Original Article

# Histopathological Assessment of Colonoscopic Biopsies in Patients with Bleeding Per Rectum

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## Abstract

**Background:** Lower gastrointestinal (GI) bleeding is usually defined as bleeding from the GI tract distal to the ligament of Treitz, and it is usually suspected when patients present with hematochezia, or maroon stools per rectum. It has various causes, which often require colonoscopic biopsy for their conclusive diagnosis. **Aim of Study:** To determine the histopathological changes of colonoscopic/sigmoidoscopic biopsies in patients presenting with bleeding per rectum according to the age, gender, clinical symptoms, and endoscope findings. **Materials and Methods:** In retrospective and prospective studies, 58 cases of colonic tissue paraffin blocks from patients with BPR were collected from Teaching Laboratories of Al-Imamain Al-Kadhumain (AS) Medical City. From each block, sections of 5 um thickness were taken and stained with the routine HandE stain. **Result:** The mean age of the cases with BPR was (44.5 ± 15.7) years, with an M:F ratio of 2.2:1. The most common diagnosis was nonspecific colitis 13(22.4%) cases followed by 7 (12%) cases diagnosed as ulcerative colitis. There is a significant difference in the distribution of final diagnosis according to the patient's gender and age with a p value of (0.03) and (<0.001), respectively. There is a significant difference in the relationship between final diagnosis and colonoscopic findings ($P = 0.004$). **Conclusion:** In this study, the most common etiology of BPR was nonspecific colitis, ulcerative colitis, hyperplastic polyp, and internal hemorrhoid. There is a significant correlation between final diagnosis and colonoscopic findings.

**Keywords:** Biopsy, bleeding per rectum, clinicopathological, colonoscopy, gastrointestinal tract

## Introduction

GI bleeding refers to any form of hemorrhage/blood loss occurring in the gastrointestinal tract, a passage ranging from the mouth to the anus.[1]

Lower gastrointestinal bleeding (LGIB) can be classified into three groups based on the amount of bleeding (chronic occult bleeding, moderate bleeding, and massive bleeding).[2]

Acute LGIB is defined as bleeding of fewer than three days in duration.[3]

Chronic LGIB is the passage of blood from the rectum over a period of several days or longer and usually implies that blood loss is either intermittent or slow.[4]

The incidence of LGIB ranges from 20.5 to 27 cases/100,000 adults worldwide; it increases with age and is more common in men than women.[5] LGIB diseases cause a lot of morbidity and mortality. The total mortality rate from colonic bleeding is 2.4–3.9%.[6,7]

LGIB classically presents with hematochezia (passing of red blood from the rectum) or melena.[8] LGIB has various causes that can be divided into different groups; these include: anatomic (diverticulosis); vascular (angiodysplasia, ischemic); inflammatory (infectious, idiopathic, and radiation-induced); and neoplastic.[9]

This study aimed at determining the histopathological evaluation of colonoscopic biopsies in patients presenting with bleeding per rectum according to the age, gender, clinical symptoms, and endoscope findings.

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## Materials and Methods

A retrospective and prospective study was intended, which included a total of 58 colonic tissue paraffin blocks (endoscopic colonic biopsies) from patients who presented with bleeding per rectum.

These blocks were collected from Teaching Laboratories of Al-Imamain Al-Kadhumain (AS) Medical City from January 2018 to November 2019.

The clinicopathological parameters (age, gender, symptoms other than bleeding per rectum (abdominal pain, anemia, constipation, or diarrhea), findings of P.R. and anal examination, provisional diagnosis, endoscopic finding, and histopathological features) were obtained from achieved pathology and endoscopy reports.

The practical workup of this study includes:

1. Collection of 58 colonic formalin-fixed paraffin-embedded tissue blocks (endoscopic biopsies) and selected according to the following inclusion and exclusion criteria:

### Inclusion criteria

- Patients belonging to all age groups.
- Patients presenting with rectal bleeding as their chief complaint.
- Patients with first time presentation.

