

Findings from ileoscopies performed in the endoscopy service of the Neiva University Hospital from 1996 to 2009

Gustavo Portela Herrán, MD,¹ Germán Díaz Santos, MD.²

¹ Gastroenterologist, Assistant Professor of Medicine at the Universidad Surcolombiana USCO (South-Colombian University). University Hospital of Neiva. Neiva, Colombia.

² Medical Resident, level III of Internal Medicine at the USCO. Neiva, Colombia.

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Summary

Ileoscopy is endoscopic exploration of the ileum. It can be performed using two procedures: single or double balloon endoscopy or capsule endoscopy. We have little information about ileum pathologies in our environment.

Objective: Describe findings from ileoscopies performed through colonoscopies without prior indications. Calculate the frequency of these findings.

Materials and methods: 3701 reported colonoscopies performed in the Neiva University Hospital were examined between 1996 and 2009. 417 colonoscopies were selected for ileoscopies, which were performed from 29 biopsies.

Results: 417 reports were included for analysis. 92.9% were normal. 7.1% (34 patients) presented pathologic characteristics. Of those 34 patients, 28 were chosen for biopsies. The most frequent diagnoses were chronic inflammation (56%) and lymphoid hyperplasia (28%). No complications were reported from the use of endoscopic procedures.

Conclusions: Ileoscopy is a procedure with low productivity regarding distal ileum pathologies. We cannot recommend this procedure for routine examinations. It must be practiced with discretion by specialists depending upon the availability of other methods, experience and costs.

Key words

Ileoscopy, lymphoid hyperplasia.

INTRODUCTION

Diagnosis of large intestine illnesses has advanced thanks to the development of endoscopic techniques. The same cannot be for about the small intestine, since knowledge about it has been advancing for only a short period of time.

The small intestine constitutes two thirds of the alimentary canal. The terminal ileum in turn constitutes three fifths of the alimentary canal making it difficult to explore via endoscopy.

Intubation of the terminal ileum should not be performed as a routine procedure because it adds three minutes to normal procedure time. This is related to the learning

curve of the procedure which shows a plateau after 750 procedures achieved. In 85% of cases there is low diagnostic performance (1).

It has shown itself to be useful only in a few studies in which systemic and well-located illnesses such as Inflammatory Bowel Disease (IBD). It has also been used to clarify the etiology of chronic diarrhea (2) and other diseases such as lymphoma, ileitis induced by cytomegalovirus, tuberculosis and other infections (3).

Nevertheless, some authors consider that when upper gastrointestinal (UGI) endoscopy is performed to examine the second and third duodenal portions the terminal ileum should be examined as well, even when there has been a low diagnostic yield (4).

The most frequent complication described in the text is pain, which is considered to be a warning signal to stop the procedure. This indicates that the ileum is extended and that a perforation may have occurred. Ileal perforation can be related to prolonged attempts at intubation and excessive insufflations of the cecum (5).

The principal objectives of our study are to describe pathologies of the terminal ileum in our region epidemiologically, explain indications for colonoscopy, and examine how well endoscopic and histological diagnoses coincide.

MATERIALS AND METHODS

A retrospective, cross sectional, descriptive study was performed. We reviewed reports of colonoscopies performed in the Endoscopy Unit of the University Hospital of Neiva from 1996 to 2009. A total of 3,701 colonoscopies were performed. Of these there were 417 chosen for ileoscopies. For these 417 patients we collected epidemiological data including age, gender, place of origin and place referred from (external medical office, hospital emergency room, and others).

The colonoscopies were ordered by gynecologists, obstetricians, internal medicine specialists, and general surgeons (there were no definite indications for ileoscopy. This procedure was performed to satisfy the scientific curiosity of the specialists). The procedures were performed by a gastroenterologist and two gastrointestinal surgeons using Fujinon and Olympus colonoscopes. Findings such as polyps, erythemas, ulcers, congestive mucosa, micronodular pattern, white pearl pattern, rigidity and coldness, hemorrhaging injuries and nodular lesions were registered. The preparation technique used to use saline laxatives, but for the last 3 years mannitol and polyethylene glycol have been used for preparation. No sedation of any type was used to perform procedures.

