with hospitalization and surgery[3]. Additionally, the risk of hospitalization has decreased to 26% at one year and 40% at five years, while the risk of surgery has fallen to 12%, 18%, and 26% at one, five, and ten years, respectively[4].

The disease follows a course of activity, remission, and relapse. Cumulative relapse rates have been recorded at 53%, 85%, and 90% at one, five, and ten years post-diagnosis, respectively[5]. Therefore, during follow-up, it is essential to quantify the degree of disease activity and the response to treatment to make necessary adjustments to management.

The Crohn's Disease Activity Index (CDAI) is an objective tool used to quantify symptoms and, consequently, disease activity in CD patients[6]. It has been universally applied to assess the efficacy and response to various treatments[7–12].

In Colombia, the general population prevalence of CD has been reported as 15 per 100,000 inhabitants. The most prevalent age group is 35–39 years, with a female predominance of 60%[13] and a higher occurrence of ileal involvement followed by ileocolonic involvement[14]. While descriptive studies have reported clinical and sociodemographic characteristics, the frequency of biological and other immunomodulatory treatments[14–16], the progression and outcomes associated with treatment in specialized programs have not been documented in our setting.

This study aims to describe the clinical outcomes over two years in a CD care program at a referral hospital in Colombia.

METHODS

This is a longitudinal study based on a case series, including all adult patients (aged 18 years or older) with a previous or new diagnosis of Crohn's disease (CD), managed by the specialized institutional program at Hospital Universitario San Ignacio (Bogotá, Colombia) between 2013 and 2023. Since the diagnosis of CD requires clinical, endoscopic, and histopathological correlation[17], diagnoses were only accepted after confirmation by the Inflammatory Bowel Disease Medical Board. This board diagnoses CD based on a combination of clinical, biochemical, and endoscopic findings, cross-sectional imaging, and histology, following the guidelines suggested by ECCO[18]. The board comprises three gastroenterologists experienced in inflammatory bowel disease, one rheumatologist, one psychiatrist, and one nutritionist. Patients referred to another hospital during the initial evaluation and those who did not meet a minimum follow-up period of six months were excluded. The study was approved by the Research and Ethics Committee of Pontificia Universidad Javeriana and Hospital Universitario San Ignacio in Bogotá (Approval Minutes FM-CIE-1164-23). The STROBE checklist was used as a guideline.

Clinical, sociodemographic characteristics, and treatment adjustments were obtained from the institutional registry for inflammatory bowel disease patients at Hospital Universitario San Ignacio. This registry systematically documents information from both initial assessments and all subsequent evaluations, including outpatient visits and hospitalizations. Collected data included age, sex, type of inflammatory bowel disease according to the Montreal classification (**Table 1**)[19], symptom onset date, diagnosis date, disease activity measurements at all evaluations (CDAI), hemoglobin levels, imaging studies (computed tomography, enterography, CT enterography), extraintestinal involvement, treatments received (biologics, immunomodulators, corticosteroids), the need for treatment changes or optimization, and adverse events. Biologic treatments included infliximab, adalimumab, vedolizumab, and certolizumab. Patients on infliximab or adalimumab could receive intensified regimens in cases of loss of response to standard doses[20, 21]. For this study, missing information was directly collected from the hospital's medical records.

Table 1. Montreal Classification for Crohn's Disease

Clinical Factors	Montreal Classification
Age	A1: <16 years
	A2: 17 to 40 years
	A3: >40 years
Location	L1: Ileal
	L2: Colonic
	L3: Ileocolonic
	L4: Isolated upper gastrointestinal tract disease
Behavior	B1: Non-stricturing, non-penetrating
	B2: Stricturing
	B3: Penetrating
	p: Perineal involvement

Author's own research.

The analysis focused on the first 30 months of follow-up for each patient from the time of enrollment in the program. Disease activity was assessed using the CDAI score, which was recorded during the initial evaluation and subsequent follow-ups every six months (6, 12, 18, 24, and 30 months). Based on this score, remission was defined as a CDAI <150; mild activity as a CDAI of 150–220; moderate activity as a CDAI of 220–450; and severe activity as a CDAI >450[17]. The primary outcome was the change in CDAI.

