


Prevalence and Outcomes of Crohn's Disease Among Patients Presenting with Lower Abdominal Pain in the Surgical Department

Nasser Mohamed¹ , Ahmad Abaidalla¹ , Salma Mohamed¹ , Majduadeen Alhlafi² , Amal Amhawe¹ ,
Wesam Abraheem³ 

¹Department of Surgery, Faculty of Medicine, Omar Almokhtar University, Libya.

²Department of Family and Community Medicine, Faculty of Medicine, Omar Almokhtar University, Libya.

³Global Alliance of Young Researchers (GAYR).

Corresponding author. ahmad.abaidalla@omu.edu.ly 

Abstract

Lower abdominal pain is a common clinical complaint and has a wide spectrum of causes, among which is Crohn's disease (CD). The CD should be diagnosed early to prevent both a late diagnosis and complications in such patients. This study examines the prevalence and clinical consequences of CD in 184 patients with lower abdominal pain who are admitted to Albyeda Medical Center. A retrospective examination identified CD in 6 individuals who were already diagnosed. Of the remainder, 35 were released following negative observation for appendicitis, and 143 had surgery. The histopathological examination of these operations revealed 8 new cases of CD, for a total prevalence of 7.6%. This result emphasizes that in young patients with abdominal pain, CD should be taken into account as one of the possible diagnoses.

Keywords. Crohn's Disease, Lower Abdominal Pain, Inflammatory Bowel Disease.


Introduction

Lower abdominal pain is a common indication for emergency department visits and represents a wide spectrum of diseases and conditions. These conditions may include acute appendicitis, gynecological disorders, diverticulitis, and IBD (particularly Crohn's disease). CD is a chronic relapsing inflammatory condition that can involve any segment of the gastrointestinal tract from the mouth to the anus. The ileocecal region was the most common site affected. Usually, affects people of all age groups, and it presents with non-specific symptoms such as abdominal pain, diarrhea, and weight loss. The similarity of CD to other acute diseases makes its diagnosis difficult, particularly in an emergency. Delays in diagnosing CD may lead to unnecessary operations and prolonged hospitalizations with the probability of poor outcomes.

Patients with Crohn's disease are at increased risk of cancer, osteoporosis, anemia, nutritional deficiencies, depression, infection, and thrombotic events. Maximizing prevention measures is essential in caring for these patients. The diagnosis was made in almost half of the patients. CD is characterized by a discontinuous and ulcerous transmural inflammation often involving the ileocaecal region and leading to a stricturing or even fistulising phenotype in up to 50% of patients.

CD is mainly a clinical diagnosis based on the patient's history and examination, and supported by laboratory, serological, radiological, endoscopic, and histological findings. Treatment goals of CD include resolution of symptoms and reduction of bowel inflammation, the latter being targeted with the hope of preventing future symptomatic relapse and progressive bowel damage.

The prevalence and incidence of CD have historically been higher in developed countries. There are hundreds of articles describing the incidence of CD in many regions of the world. Acute abdominal pain can represent a spectrum of conditions from benign and self-limited disease to surgical emergencies. Evaluating abdominal pain requires an approach that relies on the likelihood of disease, patient history, physical examination, laboratory tests, and imaging studies [1].

Crohn's disease (CD) is a type of inflammatory bowel disease (IBD) that causes chronic granulomatous inflammation of the gastrointestinal tract. It has a high recurrence rate and an unpredictable disease course. Recent studies have shown an increased global trend in the prevalence of CD in Western countries, Asia, and the Arab world [2]. The exact diagnosis of IBD is crucial for patient safety and treatment and for the interpretation of epidemiological data. However, CD is sometimes not obvious even after clinical, endoscopic, radiologic, macroscopic, and histologic evaluations. In practice, 3%–10% of patients with colonic inflammation have overlapping clinical and pathological features, making it difficult to distinguish between CD and other differential diagnoses [3]. The highest annual incidence of CD was 12.7 per 100,000 person-years in Europe, 5.0 person-years in Asia and the Middle East, and 20.2 per 100,000 person-years in North America [4]. 

This research aims to investigate the incidence of patients with CD presenting with lower abdominal pain, compare findings on restaging of disease following different therapeutic procedures, and highlight the importance of early and correct diagnosis as an element that can provide greater safety and efficiency in clinical management. The two most common sites of CD are the ileum and the colon [5].

Crohn's disease confined to the appendix is a rare entity, with an incidence that has been reported as 0.1% up to 2.0% and up to 50% of specimens resected in cases of CD showed appendiceal involvement [6] and was first described by Meyerding and Bertram in 1953. When CD affects the appendix exclusively, it may present with chronic or recurring symptoms, and in most cases it can present macroscopically as an increase in volume that can range from 1.5 cm to 2 cm, adhered to surrounding structures due to chronic inflammatory changes; ultimately, histopathological study will determine whether it is CD or an acute appendicitis non related to CD; additionally appendiceal CD has been considered a different entity from idiopathic granulomatous appendicitis [5]. Appendectomy remains the gold standard for treatment of this disease [7]. The most common symptom of appendiceal CD is right lower quadrant pain, very similar to that observed in acute appendicitis, which can be acute or chronic (2 or more days). Histopathologic features are characterized by transmural chronic inflammation with marked fibrous thickening of the wall, lymphoid aggregates, small noncaseating granulomas, ulcerative mucosal change, crypt abscesses, muscular hypertrophy, and neural hyperplasia [8].