### Exclusion criteria

- Patients with a suspected upper gastrointestinal source of bleeding, that is, history of hematemesis/malena or gastric aspirates containing coffee-ground material or bright red blood.
- Patients with bleeding tendency disorders.
- Known cases of colorectal carcinoma.

2. Re-sectioning and HandE staining was conducted in the pathology department at the teaching laboratory of the Al-Imamain Al-Kadhumain (AS) Medical City.
3. HandE stained slides were examined and re-evaluated by the supervisor pathologist of this study for the revision of the histopathological diagnosis in the Pathology Department at College of Medicine / Al-Nahrain University.

The research lasted for one year: It commenced in January 2019 and was completed in January 2020.

### Ethical consideration

The study was conducted in accordance with the ethical principles that have their origin in the Declaration of Helsinki. It was carried out with patients' verbal and analytical approval before a sample was obtained. The study protocol and the subject information and consent form were reviewed and approved by a local ethics committee according to the document number 1889 dated 07/09/2020 to obtain this approval.

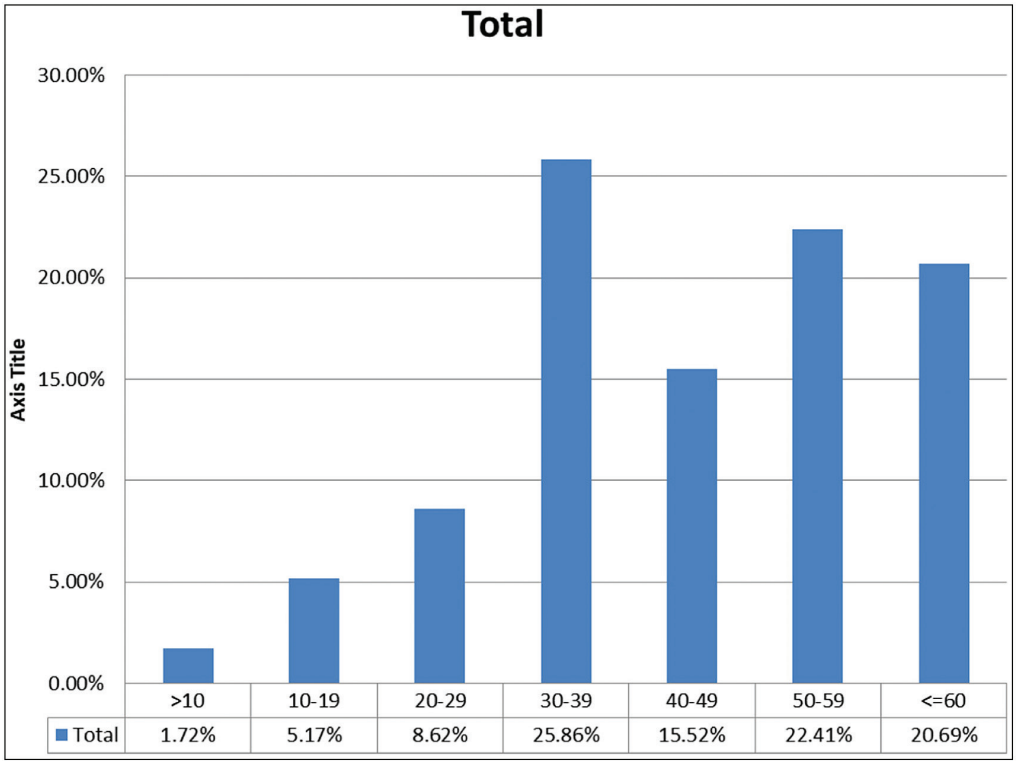


**Figure 1:** Age distribution of patient with BPR

## Results

Regarding age and gender, the mean age of the 58 colonic endoscopic biopsy cases with bleeding per rectum was 44.5 ± 15.7 years, and median age was 45.5 years (range 3–71 years) [Figure 1].