Data Analysis

Qualitative variables were measured using absolute and relative frequencies. Quantitative variables were recorded using measures of central tendency and dispersion. Variables with normal distribution were calculated using the mean and standard deviation (SD), while those with non-normal distribution were estimated using the median and interquartile range (IQR). The Kolmogorov-Smirnov

test with a statistical significance of 5% (p <0.05) was used to determine normal distribution.

Patients were divided into two groups for comparison based on disease activity at the initial evaluation. The first group included patients in remission (CDAI <150), and the second included those with mild to moderate activity (CDAI: 150–450). No patients presented with severe activity at baseline. Depending on the characteristics of the variables, comparisons between groups were made using a Student's T test, Mann-Whitney U test, or chi-square test. As the distribution of CDAI was non-normal, changes over time in the primary outcome were evaluated using the Wilcoxon signed-rank test. Statistical analysis was performed using Stata (Stata Statistical Software: Release 16, College Station, TX: StataCorp LLC).

Ethical Considerations

The research was conducted in accordance with ethical guidelines proposed by international agreements such as the Declaration of Helsinki of the World Medical Association, as well as Resolution 008430 of 1993 from the Ministry of Health of Colombia. The study was approved by the institutional ethics and research committees of Hospital Universitario San Ignacio and Pontificia Universidad Javeriana (Approval Minutes FM-CIE-1164-23). Signed informed consent was not required as the data were anonymized, and no sensitive information was exposed.

RESULTS

A total of 22 patients were included in this case series. The median age was 44 years (IQR: 32–64), 10 (45%) were male, 9 (41%) were newly diagnosed, 14 (63.4%) were in remission, and 8 (36.6%) had mild-to-moderate activity (MMA) at the initial evaluation. Ileocolonic involvement (Montreal classification L3) was more frequent among patients with MMA compared to those in remission (50% versus 7%, $p < 0.05$). Conversely, classifications A3, L1, and B1 were more common in patients in remission at the initial evaluation (A3: 64% versus 37%, $p < 0.05$; L1: 79% versus 25%, $p < 0.05$; and B1: 57% versus 12%, $p < 0.05$) (**Table 2**).

Table 3 shows the changes in the median CDAI score at each follow-up compared to the initial consultation. Regardless of the degree of activity during follow-up, there was an average reduction in CDAI scores to remission levels. This reduction was statistically significant at 12 months (CDAI: 50, IQR: 10–115) and 24 months (CDAI: 24, IQR: 10–117) ($p < 0.05$) (**Figure 1**). When evaluating CDAI progression based on initial activity levels, patients in remission showed a statistically significant improvement in CDAI at the 12-month follow-up (CDAI: 46, IQR: 10–70.7, $p < 0.05$). Patients with initial mild-to-moderate activity (MMA) exhibited a statistically significant improvement in CDAI at the 6-month (CDAI: 128, IQR: 62.5–226) and 12-month follow-ups (CDAI: 115, IQR: 12–221) ($p < 0.05$). By the end of the follow-up, 80% of patients were in remission, and 20% had MMA, while seven patients (31.8%) discontinued follow-up. Although there were no statistically significant differences in corticosteroid use during follow-up, there was a notable increase in the use of biologic therapies, from 36% at the initial consultation to 82.3% at 24 months ($p < 0.05$).

DISCUSSION

This study describes the baseline characteristics of patients with Crohn's disease (CD) and their two-year follow-up. Several noteworthy aspects emerge: first, the clinical characteristics of our case series suggest a profile of greater disease severity; second, by the end of the follow-up, 93.3% of the patients were on biologic therapy, a higher percentage than reported in our setting and in Latin America, indicating greater disease complexity in our program; and third, care provided by this specialized program demonstrated a reduction in disease activity during follow-up.

Various clinical predictors are associated with a worse prognosis in CD, including disease severity, age at presentation (<40 years), and ileocolonic involvement[5,22–24]. These variables influence hospitalization rates, the need for surgery, and the type of medical treatment required. Perianal involvement and extraintestinal manifestations are also associated with greater severity and a higher need for immunosuppressive therapy[22,25–28]. Penetrating disease, in particular, has been directly linked to a higher need for surgery and earlier recurrence compared to stricturing disease[22].

