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*Research Article*

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# Intestinal Amoebiasis in Patients with Inflammatory Bowel Disease (IBD)

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## Abstract

**Introduction:** Intestinal amoebiasis is defined as the condition in which the human body harbors Entamoeba histolytica, with or without clinical manifestations. It may mimic a flare-up of inflammatory bowel disease (IBD), particularly in endemic regions, potentially leading to diagnostic and therapeutic errors. A properly performed stool parasitological examination (SPE) is essential for establishing the diagnosis and preventing complications.

**Objective:** To assess the prevalence of intestinal amoebiasis in patients with IBD and highlight the importance of stool parasite examinations (SPE) in the differential diagnosis of an IBD flare-up.

**Materials and methods:** This were a retrospective study conducted at the Parasitology-Mycology Laboratory of the Hassan II University Hospital in Fez from August 2016 to December 2025. It covered all requests for SPE originating from the Gastroenterology-Hepatology Department for patients with IBD.

**Results:** Out of 249 stool examinations performed, 67 were positive, representing a positivity rate of 27%. Crohn's disease affected 17 patients (25.37%), and ulcerative colitis affected 50 (74.63%). Male patients accounted for 52.22% of cases, and female patients for 44.78%. The *Entamoeba histolytica*/*E. dispar* complex was found in the vegetative form in 38.80% of cases and in the cystic form in 61.19%. Associated non-pathogenic intestinal parasites were found in 61.19% of cases.

**Conclusion:** Screening for intestinal amoebiasis in patients with IBD is essential—particularly before initiating corticosteroid or immunosuppressive therapy—to avoid exacerbating an undiagnosed infection and to tailor therapeutic management.

**Keywords:** Amoebiasis, Parasitosis, IBD, EPS, Crohn's, UC

## Introduction

Inflammatory bowel diseases (IBD) are chronic inflammatory disorders of the digestive tract, mainly comprising two conditions: Crohn's disease (CD) and ulcerative colitis (UC). They result from interactions among multiple genetic, immunological, environmental, and microbial factors. Their incidence is steadily increasing worldwide, making them a major public health concern [1-2].

Intestinal amoebiasis is a cosmopolitan parasitic disease caused by the protozoan Entamoeba histolytica and transmitted via the fecal–oral route. It is particularly prevalent in settings with poor sanitation, where it remains endemic. The major complications of this disease arise from the development of invasive infection, which is estimated to cause approximately 55,000 deaths annually and is associated with substantial morbidity, according to estimates by the World Health Organization [3-4].

The coexistence of intestinal amoebiasis and IBD poses significant diagnostic and therapeutic challenges, particularly in endemic areas, because the clinical, laboratory, radiological, and endoscopic features of IBD flares overlap with those of amoebic colitis. Patients may present with mucoid and bloody diarrhea, abdominal pain, fever, elevated inflammatory markers, and

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colonic ulcerations similar to those observed in IBD, thereby complicating the diagnostic process [5,6]. Indeed, administering corticosteroids, immunomodulators, or biologic therapies to patients with undiagnosed intestinal amoebiasis may lead to parasite dissemination, fulminant amoebic colitis, colonic perforation, and toxic megacolon, resulting in high mortality rates. Therefore, intestinal amoebiasis must be ruled out before initiating immunosuppressive therapy, particularly in individuals who live in or have resided in endemic areas [5-7].

Furthermore, patients with IBD may exhibit a pathological intestinal environment that facilitates tissue invasion by E. histolytica, including an abnormal immune response, disruption of the intestinal barrier, and dysbiosis, which may further exacerbate intestinal damage [8,5].

The importance of this issue lies in the increasing prevalence of IBD and the fact that our region is endemic for intestinal amoebiasis. This combination highlights the need for systematic parasitological screening before initiating corticosteroid therapy or other immunosuppressive treatments [7].

## Materials and Methods

This retrospective descriptive study was conducted at the Parasitology Laboratory of Hassan II University Hospital in Fez, Morocco, over a period of nine years and five months, from August 2016 to December 2025. It included all requests for stool parasitological examination (SPE) originating from the Gastroenterology and Hepatology Department for patients diagnosed with IBD.

Three stool samples were collected at intervals of several days under standardized conditions, including adherence to a low-residue diet and avoidance of treatments that could interfere with parasitological test results.