The study was carried out within the Endoscopy Unit of the University Hospital of Neiva, which is a third level hospital. It cares for patients from strata one and two (The two lowest social economic geographical units defined in Colombian law. There are 6 strata) from Huila, Caquetá, Putumayo and Tolima departments.

The sample included all patients of both genders who filled in all of the data required on our forms. Patients were 18 years or older patients and had had a colonoscopy with ileal intubation performed. Patients were included in the sample whether or not a biopsy was performed during the period of study. The patients who did not fulfill the requirements were excluded.

We took the information on microscopic studies from the reports of the Pathological service of the University Hospital of Neiva.

EPIINFO 3.5.1 version, July 17th 2008 was used to create a database and statistical calculations including percentages, percentiles, mode and mean. The graphs were created in Office Excel 2007.

RESULTS

13 years of colonoscopy reports were reviewed. 11.2% of these reports fulfilled inclusion criteria (417 ileoscopies out of 3,701).

Most of the patients came from the north of Huila, mainly from the cities of Neiva (63%), Pitalito (4.5%), Palermo (3%), and Campoalegre (2.5%). A small percentage (0.9%) came from Purificación and Planadas, Tolima rather than from Huila.

81% of the patients upon whom ileoscopies were performed had colonoscopies upon the request of external consultants. 56.6% of the patients studied were women, 43.4% were men.

Most of the patients were between 41 and 50 years old (25.4%), followed by 31 to 39 years old (22.5%). 17.8% of the patients were 60 years old or more. 15.8% were between 51 and 60 years old. 14.4% were between 21 and 31 years old. 4.2% of patients were 20 years old or younger. Mean: 43. Mode: 39 (figure 1).

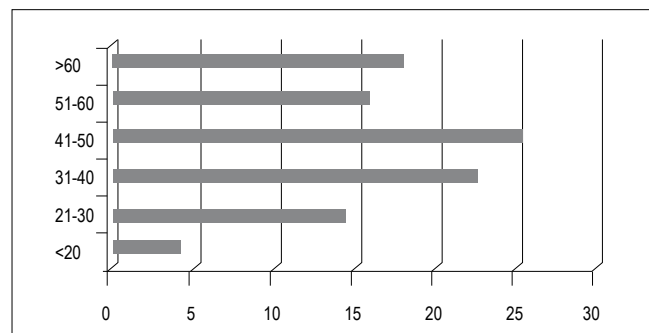


Figure 1. Ileoscopies and Patients' Ages.

The main indications for colonoscopies were lower digestive tract hemorrhaging affecting 22.2% of all cases. This was followed by irritable bowel syndrome which affected 15.6% of all patients. Abdominal pain affected 12.7%, while chronic diarrhea affected 10% (Table 1).

Most of the ileoscopies performed (92.8%) found no new pathologies. The most frequent alteration found was non-specific ileal inflammation (2.9% ileitis) and ulcerative ileitis (1.4%) (Table 2).

Only 7.1% of the ileoscopies had positive findings. Biopsies were taken from 5.9% of this total. Biopsies were not performed on two patients who presented hemorrhages in the colon and ileum.

Table 1. Indications for the colonoscopy.

Indication	Percentage (%)
Colorectal cancer	7,90
Chronic diarrhea	10,00
Abdominal pain	12,70
Anal-rectal diseases	2,60
Diverticular disease	2,60
Inflammatory bowel disease	8,40
Pre-transplant ERC study	0,50
Constipation	2,40
Primary unknown extension studies	4,70
HVDB	22,20
Abdominal mass	4,20
Intestinal obstruction	0,80
Colonic polyps	2,10
Proctocolitis	0,50
Anemic syndrome	2,10
Constitutional syndrome	0,30
Irritable bowel syndrome	15,60
Intestinal tuberculosis	0,30

Table 2. Endoscopic diagnosis from ileoscopies.

Principal diagnosis	Percentage (%)
Findings in the ileocecal valve	0,50
Ileitis	2,90
Erosive ileitis	0,70
Ileitis by tuberculosis	0,50
Ulcerative ileitis	1,40
Normal ileocolonoscopy	92,80
Ileal hemorrhage	0,70
Ileal polyposis	0,50

Only 2.6% of the patients were unsuitably prepared for the procedure.

