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Original Research Article

Histopathological Evaluation of Lower Gastrointestinal Biopsies

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Abstract:

Aim: The endoscopy evaluation and biopsy is common and frequently used in the diagnosis and treatment of gastrointestinal tract (GIT) mucosal pathology. Lower GIT is relatively common to navigate and thus gives easy accessibility for endoscopic evaluation, and plays an important role for direct visualization as well biopsy for histopathological evaluation of various pathology. In our study, we retrospectively evaluated the histopathological results of the lower gastrointestinal endoscopic biopsies.

Materials and Methods: A total of 130 (n=130) patients were endoscopically examined and biopsied from lower GIT between Jan 2015 to Dec 2015.

Results: out of 130 patients, 96 (73.8%) were male and remaining 34 (26.2%) patients were female. The average age of patients was 39.2 years (Male 41.73 years and female 38.77 years), their age range varies from 5 years to 84 years. Histopathological diagnosis inferred in descending order of frequency as inflammatory bowel disease in 49 patients (37.69%), nonspecific colitis in 42(32.2%), acute infectious colitis in 13 (10%), Solitory rectal ulcer syndrome in 7(5.38%), carcinoma in 6(4.60%), chronic colitis in 4(3.04%), granulomatous and amoebic colitis - 3 each (each 2.30%) and polyp in 2(1.53%) patients.

Conclusion: Endoscopy is an important tool for direct evaluation of GIT and histopathological diagnosis for variety of pathological lesions.

Keywords: Lower Gastrointestinal tract (Lower GIT), colorectal cancer (CRC), endoscopy.

Introduction

Gastrointestinal endoscopy of lower gastrointestinal tract (GIT) is most commonly performed procedure for direct visual evaluation of lower GIT pathology with simultaneous facilities for tissue sampling (biopsy) for histopathological evaluation.

Materials and Methods

All endoscopic biopsy from Lower GIT between Jan. 2015 to Dec. 2015 were included in this retrospective study from the Department of Pathology, NC Medical College, Israna, Panipat as well patient biopsies submitted to authors for personal opinion. A total of 130 mucosal biopsies were evaluated for frequencies and percentages. Patients' demographic characteristics were analysed including age, sex and history. The histopathological diagnosis was confirmed by expert pathologists. The final diagnosis of Crohn's disease and vasculitis was confirmed using a combination of clinical, endoscopic, radiologic, laboratory, and histological findings.

Results

In our study, a total number of 130 lower GIT biopsy were evaluated from 96 male (73.8%) and 34 female (26.2%) patients (Figure-1). The average age of patients was 39.2 years (Male= 41.73 years and female = 38.77 years). Age range varies from 5 years to 84 years old. Location of different lesions and their diagnosis are depicted in Table 1. Colon is the principle site for endoscopic evaluation with biopsy procedure in 83 (63.84%) patients, followed by rectum in 41 (31.53%). Caecum being the proximal part and explored in only 6 (4.6%) patients. Amongst various diseases diagnosed histopathologically (Table 2), inflammatory bowel disease (IBD) was commonest in 49(37.69%) patients, followed by Non-specifc colitis/proctitis together in 42(32.30%) patients and acute infectious colitis in 13(10.0%) patients. Solitory rectal ulcer syndrome (SRUS) was found in 7(5.38%) patients; and 3(2.30%) patients were diagnosed for amoebic colitis and granulomatous lesion each. Polyps and malignant lesions were also diagnosed through endoscopic examination and histopathologically 2((1.53%) were adenomatous polyp with mild to moderate dysplasia and 6(4.60%) patients were diagnosed as colorectal carcinoma (CRC).