It has been reported that primary CD of the appendix has a more favorable clinical outcome compared to CD arising in the small or large bowel, with long post-surgical remissions and a recurrence rate of 8% to 10% [6]. Recently, it has been suggested that endothelial Fas-L expression in endothelial cells may play an important role in the regulation of mucosal immunity and in the pathogenesis of CD and IBD [9].

Differential diagnosis should include intestinal tuberculosis, foreign body reaction, and diverticulitis of the appendix, actinomycosis, yersinia infection, and even carcinoma [10-15]. Ileal resection is clearly indicated for an obstructing ileal stricture that fails to respond to medical or endoscopic therapy, for a right iliac fossa mass with internal or external fistulation, for uncontrolled bleeding, or when there is free perforation [16].

Methods

In this study, we retrospectively analyzed 184 patients with Lower abdominal pain who presented to the surgical department in Albayeda Medical Center using the files of those patients from the statistics department of Albayeda Medical Center. The sample included 161 males and 23 females, aged from 18 to 38 years. The patient's clinical course was divided into two types: crohn's disease Patients who have been diagnosed with Crohn's disease patients, and the non-Crohn's disease group.

Results

The study included 184 participants, with 14 diagnosed with Crohn's disease and 170 without. The overall mean age was 28.54 years (SD = 5.68), and the median age was 29. Participants with Crohn's disease tended to be slightly older on average. The sample was predominantly male, though the proportion of females was higher in the Crohn's group compared to the non-Crohn's group.

Table 1. Overall Demographic Characteristics of the Study Sample (N = 184)

Characteristic	Value
Age (Mean ± SD)	28.54 ± 5.68
Age Range	18 – 38
Median Age	29
Male, n (%)	161 (87.5%)
Female, n (%)	23 (12.5%)
Crohn's Disease, n (%)	14 (7.6%)
No Crohn's, n (%)	170 (92.4%)

Participants with Crohn's disease had a slightly higher mean age (30.36 ± 6.71) compared to those without (28.44 ± 5.62). Median age was also higher in the Crohn's group (31.50 vs 29.00). Tests of normality indicated that age was not normally distributed among groups (Shapiro-Wilk $p < .001$). Given the non-normal distribution, a Mann-Whitney U test was used, revealing no statistically significant difference in age between groups ($U = 954.000$, $Z = -1.234$, $p = .217$). Here also, we note the overall prevalence of crohn's disease in lower abdominal pain cases is 7.6% which is near the overall world prevalence of crohn's disease.

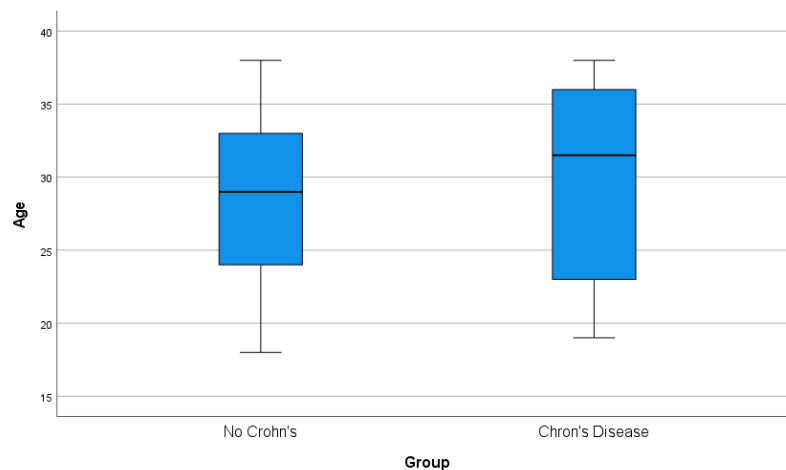


Fig 1. Boxplot of age distribution among participants with and without Crohn's disease.

Gender distribution differed significantly between participants with and without Crohn's disease. Among those without Crohn's, 89.4% were male and 10.6% female, while the Crohn's group included 64.3% males and 35.7% females. A Pearson Chi-Square test indicated a statistically significant association between gender and Crohn's status ($\chi^2 = 7.466$, $p = .006$), supported by Fisher's Exact Test ($p = .018$). These findings suggest that females were proportionally more represented in the Crohn's group compared to the non-Crohn's group.