93% of the colonoscopies had only normal visual indications. 1.9% showed erythema. 1% showed depressed lesions, nodular depression and congested mucosa (Table 3).

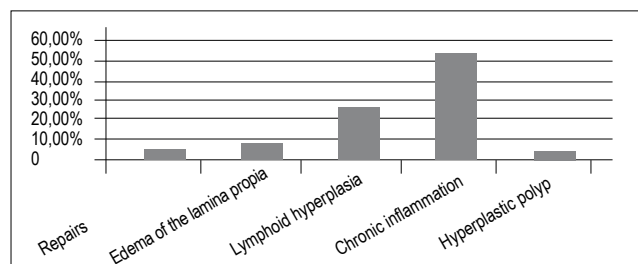
Pathology reports demonstrated chronic inflammation in 56% of the cases, lymphoid hyperplasia in 28%, edema of the lamina propia in 8%, and hyperplastic polyps and reparative changes in 4% (figure 2).

The two patients who were diagnosed with lesions in the ileocecal valve both (100%) had lymphoid hyperplasia. Most of the 8 patients with ileitis reported chronic inflammation. One had edema of the lamina propia and another had lymphoid hyperplasia. Of the three patients with erosive ileitis, one had reparative changes, one had lymphoid hyperplasia and the other had chronic inflammation. Of

the two patients with ileitis caused by tuberculosis, one had lymphoid hyperplasia and the other had chronic inflammation. All three patients with ulcerative ileitis showed chronic inflammation on their pathology reports. The two patients with normal ileoscopies showed lymphoid hyperplasia and chronic inflammation. Of the two patients with ileal polyps, one had edema of the lamina propia while the other had hyperplastic polyps (Table 4).

Table 3. Macroscopic lesions seen in colonoscopies.

Macroscopic lesions	Percentage (%)
Polyps	0,5
Diverticulitis	0,5
Depressed lesions	1,0
Normal	93,0
White pearl pattern lesions	0,5
Micronodular patterned lesions	0,5
Petechial lesions	0,7
Nodular lesions	1,0
Rigidity and coldness	0,2
Congested mucosa	1,0
Erythema	1,9
Aphthous ulcer	0,7
Ulcers	0,2

**Figure 2.** Pathology reports of biopsies of distal ileum.

DISCUSSION

Ileal intubation is a controversial procedure because some studies report poor diagnostic results, but important cost increases (6). Price lists in manuals do not contemplate additional costs for ileal intubation.

Different series report durations. Our study looked at colonoscopies performed during thirteen years. Nevertheless shorter studies report greater frequencies of the procedure (7).

Our sample included 3,701 colonoscopies. Of these, there were 417 ileoscopies performed (11%). 43.4% of our cases were men and, 56.6% were women. The largest number of patients were between 41 and 50 years old. Gender

Table 4. Comparison between principal diagnoses and pathology reports.

Pathology report Principal diagnosis	Reparative changes	Edema of the lamina propia	Lymphoid hyperplasia	Chronic inflammation	Hyperplastic polyps
Findings in the ileocecal valve by the study	0	0	2	0	0
Ileitis found by the study	0	1	1	8	0
Erosive ileitis	1	0	1	1	0
Ileitis caused by TBC	0	0	1	1	0
Ileitis ulcerativa	0	0	0	3	0
Normal ileo-colonoscopy	0	0	1	1	0
Ileal polyposis	0	1	0	0	1

relations agree with another series published in Colombia (8), although our patients had a lower average age. The greatest percentage came from the Neiva, the capital of Huila. The rest came from rural areas in the north of the department.

Kundratas and others (9), measured the length of the terminal segment of the ileum for 162 of the cases they studied. It was 5 cm or less in 24.07 % of those cases, from 5 cm to 10 cm in 50% of their cases, and more than 10 cm in 42% of those cases. (4) Our study did not evaluate the length of the area under study.

In our study the most frequently reported microscopic alteration was ileitis, an inflammation of the terminal ileum. It can present itself in two forms. One form is acute, generally with infectious origins. It is limited with antibiotics. (10) The second form is chronic, caused principally by idiopathic inflammatory disease of the small intestine. Most of our patients presented chronic pathologies. We can infer this from colonoscopy indications and from the greater percentage obtained from external consultancies.