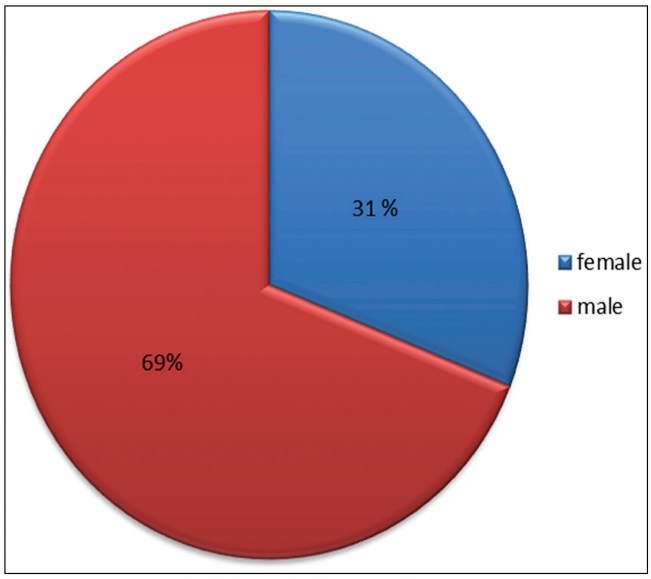


**Figure 2:** Gender distribution of colonic endoscopic biopsies of cases with BPR

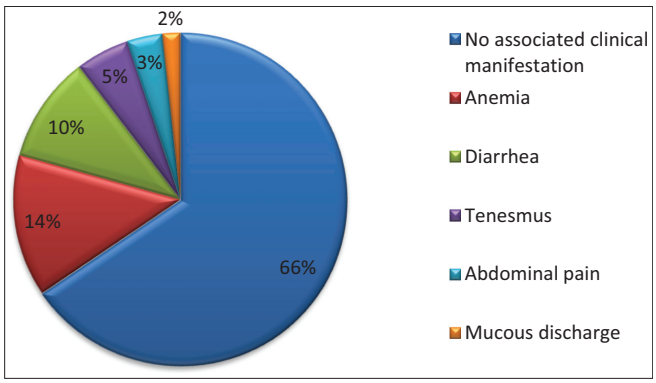


**Figure 3:** Frequency of symptoms in patient with BPR

**Table 1: Frequency of colonoscopic findings in cases with BPR**

| Colonoscopic finding | Number | Frequency |
|---|---|---|
| Ulcer | 14 | 24.1% |
| Erythematous mucosa | 13 | 22.5% |
| Polyp | 13 | 22.5% |
| Erythematous mucosa + internal hemorrhoid | 7 | 12% |
| Polyp + internal hemorrhoid | 7 | 12% |
| Mass | 3 | 5.2% |
| Internal hemorrhoid | 1 | 1.7% |
| **Total** | **58** | **100%** |

The male patients comprised 40 (69%) cases of the total cases of BPR and the female patients comprised 18 (31%) cases with an M:F ratio of 2.2:1 [Figure 2].

Regarding clinical features associated with bleeding per rectum, 22 (40%) cases were found to have an associated clinical manifestation other than BPR and anemia was the most common feature [Figure 3].

Regarding colonoscopic and\or sigmoidoscopic findings in cases with bleeding per rectum, the most common finding was ulcer, which was found in 14 cases.

Overall, 24.1% cases followed by 13 (22.5%) cases were diagnosed with erythematous mucosa and 13 (22.5%) cases were diagnosed with polyp [Table 1].

Regarding final diagnosis (according to histopathological changes and endoscopic findings) in cases with bleeding per rectum, the most common diagnosis was nonspecific colitis [Figure 4]. Overall, 13 (22.4%) cases followed by 7 (12%) cases were diagnosed as ulcerative colitis [Figure 5]; out of these, 7(12%) cases had hyperplastic polyp and

