

# Histopathological evaluation of endoscopic biopsy specimens of ulcerative colitis

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## Abstract

**Background:** Nonneoplastic colorectal diseases including non specific colitis and ulcerative colitis are very common diseases all over the world and account for major portion of the gastrointestinal morbidity. Histopathological study of endoscopic colorectal biopsy plays a major role in the diagnosis of these diseases. Scoring of ulcerative colitis further establishes its role in the prognosis and helps clinicians in efficient patient management. **Methodology:** This is a prospective study of 33 patients who underwent endoscopic colorectal biopsies in various hospitals in and around Mangaluru and in Yenepoya Medical College and hospital, Mangaluru from October 2013 to September 2015. Histopathological diagnosis was made in each case in cases of ulcerative colitis scoring was done by K. Geboes scoring system. **Results:** Among the 33 cases studied of ulcerative colitis, twenty two (66.66%) were males (n=22) and eleven (33.33%) were females (n=11) with a ratio of 2:1. This indicates the male preponderance of ulcerative colitis. Ulcerative colitis cases were classified according to the Montreal classification. Maximum number of patients with ulcerative colitis were in the age group of 56-65 years. Ulcerative colitis was more common among men compared to women (M: F=2:1). Ulcerative colitis cases were graded according to K. Geboes grading system. Most of the cases were in grade 4 and 5. **Conclusion:** Histopathological examination of endoscopic colorectal biopsies is a very useful tool in the accurate diagnosis of non-neoplastic colorectal diseases and excluding neoplastic diseases especially colorectal cancer. **Keywords:** Ulcerative colitis, Crohn's disease, K.Geboes scoring, Montreal classification.

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## INTRODUCTION

**Inflammatory bowel disease:** Many conditions mimic the clinical symptoms of chronic idiopathic inflammatory bowel disease, thus histopathological examination of colorectal biopsies is important. It helps in both confirming the diagnosis and excluding other conditions like infective colitis. Microscopic study of colorectal mucosa is very useful in differentiating ulcerative colitis from Crohn's disease as these two diseases at times may present with similar clinical manifestations. A histological end point is likely to be more relevant in

ulcerative colitis than Crohn's disease. Ulcerative colitis: The name is imperfect since rectum is almost invariably involved and ulceration is not always present. Synonyms for it are granular proctitis and haemorrhagic proctitis, when confined to rectum. Onset of the disease peaks between 20 and 25 years, with no age exempt. Females are affected more commonly (ratio 3:1). It is global in distribution despite previous misconception that it is a disease of the western countries. Familial occurrence is known.<sup>1</sup> Ethnic differences do exist. The pattern of idiopathic IBD differs in Indians and west Indians, whereas similar in west Indians and Europids.<sup>2</sup> American Jews show higher incidence than Israeli Jews, which in turn show higher incidence than Middle East Ulcerative colitis which is one of the two types of inflammatory bowel diseases is a severe chronic ulcerating inflammatory disease that is predominantly limited to the colon and rectum with or without extra intestinal manifestations. It always involves rectum and extends proximally in a continuous fashion without any skip lesions. The disease is grossly characterised by extensive broad based ulcers which are aligned along the long axis of colon. Often the undermined edges of ulcers

interconnect to form tenuous mucosal bridges linking the ulcers. Swollen mucosa may bulge upward producing pseudopolyps. Length of colon and rectum is reduced due to muscle abnormality and not fibrosis.<sup>3,4</sup> Microscopically the disease involve the mucosa and submucosa and is characterised by the presence of dense inflammatory infiltrate, crypt abscess, cryptitis, crypt distortion and epithelial metaplasia. Granulomas are never seen in ulcerative colitis.<sup>5</sup> Stern Jews. This pattern shows the role of Urbanisation.