Freshly passed stool samples were collected in clean, dry, wide-mouthed, airtight containers, previously labeled with the patient's last name, first name, and identification number, as well as the date and time of collection. Each sample was accompanied by a duly completed and signed laboratory request form containing the patient's identification details and the clinical, epidemiological, and laboratory information required for result interpretation.

Each Sample Underwent a Parasitological Examination Consisting of the Following Procedures:

- **Macroscopic examination:** Stool color and consistency were recorded, along with the presence of mucus, blood, pus, or adult parasites (e.g., complete adult worms or tapeworm proglottids).
- **Direct microscopic examination of fresh stool:** Fresh stool samples were examined for the presence of trophozoite and cyst stages. A small amount of stool was collected from different areas of the sample using a Pasteur pipette, then diluted in a drop of normal saline on a glass slide and covered with a coverslip. The preparation, spread in a thin layer, was examined first under low magnification (×10) and then at ×40 magnification for parasite identification.
- **Direct examination after staining:** Following the fresh examination, a preparation stained with 2% Lugol's iodine was performed to facilitate the visualization and identification of cyst forms. Merthiolate–iodine–formalin (MIF) staining was also used to fix and stain the trophozoite and cyst forms of protozoa. In cases where direct examination yielded negative results, physicochemical concentration techniques, including the Ritchie method and MIF concentration, were performed to improve diagnostic sensitivity.

## Results

During the study period, 249 stool parasitological examination (SPE) requests from the Gastroenterology and Hepatology Department were recorded for patients with inflammatory bowel disease (IBD), including ulcerative colitis (UC) and Crohn's disease (CD). Of these requests, 67 yielded positive results, corresponding to a prevalence of 27%. Crohn's disease was diagnosed in 17 patients (25.37%), whereas 50 patients (74.63%) had ulcerative colitis.

**Table 1: Distribution of patients with positive stool parasitological examinations according to their medical history.**

| IBD type | Number of cases | Percentage |
|---|---|---|
| Ulcerative colitis (UC) | 50 | 74.63% |
| Crohn's disease (CD) | 17 | 25.37% |
| Total | 67 | 100% |

The annual distribution showed variations in the number of intestinal amoebiasis cases diagnosed among patients with IBD over the study period. The number of positive cases generally increased, rising from 2 cases in 2016 to a peak of 11 cases in 2024, with intermediate fluctuations. A second peak was observed in 2021, with 10 cases, while the lowest numbers were recorded in 2016 and 2022, with 2 and 4 cases, respectively (Figure 1).

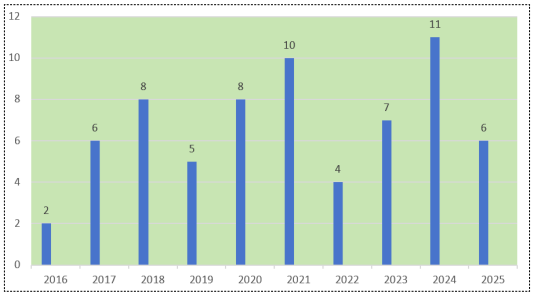



**Figure 1:** Annual distribution of stool parasitological examinations positive for intestinal amoebiasis among patients with inflammatory bowel disease (IBD) (2016–2025).

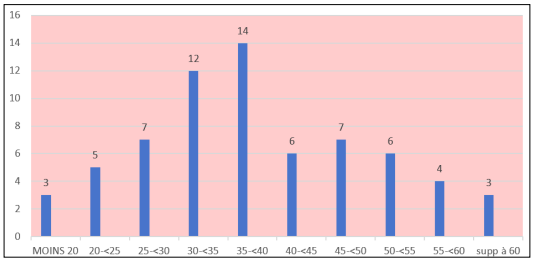



**Figure 2:** Distribution of patients by age group.

Patients' ages ranged from 16 to 65 years, with a median age of 37.58 years. The 30–39-year age group was the most represented, accounting for 26 cases of intestinal amoebiasis (Figure 2).

Females were predominant in this study, accounting for 55.22% of cases, with a male-to-female sex ratio (M/F) of 0.81.