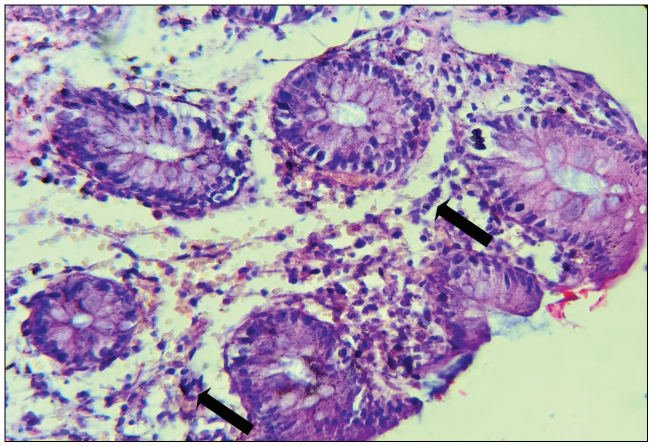

**Figure 4:** Section of nonspecific colitis with mild chronic inflammatory cell infiltrates (black arrows). (H and E) (40X)

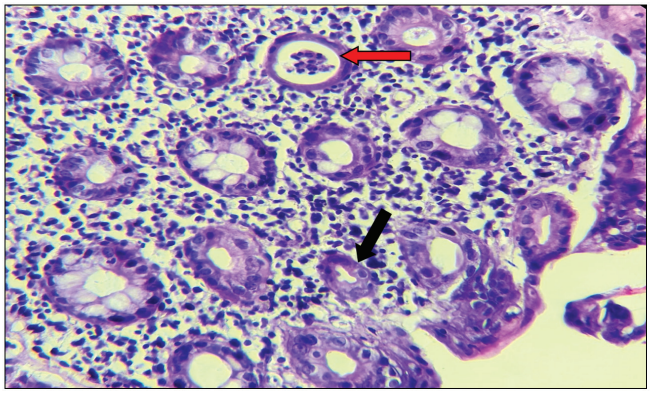

**Figure 5:** Section of ulcerative colitis of colon showing gland distortion mucin depletion (black arrow), cryptitis, and crypt abscess (red arrow). (H and E) (40X)

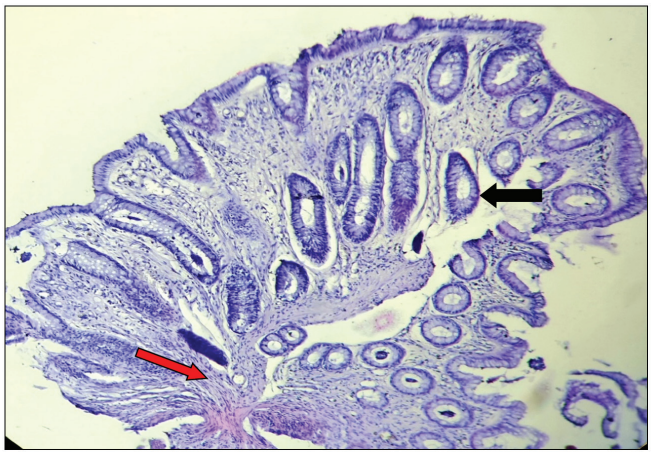

**Figure 6:** Section of solitary rectal ulcer showing crypt hyperplasia and elongation with focal dilation (some glands diamond shaped) (black arrow), thickened muscularis mucosae with fibromuscular replacement of lamina propria (red arrow). (H and E) (10X)

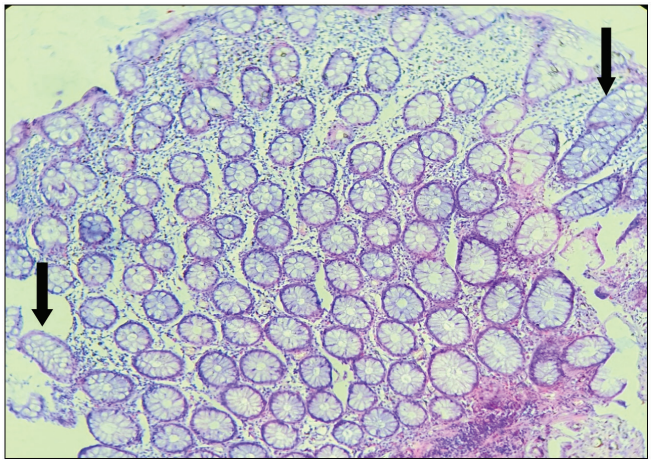

**Figure 7:** Section of hyperplastic polyp showed increased number of goblet cell-rich tubular colonic glands without features of dysplasia (black arrows). (H and E) (10X)