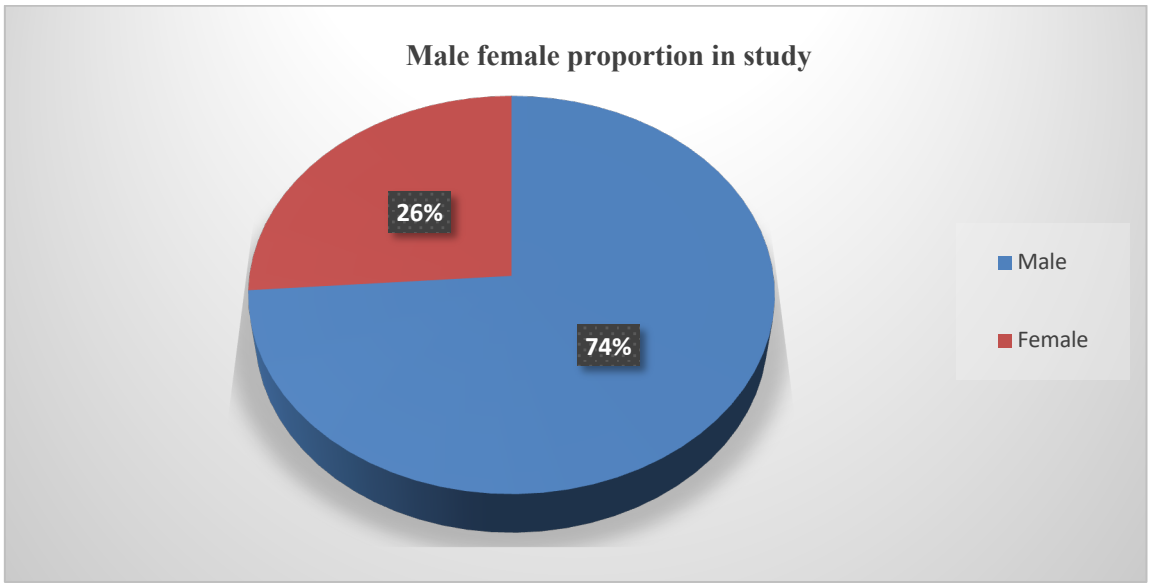

Figure: 1: Male female ratio

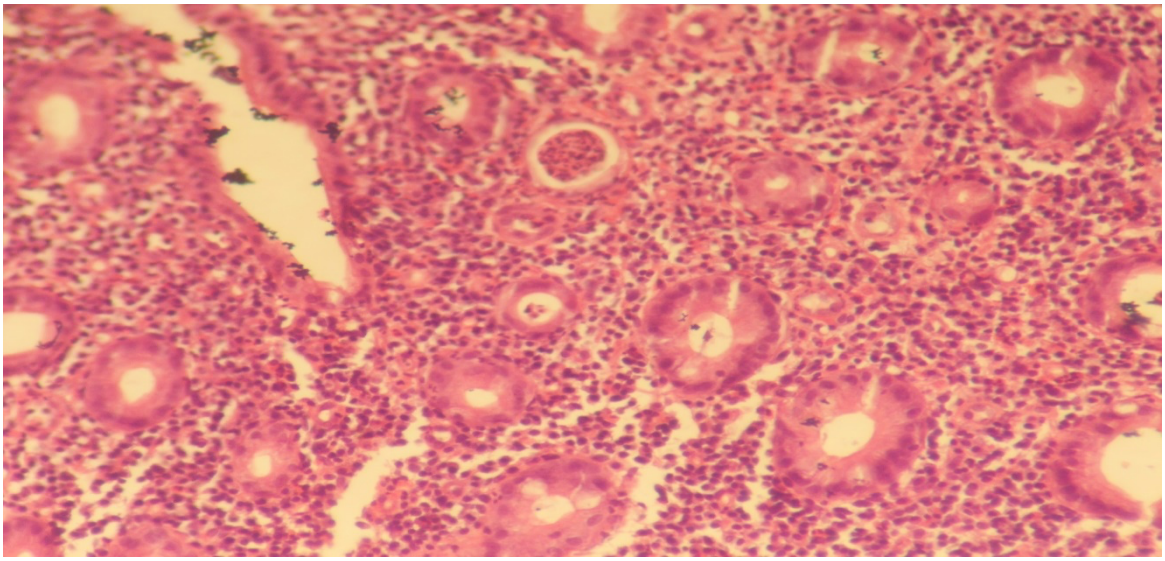

Figure 2: Inflammatory bowel disease- Active Ulcerative Colitis

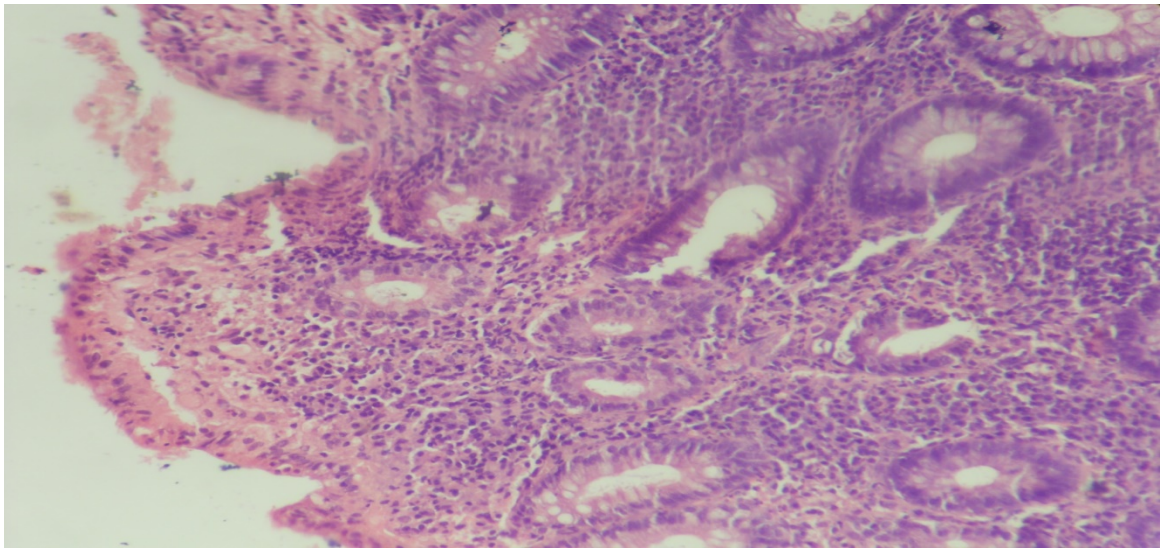

Figure 3: Infectious (Acute) colitis

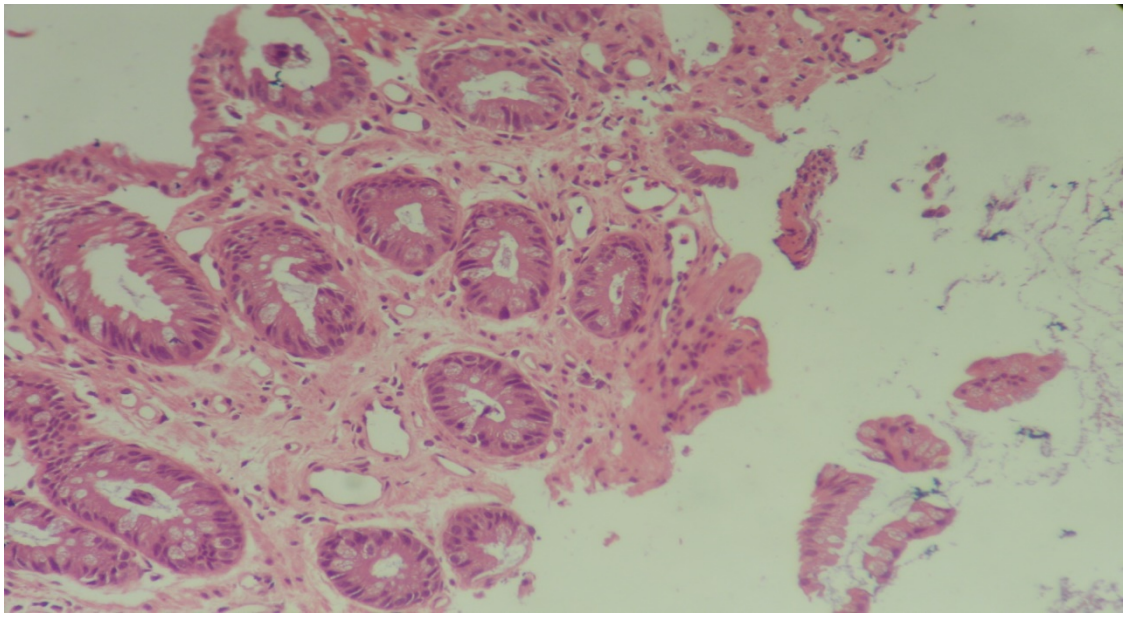

Figure 4: Solitory Rectal Ulcer Sundrome

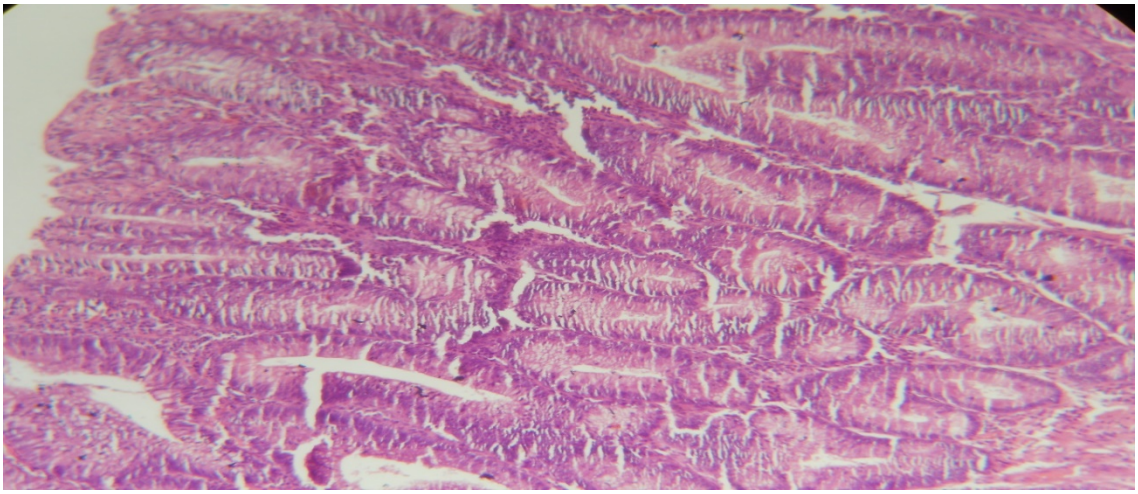

Figure 5: Adenomatous Polyp, colon

Table 1: Location of Endoscopic biopsy

Anatomical site	No. of patients	%
CAECUM	6	4.60%
Colon	83	63.84
Rectum	41	31.53
n	130	

Table 2: Histopathological diagnosis of endoscopic biopsy

Acute Infectious Colitic	13	10%
Amoebic Colitis	3	2.30%
CA	6	4.60%
CH Colitis	4	3.07%
Granulamotous	3	2.30%
IBD	49	37.69%
No Diagnosis	1	0.76%
NS Colitis	25	19.23%
NS Proctitis	17	13.07%
POLYP Adenomatous POLYP	2	1.53%
SRUS	7	5.38%
	130	

Discussion

Endoscopy is done frequently to detect various inflammatory & pathological conditions of large intestine as well early detection of malignancy. Inflammatory lesions outnumber neoplastic lesions in our study and comparable to other studies [1].

