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Original research

The analysis of clinico-pathologic characteristics in patients who underwent surgery due to stricturing and non-perineal fistulizing forms of Crohn's disease: A retrospective cohort study

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HIGHLIGHTS

- There is still no common etiopathogenetic model for all forms of Crohn's disease.
- Data is limited regarding clinico-pathologic characteristics of the stricturing and non perineal fistulizing forms.
- No specific clinical feature was found in the present study between the two disease forms.
- Histopathological analysis revealed significant differences in some parameters.

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ABSTRACT

Background: The diagnosis of Crohn's disease is based mainly on the patient's history and clinical examination and supported by serologic, radiologic, endoscopic, and histologic findings.
Aims: The main purpose of the present study was to evaluate in a retrospective manner the clinico-pathological characteristics of patients who underwent surgery due to stricturing or non perineal fistulizing Crohn's disease.
Material and methods: Between January 2007 and June 2012, 75 patients who were operated on for stricturing and non-perineal fistulizing forms of Crohn's disease were analyzed according to their clinico-pathological characteristics.
Results: The L3 localization (Montreal Classification) was detected significantly more often in the non-perineal fistulizing group than in the stricturing group ($P < 0.03$). Wound infection (18 patient, 24%) was the most commonly observed postoperative complication, followed by postoperative ileus (5 patients, 6.7%) and intraabdominal abscess (4 patients, 5.2%). The distribution of postoperative complications according to the two groups was not significantly different ($P = 0.772$). Submucosal fibrosis, ulcers and transmural inflammation were the three most common histopathological signs in resected specimens from both groups. Pseudopolyps, microabscess, granuloma, mononuclear inflammation and deep fissures were significantly far more frequent in the non perineal fistulizing group when compared to the stricturing group ($P < 0.05$). On the other hand, superficial ulcers were significantly more frequent in the stricturing group ($P = 0.007$).
Conclusion: No specific clinical feature was found to differentiate patients with the stricturing form of Crohn's disease from the fistulizing form. However, histopathological analysis of the resected specimens revealed significant differences in some parameters between the two disease forms.

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1. Introduction

Crohn's disease is a chronic relapsing inflammatory disease of unknown cause that can affect any part of the gastrointestinal tract [1,2]. The disease is characterized by a discontinuous and ulcerous transmural inflammation often involving the ileocaecal region and leading to stricturing or perforating complications; of these the latter eventually form fistulas in up to 50% of patients. The diagnosis of Crohn's disease is based mainly on the patient's history and clinical examination and is supported by serologic, radiologic, endoscopic, and histologic findings [3]. Indications for surgery include failure of medical treatment, bowel obstruction, fistula or abscess formation, with the most common surgical procedure being resection [4].

Although several details of the pathophysiology have been explained, there is still no common etiopathogenetic model for all forms of Crohn's disease [5]. In the European Crohn's and Colitis Organization (ECCO) consensus statements (2006, 2009 and 2013), reviews and recommendations were based mostly on the management of medical therapies and drug regimens. However, little information was given and limited evaluation was discussed in these conferences regarding the clinical characteristics, prognosis and treatment algorithms of patients with stricturing or non perineal fistulizing forms that require surgery [6–8].

The main purpose of the present study was to evaluate in a retrospective manner the clinico-pathological characteristics of patients who underwent surgery due to stricturing or non perineal fistulizing Crohn's disease.

2. Material and methods

Between January 2007 and June 2012, 75 patients in the Gastroenterological Surgery Department at Turkiye Yuksek Ihtisas Teaching and Research Hospital operated on for stricturing and non-perineal fistulizing forms of Crohn's disease were retrospectively evaluated according to their clinico-pathological characteristics. Patients with isolated perineal Crohn's disease and those with fulminant colitis were not included in the study.

The diagnosis of preoperative Crohn's disease was determined according to the criteria defined by the World Gastroenterology Organization Practice Guidelines, including clinical, radiologic, endoscopic and pathologic findings [9].