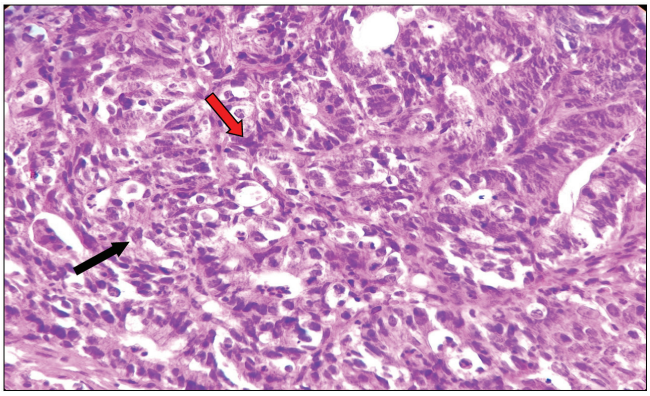

**Figure 8:** Section of a moderately differentiated adenocarcinoma of colon showed that the glandular configuration is still, but the glands are irregular and very crowded with loss of nuclear polarity (black arrow); many of them have lumens containing mucin (red arrow). (H and E) (40X)

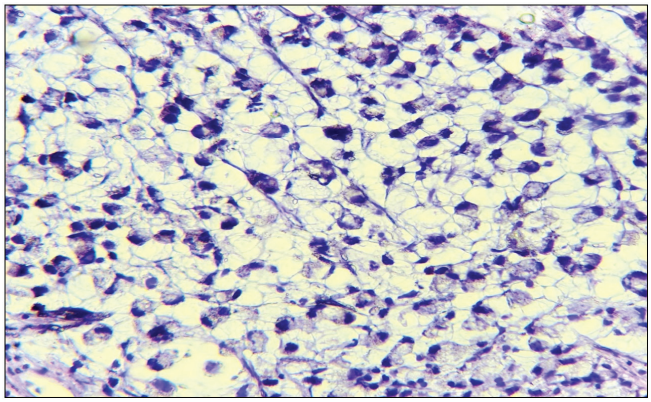

**Figure 9:** Section of signet ring cell carcinoma of colon showed that most or all of the mucin are intracellular; this intracellular accumulation of mucin results in displacement of the nucleus to the side. (H and E) (40X)

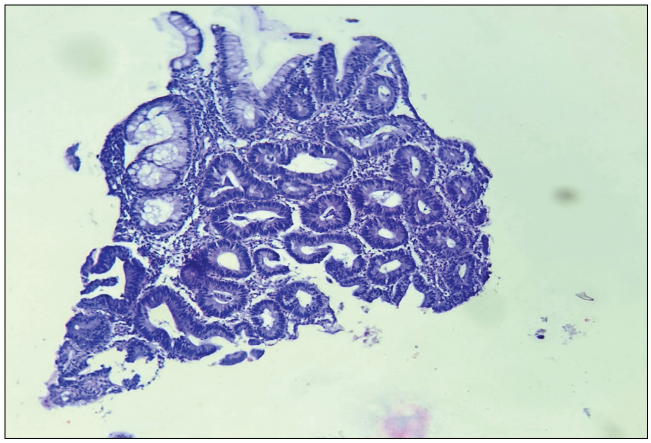

**Figure 10:** Section of tubular adenomatous polyp showed an increase in the number of mildly dysplastic glands and cells per unit area. (H and E) (10X)

internal hemorrhoid, 6 (10.3%) cases were diagnosed as solitary rectal ulcer [Figure 6], 6 (10.3%) cases were diagnosed as internal hemorrhoid, 6 (10.3%) cases were diagnosed as hyperplastic polyp [Figure 7], 4 (6.9%) cases were diagnosed as carcinoma [Figures 8, 9], and 4 (6.9%) cases were diagnosed as adenomatous polyp [Figure 10] [Table 2].