'Pre analytic "variables like detailed clinical history, clinical presentation, anatomical location as well endoscopic findings at the time of biopsy enhance the accuracy of histopathological evaluation of gastrointestinal biopsies [2]. Mucosal changes occurring in IBD in initial phase are difficult to differentiate from infective colitis; but duration of symptoms may facilitate histopathological evaluation. Both lymphocytic and collagenous colitis present with watery diarrhoea [2] without intermittent constipation. Collagenous colitis is common amongst elderly females. while lymphocytic colitis is affecting both sexes equally. In microscopic colitis, the mucosal changes can be patchy and more prominent in proximal colonic mucosa [3]. Lymphocytic and collagenous colitis can be differentiated by histopathological evaluation of mucosa only [2]. A minimum of 3-4 mucosal biopsies, each from the right colon (caecum—transverse colon) and left colon (descending colon—rectum) are essential for a definite diagnosis of microscopic colitis. Similarly, history of radiation exposure or radiotherapy may help in identifying radiation-induced mucosal injury [4]. In case of polyp, history of previous partial polypectomy may prevent misinterpretation of misplaced epithelial glands as CRC.

Mucosa of right colon differs from left-sided colonic mucosa and may lead to an enormous error if a proper location is not specified. Mucosal biopsies should be arranged from proximal to distal origin. Inflamed colonic mucosal biopsy should be paired with normal mucosal biopsies for histopathological evaluation and differentiation from other colitis [2]. Biopsy of colonic ulcer with base is useful for the identifying viral inclusions; however in suspected IBD, biopsies from non-ulcerated areas are preferred for evaluating disease activity. Targeted biopsies are performed in suspected case of malignancy during endoscopic evaluation. Predominantly normal or near normal colorectal mucosa with an occasional focus of acute cryptitis or crypt abscess indicate focal active colitis. This may be part of Crohn's disease, but also common during resolving phase of active colitis [5]. NSAIDs are also associated non-specific colitis, ulceration, or microscopic colitis [6] therefore a history of use of oral NSAID is important for evaluation histopathologically. Diagnosis of Crohn's (CD) requires multiple mucosal biopsy from normal and abnormal areas of different segments of GIT [7]. Eight tissue specimens are recommended for diagnosing intestinal tuberculosis [8], and five or more biopsies are required for eosinophilic gastroenteritis [9].