Our study shows a higher frequency of poor prognostic predictors compared to other studies in Colombia. The average age was 41 years, which was even lower among patients with mild-to-moderate activity (MMA) at 34 years, contrasting with other cohorts where the median age ranged from 45 to 47 years[14,16]. Among patients in remission at the initial evaluation, older age (>40 years), ileal involvement, and non-stricturing, non-penetrating behavior (Montreal classification A3, L1, B1) were more common, findings comparable to other Colombian cohorts[14–16]. However, these findings differ for those with MMA, who more frequently presented between 17 and 40 years of age, with ileocolonic involvement and stricturing behavior (Montreal classification A2, L3, B2). Additionally, 18% of our patients had perianal involvement, a higher frequency than previously reported (1.7%–9.8%)[14,15]. Finally, 9% of our population had upper gastrointestinal tract involve-

Table 2. Clinical Characteristics at Initial Evaluation of Crohn's Disease Patients at HUSI by Disease Activity

Variable	Total n = 22	Remission n = 14	Mild-to-Moderate Activity n = 8	*p*-Value
Age at consultation, median (IQR)	44 (32-64)	47 (39-63)	34 (25-67)	0.66
Male sex, n (%)	10 (45.5)	7 (50.0)	3 (37.5)	0.66
Newly diagnosed, n (%)	9 (40.9)	4 (28.6)	5 (62.5)	0.12
Initial outpatient visit, n (%)	18 (81.8)	14 (100)	4 (50.0)	0.06
Initial emergency visit, n (%)	4 (18.2)	0 (0.0)	4 (50.0)	0.06
Surgical management, n (%)	3 (13.6)	0 (0.0)	3 (37.5)	0.16
Prior surgical history, n (%)	4 (18.2)	3 (21.4)	1 (12.5)	0.76
Extraintestinal manifestations, n (%)	6 (27.3)	4 (28.6)	2 (25.0)	0.92
Hemoglobin (g/dL), median (IQR)	14.7 (12.7-15.8)	15 (13.7-16.2)	12.8 (11.4-15.2)	0.07
Montreal Classification, n (%)				
- A1	0 (0.0)	0 (0.0)	0 (0.0)	1
- A2	10 (45.5)	5 (35.7)	5 (62.5)	0.22
- A3	12 (54.5)	9 (64.3)	3 (37.5)	0.01
- L1	13 (59.1)	11 (78.6)	2 (25.0)	0.01
- L2	2 (9.1)	1 (7.1)	1 (12.5)	0.67
- L3	5 (22.7)	1 (7.1)	4 (50.0)	0.02
- L4	2 (9.1)	1 (7.1)	1 (12.5)	0.67
- B1	9 (40.9)	8 (57.1)	1 (12.5)	0.04
- B2	9 (40.9)	4 (28.6)	5 (62.5)	0.11
- B3	3 (13.6)	2 (14.3)	2 (25.0)	0.53
p-value	4 (18.2)	2 (14.3)	2 (25.0)	0.71

A1: <16 years; A2: 17–40 years; A3: >40 years; HUSI: Hospital Universitario San Ignacio; L1: Ileal; L2: Colonic; L3: Ileocolonic; L4: Isolated Upper Gastrointestinal Tract Involvement; B1: Non-Stricturing, Non-Penetrating; B2: Stricturing; B3: Penetrating; p: Perianal Involvement; IQR: Interquartile Range. Author's own research.

ment, which has not been reported in other Colombian cohorts[14–16]. Only one study in our setting has reported extraintestinal involvement, with higher percentages than observed in our study[15].