According to the relationship between final diagnosis and the gender of patients with BPR, there is a statistically significant difference in the distribution of final diagnosis according to the patient's gender ($P = 0.03$) [Table 3].

Regarding the relationship between final diagnosis and the age of patients with BPR, there is a highly significant difference in the distribution of final diagnosis according to the patient's age ($P < 0.001$) [Table 4].

Regarding the relationship between final diagnosis and colonoscopic findings, there is a statistically significant difference in the relationship between final diagnosis and colonoscopic findings ($P = 0.004$) [Table 5].

## Discussion

In the current study, the mean age of patients with BPR was 44.5 ± 15.7 years; this is compatible with previous research in Iraq conducted by Makkie *et al.*[10] However, it disagrees with Arabi *et al.*,[11] who found that the mean age was 55.43 ± 17.7.

In the present study, male patients comprised 69% of the total cases of bleeding per rectum whereas female patients comprised 31% of the total cases, with an M:F ratio of 2.2:1. This goes with most of the studies that found that the males predominate than females (Iraqi studies by Makkie *et al.*, and Alobaidi *et al.*; Saudi study by Alruzug *et al.*).[10,12,13] This study disagrees with the study by Hreinsson *et al.*[14] in Europe in 2019.

In the present study, most of the cases were found to have no associated clinical manifestation other than bleeding per rectum (60%); anemia was the most common feature (16%), followed by diarrhea (12%). These paralleled an Iraqi study by Abbas *et al.*,[15] whereas this study did not agree with the study by Badiger *et al.*[16] In India, in 2017, constipation was found to be the most common feature; in Nepal, in 2019, diarrhea was found to be the most common feature.[17]

In the present study, out of 58 patients with BPR, the most common finding in colonoscopy examination was ulcer (24.1%) among patients, 22.5% of patients had polyp, and 22.5% of patients had erythematous mucosa. This was compatible with an Egyptian study by Younis *et al.*,[18] but it was totally incompatible with an Egyptian study by Tarek in 2018 and a Pakistani study by Khan.[19,20]

In this study, the most common diagnosis was nonspecific colitis (22.4%); 12% of cases were diagnosed as ulcerative colitis; and 12% of cases had hyperplastic polyp and internal hemorrhoid. This was approximately similar to a Nepali study by Chaudhary *et al.*,[17] but it did not agree with an Iraqi study by Alobaidi *et al.*[12] ; they found that the most common was ulcerative colitis in 31% of cases.

**Table 2: Frequency of final diagnosis in cases with BPR**

| Diagnosis | Number | Frequency |
|---|---|---|
| Nonspecific colitis | 13 | 22.4% |
| Ulcerative colitis | 7 | 12% |
| Hyperplastic polyp + internal hemorrhoid | 7 | 12% |
| Solitary rectal ulcer | 6 | 10.3% |
| Internal hemorrhoid | 6 | 10.3% |
| Hyperplastic polyp | 6 | 10.3% |
| Carcinoma | 4 | 6.9% |
| Adenomatous polyp | 4 | 6.9% |
| Nonspecific proctitis | 2 | 3.5% |
| Nonspecific colitis + internal hemorrhoid | 2 | 3.5% |
| Inflammatory polyp | 1 | 1.7% |
| **Total** | **58** | **100%** |