Different indications for performance of ileoscopies exist as shown in the study by *James and Church* (11). That study reports that the main indications were prior knowledge of colon cancer, bleeding in the digestive tract and prior presence of polyps. In other studies (12), the most frequent indications were diarrhea, hemorrhages in the lower digestive tract and abdominal pain. In our study the main indications for performing colonoscopies were hemorrhages in the lower digestive tract, irritable bowel syndrome and abdominal pain.

The routine performance of ileoscopies has been discussed a great deal, nevertheless the most rational method is to allow patients to decide whether or not they want to have this procedure performed. Different types of mucosal alterations such as edema, erythema, erosions and ulcers can be seen through the use of ileoscopy. Since biopsies frequently do not show specific results, it often becomes necessary to use complementary paraclinical measures

such as cultures, serological studies, electron microscopy and immunohistochemistry (15).

Our study shows that a very high percentage (93%) of ileoscopic exams did not show any abnormal findings. However, non-specific ileal inflammation and ulcerative ileitis frequently presented themselves in the alterations. Four studies report that 73% of their cases were normal. 9% showed alterations. Lymphoid hyperplasia was seen in 18% of these cases. Crohn's ileitis was seen in 3.6%, unspecified ileitis in 2.6%. Lymphoid hyperplasia was reported as normal.

It is important to emphasize that there are very few series which report great alterations after ileoscopies. Nevertheless the reported percentages from most series could cause confusion among readers since they are shown as statistical percentages of alterations that do not exceed 23% (8). However, they do not come from the total number of ileoscopies performed. Our study reported alterations in only 7% of the cases 2.9% of which were non-specific ileitis. Studies have reported 48% of performances associated with lower abdominal pain, and 43% with of inflammatory bowel disease (16). Other studies of chronic diarrhea among HIV patients have demonstrated a diagnostic performance of 67% of all reported results (8-13). In our series of reported cases, there were no HIV patients. In our study, ulcerative ileitis was reported in 1.4% of the cases, 0.7% presented erosive and hemorrhaging lesions. Lesions such as polyps, tuberculosis and alterations in the ileocecal valve were found in 0.5% of the cases. Other studies show 1.5% of patients with tumors and polyps (14).

The majority of authors consider that nodular hyperplasia is an immunological expression of different systemic alterations. Others consider it to be a normal pattern. In some series it is the most frequent result in pathology reports (4). In our study nodular hyperplasia was present in 28% of the cases. Edema of the lamina propia that can be understood as non-specific inflammation was found in 8% of our cases. Although chronic inflammation was most

frequently reported pathology reports, it did not suggest any particular disease.

In contrast to other studies, Crohn's disease was not diagnosed in our study. In those studies it was associated with manifestations in the mucosa such as ulcers, micronodular pattern and stenosis. There were no cases of angiodysplasia, tumors or lymphomas in our study. In previous studies the percentages of these disorders had been generally low. One hyperplastic polyp was reported through pathology in our study (14).

The majority of the pathology reports showed chronic inflammatory processes including ulcers, although they were not connected to any specific pathology. Changes in erosive ileitis were associated with active inflammatory alterations or in the process of being resolved. Although there was a suspicion of connection to tuberculosis of the terminal ileum when chronic inflammation and normal lymphatic responses were evident, no acid-alcohol resistant bacilli were evident in the samples. The polyp that was found in the hyperplasia was not associated with malignancy.

CONCLUSIONS

- In our environment the diagnostic performance of ileoscopy does not justify routine use. Where there are well-trained human gastroenterologists it is necessary to leave the decision whether or not to intubate the terminal ileum to search for a pathology that may explain the patient's symptoms to the specialists.
- The decision not to intubate the terminal ileum should not be based on costs since official manuals of prices do not list any additional cost for intubation during the colonoscopy.
- Since technologies like endoscopic capsules and one and two balloon video-enteroscopy have very high costs and limited availability, exploration of these distal centimeters of the ileum through ileoscopies can help establish diagnoses of intestinal pathology without incurring great costs in some particular situations.
- This procedure has a rate of complications close to zero.

Conflicts of interest

None.

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