The fact that a significant proportion of patients in this study (36%) were already receiving biologic therapy at the initial evaluation may reflect a more severe disease course. In Colombia and Latin America, the reported frequency of biologic therapy use ranges from 8% to 40%[13–15,29]. By the end of follow-up, 93.3% of our population was on biologic therapy, a percentage consistent with the adoption of biologic therapy in countries with a higher prevalence of inflammatory bowel disease. A retrospective study in the United States observed an increase in biologic use in CD from 21.8% in 2007 to 43.8% in 2015[30]. Similarly, a French referral center reported that 60% of CD patients received at least one anti-TNF agent[31]. In our population, the high percentage of biologic use likely reflects the greater severity of the disease in our program. Considering that our hospital is a referral center for inflammatory bowel disease, most patients treated here have already been evaluated at other institutions and are referred either due to a lack of response to other immunomodulatory therapies or because of disease severity.

Tabla 3. Change in Median CDAI Score at Semiannual Consultations Compared to Initial Consultation in a Crohn's Disease Case Series

Variable	Initial Consultation n = 22	6-Month Follow-Up n = 22	*p*-value*	12-Month Follow-Up n = 19	*p*-value*	18-Month Follow-Up n = 19	*p*-value*	24-Month Follow-Up n = 17	*p*-value*	30-Month Follow-Up n = 15	*p*-value*
CDAI Crohn's disease, (IQR)	124 (52.7-211.2)	78.5 (47.7-188)	0.17	50 (10-115)	<0.05	71 (25-254)	0.29	24 (10-117)	<0.05	58 (30-153)	0.11
Initial Activity Level, CDAI Median (IQR)											
Remission	73 (40.7-122)	74.5 (42-173.5)	0.44	46 (10-70.7)	<0.05	60.5 (8.5-219.2)	0.97	11 (7-107.2)	0.07	50 (16-61)	0.13
Mild-to-moderate activity	216 (195.7-382.2)	128 (62.5-226)	<0.05	115 (12-221)	<0.05	170 (45-297)	0.06	170 (46-376.5)	0.14	145 (132.2-379)	0.46
Patients in remission at each consultation, n (%)	14 (63.6)	15 (68.2)	0.75	17 (89.5)	0.052	12 (63.2)	0.98	14 (82.3)	0.19	12 (80)	0.28
Treatment, n (%)											
Corticosteroid use	2 (9)	7 (31.8)	0.06	1 (5.3)	0.63	1 (5.3)	0.65	2 (11.8)	0.77	3 (20)	0.34
Biologic use	8 (36)	14 (63.6)	0.07	16 (84.2)	<0.05	15 (78.9)	<0.05	14 (82.3)	<0.05	14 (93.3)	<0.05

*These values were obtained by comparing activity levels at each follow-up with initial activity. CDAI: Crohn's Disease Activity Index; IQR: Interquartile Range. Author's own research.