**Table 2: Distribution of patients by sex**

| Sex | Number of cases | Percentage |
|---|---|---|
| Male | 30 | 44.78% |
| Female | 37 | 55.22% |
| Total | 67 | 100% |

Regarding stool consistency, liquid stools were the most frequent finding, observed in 31 patients (46.27%), followed by muco-bloody stools in 21 patients (31.34%). Soft stools accounted for 10 cases (14.93%), whereas mucoid and hard stools were less common, with 4 cases (5.97%) and 1 case (1.49%), respectively (Table 3).

**Table 3: Distribution of patients according to stool consistency**

| Stool consistency | Number of cases | Percentage |
|---|---|---|
| Liquid | 31 | 46.27% |
| Muco-bloody | 21 | 31.34% |
| Mucoid | 4 | 5.97% |
| Soft | 10 | 14.93% |
| Hard | 1 | 1.49% |
| Total | 67 | 100% |

Regarding the parasitic forms identified among the 67 positive stool parasitological examinations (SPEs), the trophozoite form of the Entamoeba histolytica/Entamoeba dispar complex accounted for 38.8% of cases, whereas the cyst form was identified in 61.19% of cases. Non-pathogenic intestinal parasites were also detected as co-infections in 16.41% of positive SPEs.

All patients received a 10-day course of metronidazole, with good clinical improvement and a favorable outcome. No complications or clinical deterioration were observed during follow-up.

**Discussion**

Amoebiasis is an intestinal parasitic disease with a significant impact on global health. Its prevalence varies across regions and tends to be higher in developing countries, where poor sanitation and inadequate hygiene remain major risk factors [9].

Morocco is among the countries where amoebiasis remains a public health concern.

National data estimate its prevalence to range from 7.6% to 37%, partly due to a high rate of asymptomatic carriage [10].

Numerous studies worldwide have reported an increased prevalence of amoebiasis among patients with inflammatory bowel disease (IBD) [11-12]. This association raises the possibility of interactions between amoebic infection and IBD onset or exacerbation, making the diagnosis and management of these two conditions particularly challenging [13-14].

In the present study, intestinal amoebiasis was detected in 26.91% of patients with IBD, indicating a relatively high prevalence in this population. This finding exceeds the prevalence reported in several studies conducted among patients with IBD. In Sweden, a prevalence of 6.17% was reported [15], whereas Ustun et al., in a Turkish study published in 2003, reported a prevalence of 10% [15]. These differences may be attributable to geographical, climatic, and socioeconomic variations among the populations studied. Less favorable climatic conditions for parasite transmission, together with higher socioeconomic and sanitary standards, may contribute to lower prevalence rates in certain regions.

Furthermore, substantial variations in amoebiasis prevalence may occur within the same country. These regional disparities may reflect differences in climatic conditions, access to safe drinking water, hygiene practices, and socioeconomic status [16]. The relatively high prevalence observed in our series may therefore reflect the epidemiological and environmental characteristics of our setting.

The association between intestinal amoebiasis and IBD, particularly ulcerative colitis (UC), has been reported in several international studies [15,17,18]. This association is especially relevant because amoebic colitis and UC flares share numerous clinical and endoscopic features. Both conditions may cause diarrhea, abdominal pain, and rectal bleeding, with predominant colonic involvement. In contrast, Crohn's disease more frequently affects the small intestine, although colonic involvement may also occur [19]. These overlapping features can make differential diagnosis particularly challenging and may lead to confusion between parasitic infection and an inflammatory flare.

The prevalence of 26.91% observed in our study is relatively close to that reported in a study conducted at Yüksek İhtisas Hospital in Turkey, where the prevalence was 31.5% [20]. These findings reinforce the importance of systematically screening patients with IBD for intestinal parasitic infections when they present with digestive symptoms.

In this context, stool parasitological examination represents an important tool in the evaluation of these patients. It may help clinicians identify a parasitic etiology rather than an inflammatory flare, thereby facilitating appropriate therapeutic decisions.

When symptoms persist or fail to respond to appropriate treatment, endoscopic evaluation, particularly rectosigmoidoscopy, may be indicated to assess inflammatory activity and support the differential diagnosis. Some studies investigating this association have relied primarily on endoscopic and histopathological findings, with parasitological investigations performed only after suggestive histological features were identified [15]. In contrast, our findings highlight the value of incorporating stool parasitological examination early in the diagnostic process.