**Table 3: Frequency of final diagnosis with gender distribution in cases with BPR**

| Diagnosis | | Female | Male | Total |
|---|---|---|---|---|
| Nonspecific colitis | No. | 7 | 6 | 13 |
| | % | 38.8% | 15% | 22.4% |
| Ulcerative colitis | No. | 1 | 6 | 7 |
| | % | 5.5% | 15% | 12% |
| Hyperplastic polyp + internal hemorrhoid | No. | 1 | 6 | 7 |
| | % | 5.5% | 15% | 12% |
| Solitary rectal ulcer | No. | 2 | 4 | 6 |
| | % | 11% | 10% | 10.3% |
| Internal hemorrhoid | No. | 1 | 5 | 6 |
| | % | 5.5% | 12.5% | 10.3% |
| Hyperplastic polyp | No. | 0 | 6 | 6 |
| | % | 0.0% | 15% | 10.3% |
| Carcinoma | No. | 2 | 2 | 4 |
| | % | 11% | 5% | 6.9% |
| Adenomatous polyp | No. | 1 | 3 | 4 |
| | % | 5.5% | 7.5% | 6.9% |
| Nonspecific proctitis | No. | 1 | 1 | 2 |
| | % | 5.5% | 2.5% | 3.5% |
| Nonspecific colitis + internal hemorrhoid | No. | 2 | 0 | 2 |
| | % | 11% | 0.0% | 3.5% |
| Inflammatory polyp | No. | 0 | 1 | 1 |
| | % | 0.0% | 2.5% | 1.7% |
| **Total** | No. | **18** | **40** | **58** |
| | % | **100%** | **100%** | **100%** |

P value =0.03

**Table 4: Relationship between final diagnosis and the age of patients with BPR**

| Diagnosis | | Age (years) of the patients with BPR | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | >10 | 10-19 | 20-29 | 30-39 | 40-49 | 50-59 | <=60 | Total |
| Nonspecific colitis | No | 0 | 1 | 1 | 1 | 4 | 4 | 2 | 13 |
| | % | 0.0% | 7.7% | 7.7% | 7.7% | 30.7% | 30.7% | 15.4% | 100% |
| Ulcerative colitis | No | 0 | 0 | 1 | 2 | 0 | 1 | 3 | 7 |
| | % | 0.0% | 0.0% | 14.2% | 28.6% | 0.0% | 14.2% | 42.8% | 100% |
| Hyperplastic polyp +internal hemorrhoid | No | 0 | 0 | 0 | 1 | 3 | 1 | 2 | 7 |
| | % | 0.0% | 0.0% | 0.0% | 14.2% | 42.8% | 14.2% | 28.6% | 100% |
| Solitary rectal ulcer | No | 0 | 2 | 1 | 1 | 1 | 1 | 0 | 6 |
| | % | 0.0% | 33.3% | 16.6% | 16.6% | 16.6% | 16.6% | 0.0% | 100% |
| Internal hemorrhoid | No | 0 | 0 | 2 | 2 | 0 | 1 | 1 | 6 |
| | % | 0.0% | 0.0% | 33.3% | 33.3% | 0.0% | 16.6% | 16.6% | 100% |
| Hyperplastic polyp | No | 1 | 0 | 0 | 2 | 0 | 2 | 1 | 6 |
| | % | 16.6% | 0.0% | 0.0% | 33.3% | 0.0% | 33.3% | 16.6% | 100% |
| Carcinoma | No | 0 | 0 | 0 | 2 | 0 | 1 | 1 | 4 |
| | % | 0.0% | 0.0% | 0.0% | 50% | 0.0% | 25% | 25% | 100% |
| Adenomatous polyp | No | 0 | 0 | 0 | 0 | 1 | 1 | 2 | 4 |
| | % | 0.0% | 0.0% | 0.0% | 0.0% | 25% | 25% | 50% | 100% |
| Nonspecific proctitis | No | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 2 |
| | % | 0.0% | 0.0% | 0.0% | 100% | 0.0% | 0.0% | 0.0% | 100% |
| Nonspecific colitis +internal hemorrhoid | No | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 2 |
| | % | 0.0% | 0.0% | 0.0% | 100% | 0.0% | 0.0% | 0.0% | 100% |
| Inflammatory polyp | No | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 |
| | % | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 100% | 0.0% | 1.7% |
| **Total** | No | 1 | 3 | 5 | 15 | 9 | 13 | 12 | **58** |
| | % | 1.7% | 5.17% | 8.62% | 25.8% | 15.5% | 24.4% | 20.7% | **100%** |