**Histological scoring systems<sup>6</sup>**

Many indices to assess disease activity in UC have been described since the 1950s, though none are fully validated. This systematic review and that of Mosli *et al.*, has identified 22 histological scoring systems for UC. The first described was that by Truelove and Richards in 1956 in a study of 111 serial biopsy specimens from 42 patients with UC. The most widely used histological indices of disease activity in UC are the Riley Index (1991) and the Geboes Index (2000). The Geboes Index includes five features (architectural change, lamina propria neutrophils and eosinophils, neutrophils in epithelium, crypt destruction, and erosion or ulceration).

**MATERIALS AND METHODS**

This study was undertaken in the Department of Pathology, Yenepoya Medical College, Deralakatte, Mangaluru. One hundred endoscopic colorectal biopsy specimens of all patients with non-neoplastic diseases received in the department of Pathology of Yenepoya Medical College, Mangalore and other clinical laboratories from various hospitals in and around Mangalore were included in the study. This study was conducted from October 2013 to September 2015. Clinical details were noted in the proforma including age, sex, clinical diagnosis and endoscopic findings. The tissue was received in 10% formalin with appropriate identification. Biopsy specimens were described and entire specimen was embedded in multiple blocks. After processing, tissues were embedded in paraffin wax. Sections were cut serially at a thickness of 4-5 microns. Multiple sections were taken from each case and routine Hematoxylin and Eosin staining was done. The following observations/data was recorded: Montreal classification of ulcerative colitis<sup>7</sup>

Ulcerative colitis	
E1 -	Proctitis
E2 -	left colitis
E3 -	Pancolitis

**OBSERVATIONS AND RESULTS**

In the present study, among the thirty three cases of ulcerative colitis, twenty two (66.66%) were males

(n=22) and eleven (33.33%) were females (n=11) with a ratio of 2:1. This indicates the male preponderance of ulcerative colitis in the present study

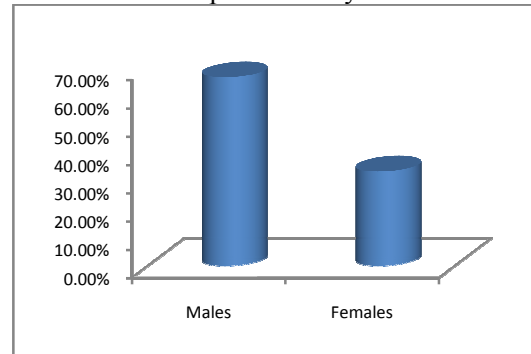


Figure 1:

**Sex distribution of ulcerative colitis**

In the present study, according to Montreal classification the most common site for Ulcerative colitis was involvement of extensive Colonic mucosa ( Pancolitis) (30%) E3 followed by Rectal mucosa (proctitis) (26%) E1 as in figure 9.