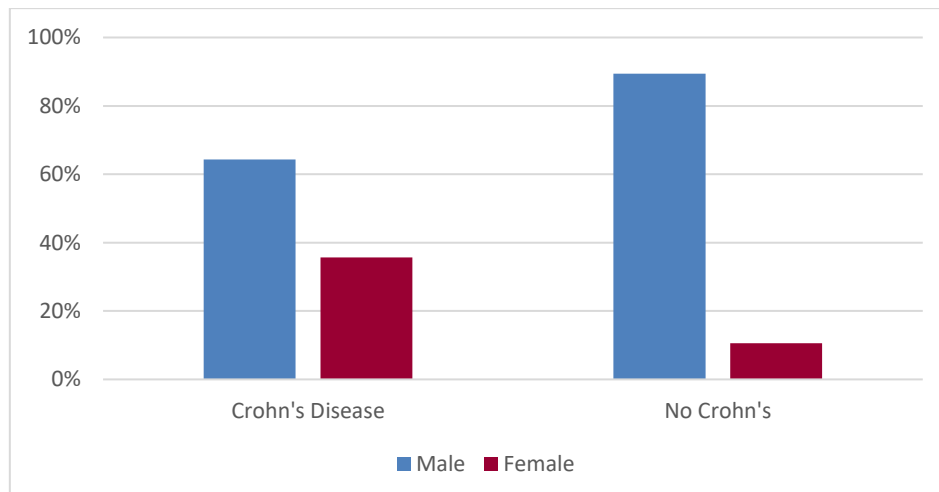


Fig 2. Bar chart showing gender distribution within Crohn's and non-Crohn's groups.

Discussion

The high proportion of surgical cases (77.7%) emphasizes how tricky it can be to tell Crohn's disease apart from other acute abdominal conditions—like appendicitis—when relying only on clinical signs. When such patients proceed to operation, histopathological evaluation continues to serve as the reference criterion for diagnosing Crohn's disease, corroborating earlier findings [17]. The current data parallel the published literature, which argues that Crohn's disease can debut abruptly, simulating surgical pathology and complicating timely diagnosis. The emergence of Crohn's cases in the surgical cohort reinforces the necessity of specimen review and close surveillance in the postoperative period [18,19]. Moreover, we noted differences in the prevalence assessed by the Vienna versus the Montreal classifications [20,21].

Review studies suggested that young male patients presenting with erythema nodosum [22-24]. Aphthous ulcers and stricturing-phenotype CD are associated with an increased risk of development of UGI-CD [25]. Some of the factors, such as young age at diagnosis and stricturing phenotype, are identified as high-risk factors for an aggressive course of CD [26]. Sun et al also showed that UGI-CD was associated with CD relapse in 36% of UGI-CD patients [20]. The prevalence of abdominal surgery among UGI-CD was as high as 66.7%, which was higher than the CD overall surgical rate of 47% [27].

Females tend to experience more gastrointestinal symptoms than males, which increases the risk of anxiety and depression among them. Disease activity was observed to be higher in females, and factors such as physical and psychological tolerance may also contribute to these differences [28]. Acute appendicitis often affects similar age groups and presents with symptoms similar to those of CD. However, the early diagnosis of CD is crucial to prevent serious postoperative complications. It has been suggested that if CD is suspected during a surgical procedure for acute appendicitis, a macroscopically normal appendix should be preserved in the absence of complicated disease [29]. Furthermore, a prospective randomized controlled trial

demonstrated that clinical and surgical recurrence rates did not increase in case of active inflammation at sites of resection margins [30]. A contrast-enhanced CT scan is valuable in distinguishing CD from appendicitis and other differential diagnoses. CD typically presents with bowel wall thickening (>1 cm), mucosal hyperenhancement, fat stranding, and the “comb sign,” unlike the localized inflammation seen in appendicitis, which features a distended appendix, appendicolith, and *peri-appendiceal* fat changes [31,32]. MRI offers similar diagnostic accuracy, with reported sensitivities of 87–92 % for obstruction and up to 100 % for abscess detection [33]. Fecal calprotectin, a neutrophil-derived marker of intestinal inflammation, is typically elevated in CD but not in uncomplicated appendicitis, making it a useful non-invasive tool for differentiation [34,35].

Imaging tests such as CT enterography (CTE) and MR enterography (MRE) are important diagnostic procedures for IBD. These tests overcome some of the limitations of endoscopy in that they permit evaluation of the entire bowel, which is particularly useful in cases of suspected Crohn’s disease. Additionally, CTE and MRE are non-invasive, generally better tolerated than endoscopy, and may permit detection of extraintestinal disease [36].

Conclusion

This study has emphasized the importance of recognizing Crohn's disease as a differential diagnosis in young patients with lower abdominal pain. With a prevalence rate of 7.6%, CD is an important cause of these presentations. An early diagnosis and a proper treatment plan are essential in reducing surgical intervention rates and improving clinical outcomes. Future studies should focus on developing and validating non-invasive diagnostic methods that will allow for early detection and treatment of CD.

Conflict of interest. Nil

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