The patients were divided into 2 groups: those with stricturing and those with non perineal fistulizing Crohn's disease. The two groups were compared according to the following criteria: age; gender; time interval between the diagnosis of the disease and surgery; tobacco usage; concomitant perineal disease; history of appendectomy; drug treatment; localization of the disease and the number of fistulas with their detection time (peroperative) according to the Montreal Classification [10] (Table 1); primary or recurrent disease; surgical procedures; type of anastomoses; hospitalization period; morbidity; mortality; and histo-pathological characteristics.

Morbidity and mortality were defined as complications or death occurring within 30 days post surgery.

The histopathological examination consisted of evaluation of parameters including pseudopolyp, cobblestone sign, transmural inflammation, ulcer, mesenteric lymphadenopathy, subserosal or submucosal fibrosis, lymphangiectasia, ganglioneuritis, neurit, neural hypertrophy, vascular obliteration, crypt abscess, microabscess, granuloma, pyloric metaplasia, mononuclear and mixed type inflammation, superficial and deep fissures, positive surgical resection margins, and resection length of the specimen.

2.1. Statistical analysis

Data analysis was performed by using SPSS for Windows 11.5 software. Whether normal distribution of continuous variables was investigated by Shapiro Wilk test. Descriptive statistics for continuous variables were shown as mean ± standard deviation or median (minimum–maximum) and categorical variables were shown as the number and percentage of cases. The significance of the difference between the groups in terms of mean were analyzed with Student's t test as significance of the difference in median values were analyzed with the Mann-Whitney U test. Categorical variables were assessed by Pearson's chi-square or Fisher's exact Chi-square tests. P value of <0.05 was considered as statistically significant.

3. Results

3.1. Demographic data and clinical characteristics of the patients

Seventy-five patients underwent surgery. Of these, 46 (61.3%) patients had bowel stenosis due to stricture formation, whereas 29 (38.6%) patients had non-perineal fistulizing disease. The mean age was 38.1 ± 12.1 years. The patients' demographics and characteristics are listed in Table 2. There was no significant difference between the two groups in terms of age, gender, tobacco usage, history of appendectomy or concomitant perineal disease.

Table 1
The Montreal classification.

Age at diagnosis (A)	
A1 ≤ 16 years	
A2 17–40 years	
A3 >40 years	
Localization (L)	**Upper GİS (L4)**
L1 Terminal ileum	L1+L4
L2 Colon	L2+L4
L3 ileocolonic	L3+L4
L4 Upper GİS	Localization could not be determined
Behavior (B)	**Perineal Disease (P)**
B1 Without stricture formation non-penetrating	B1+P
B2 Stricturing	B2+P
B3 Penetrating	B3+P

GİS: Gastrointestinal System.

Table 2
Patient's demographics and characteristics.

	Stricturing group (n = 46)	Fistulizing group (n = 29)	Total (n = 75)	*P* Value
Age	39.6 ± 13.1	35.6 ± 9.7	38.1 ± 12.1	0.544
Gender				0.685
Male	28 (60.9%)	19 (65.5%)	47 (62.7%)	
Female	18 (39.1%)	10 (34.5%)	28 (37.3%)	
Smoking				0.322
Active user	20 (43.5%)	8 (27.6%)	28 (37.3%)	
To be off smoking	9 (19.6%)	9 (31%)	18 (24%)	
Never use	17 (37%)	12 (41.4%)	29 (38.7%)	
Previous appendectomy				0.167
Yes	12 (26.1%)	12 (41.4%)	24 (32%)	
No	34 (73.9%)	17 (58.6%)	51 (68%)	
Synchronous perineal disease				1.000
Yes	6 (13%)	3 (10.3%)	9 (12%)	
No	40 (87%)	26 (89.7%)	66 (88%)	
Montreal classification				
L1	12 (26.1%)	4 (13.8%)	16 (21.3%)	0.206
L2	5 (10.9%)	0 (0%)	5 (6.7%)	0.150
L3	29 (63%)	25 (86.2%)	54 (72%)	0.030