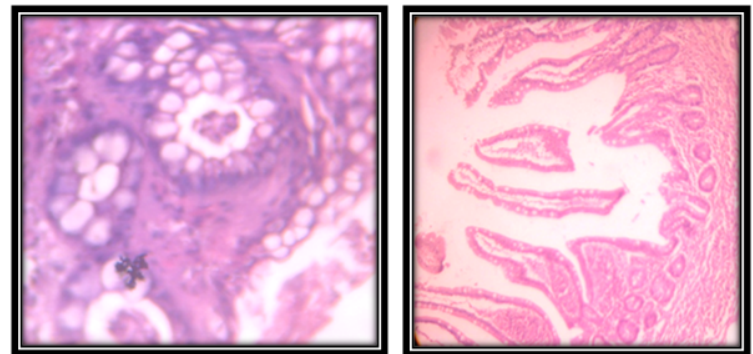


Figure 2: Crypt abscesses and cryptitis. Crypt destruction, branching

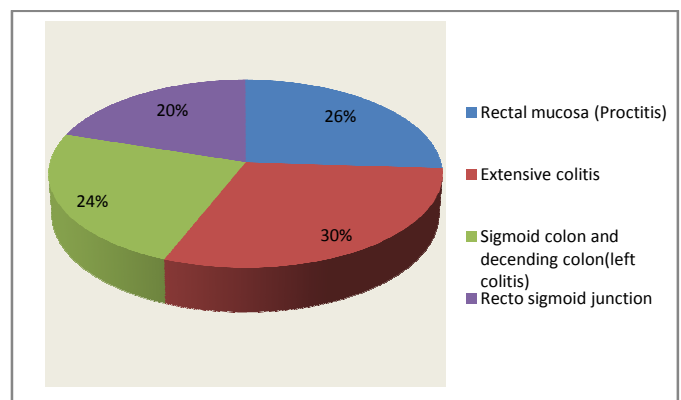
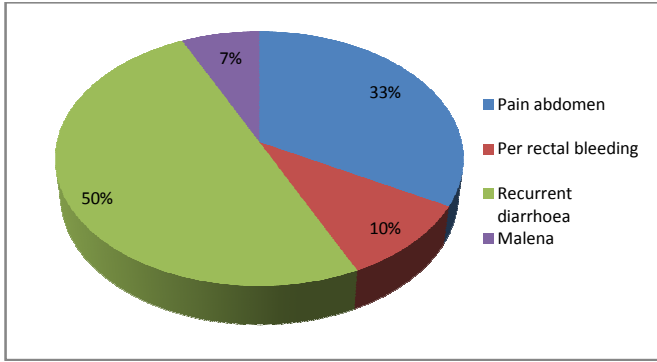


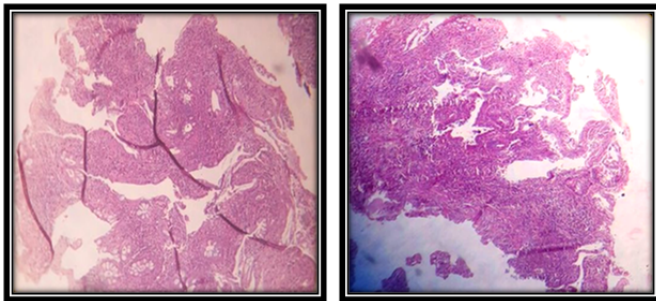
Figure 3: Relation between biopsy site and Ulcerative colitis

In the present study the most common presenting complain in ulcerative colitis was recurrent diarrhoea in 50%of cases followed by pain abdomen in 33%of cases.

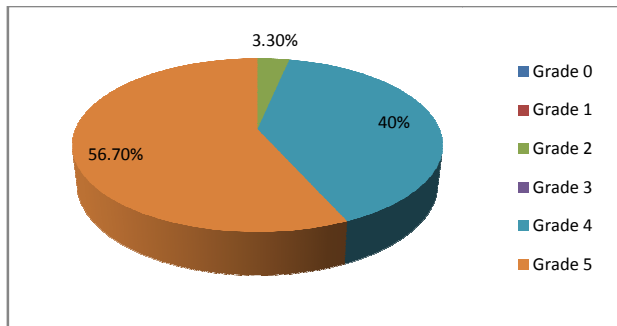


**Figure 4:** Distribution of ulcerative colitis cases on the basis of presenting complain

According to grading for assessment of disease severity of ulcerative colitis by K. Geboes. In our study maximum number of cases of ulcerative colitis are in grade 4 (with crypt destruction) 14 cases (40%) and grade 5 (with erosion or ulceration) 18 cases (56.7%). One case is in grade 2 (2A.2 – Moderate increase of eosinophils) 3.3%.