P value <0.001

**Table 5: Relationship between final diagnosis and colonoscopic findings of patients with BPR**

| Diagnosis | | Colonoscopic finding | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | Ulcer | Erythematous mucosa | Polyp | Erythematous mucosa + internal hemorrhoid | Polyp + internal hemorrhoid | Mass | Internal hemorrhoid | Total |
| Nonspecific colitis | No | 3 | 9 | 1 | 0 | 0 | 0 | 0 | 13 |
| | % | 23.% | 69.3%% | 7.7% | 0.0% | 0.0% | 0.0% | 0.0% | 100% |
| Ulcerative Colitis | No | 5 | 2 | 0 | 0 | 0 | 0 | 0 | 7 |
| | % | 71.4% | 28.6% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 100% |
| Hyperplastic polyp + internal hemorrhoid | No | 0 | 0 | 0 | 0 | 7 | 0 | 0 | 7 |
| | % | 0.0% | 0.0% | 0.0% | 0.0% | 100% | 0.0% | 0.0% | 100% |
| Solitary rectal ulcer | No | 5 | 1 | 0 | 0 | 0 | 0 | 0 | 6 |
| | % | 83.3% | 16.66% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 100% |
| Internal hemorrhoid | No | 0 | 0 | 0 | 5 | 0 | 0 | 1 | 6 |
| | % | 0.0% | 0.0% | 0.0% | 83.33% | 0.0% | 0.0% | 16.6% | 100% |
| Hyperplastic polyp | No | 0 | 0 | 6 | 0 | 0 | 0 | 0 | 6 |
| | % | 0.0% | 0.0% | 100% | 0.0% | 0.0% | 0.0% | 0.0% | 100% |
| Carcinoma | No | 0 | 0 | 1 | 0 | 0 | 3 | 0 | 4 |
| | % | 0.0% | 0.0% | 25% | 0.0% | 0.0% | 75.% | 0.0% | 6.9% |
| Adenomatous polyp | No | 0 | 0 | 4 | 0 | 0 | 0 | 0 | 4 |
| | % | 0.0% | 0.0% | 100% | 0.0% | 0.0% | 0.0% | 0.0% | 100% |
| Nonspecific proctitis | No | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 2 |
| | % | 50% | 50% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 3.5% |
| Nonspecific colitis + internal hemorrhoid | No | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 2 |
| | % | 0.0% | 0.0% | 0.0% | 100% | 0.0% | 0.0% | 0.0% | 100% |
| Inflammatory polyp | No | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 1 |
| | % | 0.0% | 0.0% | 100% | 0.0% | 0.0% | 0.0% | 0.0% | 100% |
| Total | No | 14 | 13 | 13 | 7 | 7 | 3 | 1 | 58 |
| | % | 24.1% | 22.5% | 22.5% | 12% | 12% | 5.2% | 1.7% | 100% |

P value =0.004

A U.S. study by Navaneethan *et al.*[21] found that the most common was diverticulosis (21.9%).

In the present study, there is a statistically significant difference in the distribution of final diagnosis according to the patient's gender ($P = 0.03$). This was approximately similar to a Nepali study by Shrestha.[22] However, it was incompatible with other studies (a Nigerian study by Ajayi *et al.*,[23] a Chinese study by Khan *et al.*[9]); they found no statistically significant difference.

In the present study, there is a highly significant difference in the distribution of final diagnosis according to the patient's age ($P < 0.001$). This is parallel to a Yamen study by Alwan *et al.*,[24] and a Nepali study performed by Shrestha.[22]

In the current study, there is a statistically significant difference in the relationship between final diagnosis and colonoscopic findings ($P = 0.004$). This is parallel to a Nepali study by Makaju *et al.*[25]

## Conclusion

The bleeding per rectum is more common in male patients, with a mean age of 45.5 years. The correlation between clinical history and examination, endoscopic findings, and histopathological features is essential in the final diagnosis in patients with BPR. In this study, the most common etiology of BPR was nonspecific colitis, ulcerative colitis, hyperplastic polyp, and internal hemorrhoid. There is a significant difference in the distribution of the final diagnosis according to the patient's gender and age. There is a significant correlation between the final diagnosis and colonoscopic findings.

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Nil.

### Conflicts of interest

There are no conflicts of interest.

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