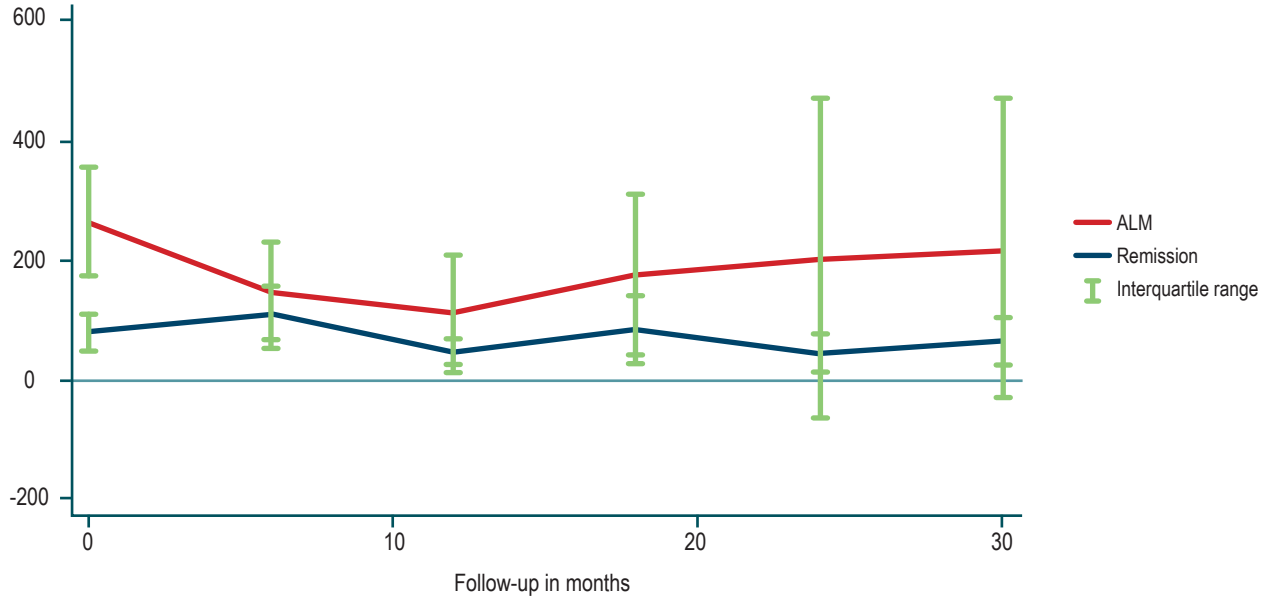

Figure 1. Average change in CDAI score over time. Author's own research.

By the end of follow-up, 20% of the patients continued to have mild-to-moderate activity (MMA) despite being on biologic therapy. This may be explained by variability in remission rates among different treatments. For example, in patients with mild disease activity, budesonide 9 mg/day achieved clinical remission in 46.7% to 61% of cases. In moderate-to-severe disease, prednisolone induced clinical remission in 59.8% of patients. Regarding TNF inhibitors, a remission rate of 25.5% was observed, with a relative risk (RR) of 1.66 (1.17–2.36) in patients with moderate-to-severe activity who had not responded to conventional therapy[17]. Therefore, although corticosteroids and biologic therapies are essential tools for managing Crohn's disease (CD), they are not 100% effective.

In our population, the Crohn's Disease Activity Index (CDAI) score showed a statistically significant reduction at the 12- and 24-month follow-ups. By the end of the follow-up period, 80% of patients were in remission. This response could be attributed to two factors: the high use of biologic therapy (93.3%) (as previously discussed) and the multidisciplinary approach of this program compared to standard care. This program enables early treatment adjustments, nutritional evaluation, mental health support, and assessment of extraintestinal involvement (e.g., rheumatology) during the same consultation.

Although disease activity improved during follow-up in both patients who started in remission and those with MMA at the 12- and 24-month evaluations, this reduction was not statistically significant at all time points. This finding could have three potential explanations:

- Previous data prior to the advent of biologic therapy demonstrated that disease relapse is common. The IBSEN cohort reported cumulative relapse rates of 53%, 85%, and 90% at one, five, and ten years post-diagnosis, respectively[5]. However, long-term data on relapse rates with biologic therapy are limited. A Danish population-based cohort of CD patients followed for a median of 7.7 years found cumulative recurrence rates of 40%, 63%, and 66% at one, five, and seven years after diagnosis, respectively[32]. These findings highlight the importance of strict follow-up for CD patients, as many may not respond to available treatments or may relapse during follow-up.
- Around 30% of patients discontinued follow-up during the study. This may have introduced selection bias, as patients with lower disease activity may have left the program, while those with higher activity levels may have continued follow-up.
- The small sample size may have limited the detection of statistically significant differences. Further studies with larger sample sizes are needed to evaluate the natural history of CD in our setting.

A key strength of this study is the reliable diagnosis of Crohn's disease (CD), as all diagnoses were confirmed through a multidisciplinary board. Additionally, follow-up through a specialized program ensures high data reliability due to the maintenance of an institutional registry for these patients. However, this series has limitations, including the small number of patients, which restricts the precision of CDAI change estimates. Moreover, due to the study's methodology, hypothesis testing should be considered only as a basis for generating hypotheses for future research. Nonetheless, this is the first reported case series of CD with longitudinal follow-up in Colombia. Another significant limitation is the lack of continuous follow-up for some patients. Therefore, further multicenter studies are recommended to evaluate the natural history of CD patients in our setting.

CONCLUSION

This study presents the clinical characteristics, therapeutic approaches, and outcomes of a specialized CD care program. Our findings suggest that this program achieves a reduction in CD activity, possibly associated with the use of biologic therapy. Future studies are needed to confirm the potential benefits of specialized care programs.

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Conflict of Interest

None.

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