**Figure 5:** Active ulcerative colitis grade 4.3 Ulcerative colitis with glandular atrophy



**Figure 6:** Distribution of ulcerative colitis cases according to K. Geboes grading

## DISCUSSION

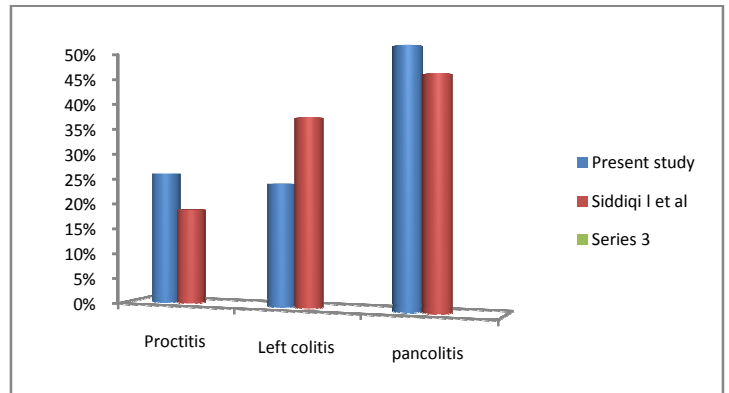
In the present study, ulcerative colitis infection was seen more in males as compared to females as 66% were males and 34% were females with a male to female ratio of 2:1. In the studies done by B.N Tandon *et al* at delhi 60% were males and 40% were females with a male to female

ratio of 2:1. Present study is similar to study done by Kinga Karlinger *et al* and Jason K. Hau *et al*.

**Table 1:** Comparison based on sex ratio in ulcerative colitis

Study	Male to Female ratio
B.N Tandon <i>et al</i> 5	2:1
Kinga Karlinger <i>et al</i> 8	1.5:1
Jason K. Hau <i>et al</i> 9	3:1
Present study	2:1

According to Montreal classification of ulcerative colitis, in the present study, the extent of the disease was limited to the rectum in 9 (26%) patients, left sided colitis in 8 (24%), pancolitis 16 (50%). This is similar to the study conducted by Siddiqui 1 *et al* and Zyirbliene *et al*. In Siddiqui 1 *et al* study they found out that extent of the disease was limited to the rectum in 34 (18.7%) patients, left sided in 67 (36.8%) and pan colitis in 81 (44.5%).



## Comparison based on site in ulcerative colitis (Montreal classification)

In the present study 1 (3.30%) patient was in grade 2, 14 (40%) patient were in grade 4, 18 (56.70%) patients were in grade 5. It is similar to the study done by K. Geboes *et al*. In their Study they found more number of cases in grade 4 and 5. K. Geboes *et al* found Correlation of the location of neutrophils in the epithelium (major grade 3) with major grades 4 (crypt destruction) and 5 (erosion). They found that both crypt destruction and erosion were significantly more common when neutrophils were present in the epithelium. In the present study 25 (76.6 %) ulcerative colitis patients have neutrophils in the epithelium. 8 (23.3%) patients have neutrophils only in the lamina propria. In K. Geboes *et al* study neutrophils in the cypts epithelium were less common as compared to the neutrophils in the surface epithelium when an erosion or ulceration was present (Major grade 5). In the present study 13 (%) patients have neutrophils in the surface epithelium and 4(%) patients have neutrophils in the crypts epithelium when an ulceration and erosion was present (Major grade 5). Present study is similar to K. Geboes *et al* study.

**Table 2:** Neutrophils in the epithelium and presence of an erosion or ulceration

Grade	Neutrophils in surface epithelium number of cases.		Neutrophils in the crypts epithelium number of cases.	
	K.Geboes <i>et al</i>	Present study	K.Geboes <i>et al</i>	Present study
5.0	8	0	5	0
5.1	3	0	0	0
5.2	16	1	2	4
5.3	14	4	0	0
5.4	6	8	0	0

**CONCLUSION**

Histopathological study of endoscopically obtained tissues is very useful in stablishing the diagnosis of non-neoplastic disorder of colorectal region. The study is also useful in assessing the response to the treatment and degree of remission in inflammatory bowel disease. K.Geboes scoring system is found to be very useful in assessing the severity of ulcerative colitis, which in addition correlate well with the clinical severity. Montreal classification of inflammatory bowel disease is found to be quiet useful in making a clinicopathological correlation. In most of the patients with inflammatory bowel disease, the histopathological study of post therapeutic endoscopic biopsies is very useful in assessing the response to the treatment, confirmation of remission or recurrence. Hence the histopathological evaluation has great prognostic significance in addition to the diagnostic value.

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