From an epidemiological perspective, our study population consisted predominantly of adults, with a female predominance. This observation is consistent with findings reported in several studies, including one conducted at Rabat University Hospital [18] and another Tunisian study carried out at La Rabta Hospital [21]. This female predominance may be multifactorial and could potentially be associated with immunological, hormonal,

or behavioral differences. However, these hypotheses should be interpreted cautiously, as they do not establish a causal relationship. The 30–39-year age group was the most represented in our series, accounting for 38.81% of patients, which may reflect the adult population commonly affected by IBD.

Regarding the microscopic identification of parasitic forms, 41 cases were classified as belonging to the Entamoeba histolytica/E. dispar complex, representing 61.19% of cases, whereas the trophozoite form was reported in 38.80% of cases. This distribution differs from that reported in a study conducted in Rabat, which found a proportion of 60% [18], but is comparable to the findings of a study conducted at the University of Minnesota in Minneapolis, United States, where a proportion of 62% was reported [22].

The relatively low proportion of trophozoite forms observed in our series may be explained, at least in part, by the pre-analytical conditions of sample collection. All stool specimens were collected in the Gastroenterology Department before being transported to the laboratory. However, Entamoeba histolytica trophozoites are particularly fragile and have limited survival outside the host. Consequently, they may undergo rapid lysis, reducing the likelihood of detection by microscopy when the interval between sample collection and examination is prolonged.

In our series, the proportion of cases classified as belonging to the E. histolytica/E.

Dispar complex was high, reaching 61.19%. This finding may be related to the lack of species-specific diagnostic methods in our laboratory, such as coproantigen detection by enzyme-linked immunosorbent assay (ELISA) or polymerase chain reaction (PCR), as well as to the pre-analytical conditions of specimen collection.

Comparable findings have been reported in several studies. In Brazil, Rafael Vital dos Santos et al. studied 82 patients and identified the E. histolytica/E. dispar complex by microscopy in 50 patients, corresponding to 61% [23]. However, ELISA testing for E.

Histolytica-specific antigens was positive in 30 patients, representing 36.6% of the study population [24]. Similarly, a study conducted at the Jawaharlal Institute in India showed that PCR identified E. histolytica in 30.2% of cases initially classified microscopically as belonging to the E. histolytica/E. dispar complex [25]. These findings illustrate the limitations of microscopy in species-specific identification.

This distinction is particularly important in countries with a high prevalence of parasitic infections, where amoebiasis should be considered whenever patients with IBD experience clinical deterioration or a suspected flare. Indeed, the similarity between the clinical manifestations of amoebic colitis and those of an IBD flare may lead to diagnostic errors. Administering corticosteroids or other immunosuppressive agents to patients with undiagnosed amoebiasis may exacerbate the infection and promote the development of severe or extraintestinal disease, increasing the risk of serious complications [26]. Conversely, parasitic infection may also contribute to worsening intestinal symptoms in patients with underlying inflammatory disease, making differential diagnosis essential for appropriate management.

Overall, although stool parasitological examination is useful as an initial diagnostic method, it has important limitations in the specific diagnosis of amoebiasis. Direct microscopy and concentration techniques can reveal parasitic forms but cannot reliably distinguish E. histolytica from E. dispar. In this context, complementary diagnostic methods, particularly species-specific antigen detection by ELISA and molecular techniques such as PCR, may be valuable for improving diagnostic sensitivity and, above all, specificity. Incorporating these methods into the diagnostic strategy could reduce misclassification and help prevent the potentially serious consequences of initiating immunosuppressive therapy in patients with unrecognized amoebiasis.

## Conclusion

In countries where amoebiasis is endemic, such as Morocco, the coexistence of intestinal amoebiasis and IBD represents a significant public health concern. These conditions may interact during their clinical course, as one can complicate the other, and each may mimic the clinical manifestations of the other, creating substantial diagnostic challenges.

Stool parasitological examination should therefore be considered in patients with IBD who present with symptoms suggestive of a flare. In addition, medical laboratories should implement all available measures to detect intestinal parasites accurately.

These measures should begin with appropriate specimen collection, preferably performed at the laboratory whenever feasible, unless the patient is unable to travel.

They should also include careful microscopic examination, detection of E. histolytica-specific antigens, and PCR to identify the causative species when cysts belonging to the E. histolytica/E. dispar complex are detected. Finally, close collaboration between laboratory specialists and clinicians is essential to ensure accurate diagnosis, appropriate treatment, and improved patient outcomes.

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