Endoscopic biopsies in suspected active ulcerative colitis are usually performed to confirm the clinical diagnosis, and to determine the extent & severity of the disease and to identify any malignant transformation including dysplasia if any [2]. Mucosal biopsies in mild IBD show changes indistinguishable from acute infectious colitis; therefore needs to be evaluated in conjunction with clinical history and endoscopic appearance during endoscopy. In absence of features of chronicity with short history suggest an infectious (acute) etiology and diagnosis of IBD is unlikely. Chronic infection such as tuberculosis and lymphogranuloma are important granulomatous lesions and should be differentiated from Crohn's disease. Viral infection can also cause infection of GIT; special staining, such as Immunohistochemistry (IHC) can be employed to identify inclusion bodies for cytomegalovirus (CMV); or molecular study for Chlamydia. In patients with segmental colitis, mucosal biopsies from both inflamed and a non-inflamed area (e.g. rectum) are required for differentiation [10]. Terminal ideal biopsy is advocated with high clinical suspicion of Crohn's disease, and may show noncaseating granulomas or ulcers [11]. Vascular insufficiency either due to surgery or Ischaemic colitis can be differentiated from IBD especially in an elderly patient. A sharp demarcated anatomical disease distribution relating to arterial supply is important feature during endoscopic evaluation.

About 5 to 6 mucosal biopsies are required from different segment to know the disease involvement in active ulcerative colitis (UC). UC is classically starts from the rectum and extend to the proximal colon. Waxing and waning of the UC lesions and the effect of partial treatment may result in sparing of the rectum and may shows a patchy distribution during endoscopic evaluation as well in histopathological findings [12,13]. Many times, endoscopic findings of colonic mucosa may not correlate well with severity of inflammation in mucosal biopsies histopathologically [14] or may appear quiescent mucosal changes with complete normal histopathological appearance. Therefore, findings of normal colorectal mucosa in histopathology do not exclude a diagnosis of IBD.

Long standing patients suffering with ulcerative colitis for 8 to10 years and with pan-colitis are at the higher risk of development malignancy. IBD have 20- times higher risk of development of CRC [15]. The risk assessment for CRC was done in one study [16] in patients with UC; and was estimated 2%, 8% and 18% after 10 years, 20 years & 30 years of active colitis, respectively [16].The risk of

development of CRC is more in patients with coexistent primary sclerosing cholangitis, with family history of CRC and in severe active IBD.

Early detection of CRC or preinvasive mucosal dysplasia are vital to improve the prognosis in such patients as well improve survival [17]. Surveillance endoscopy in longstanding UC includes two to four random biopsies from every 10 cm in suspicious areas [18]. Low-grade flat dysplasia in colorectal endoscopy is associated with a more than 50% risk of the development of high-grade dysplasia or CRC over 5 years [19].

Thus, American Cancer Society recommend colonoscopy every 3 to 4th years, after 50 years of age, and stool examination 6 monthly for occult blood for early detection of CRC [20,21]. In our study, 6 (4.60%) patients were diagnosed for CRC compared to other study showing a higher percentage of 12.9% [17].

Two (1.53%) polyps in our study were noticed during endoscopic evaluation, and simultaneous polpectomy done from base to prevent further progression to CRC. Diminutive polyps can be removed during endoscopic evaluation [2] if suspicious for malignancy, surgical resection or polypectomy is recommended [2]. Biopsies from larger polyp usually represents a small area for assessment and may miss malignant changes present elsewhere in a polyp. Risk factors for developing CRC are increases with advancing age [16].

Conclusion

The endoscopy is common and frequently used in the diagnosis and treatment of gastrointestinal tract (GIT) pathology. Lower GIT is easy to navigate and plays an important role for direct visualization & biopsy for final histopathological diagnosis.

A total of 130 (n=130) patients were endoscopically examined between Jan 2015 to Dec 2015; and included 96(73.8%) male and remaining 34(26.2%) female. The average age of patients was 39.2 years. Histopathologically, various inflammatory conditions in descending order of frequency are IBD in 49 patients (37.69%), nonspecific colitis/proctitis in 42(32.2%), acute infectious colitis in 13 (10%) and SRUS in 7(5.38%).

Six (4.60%) patients were diagnosed with CRC and two (1.53%) patients had adenomatous polyp. Quiescent mucosal changes &/or findings of normal colorectal mucosa in histopathology does not exclude a diagnosis of IBD. If suspicious for malignancy, surgical resection or polypectomy is recommended. Colonoscopy every 3-4th years over the age of 50 years, and stool examination for occult blood 6 monthly are tools for early detection of CRC.

References

1. Fiocca R, Ceppa P. Endoscopic biopsies. J Clin Pathol. 2003; 56(5):321-2.
2. Bateman AC, Patel P. Frontline Gastroenterology. 2014;5:96–102
3. Offner FA, Jao RV, Lewin KJ, et al. Collagenous colitis: a study of the distribution of morphological abnormalities and their histological detection. Hum Pathol 1999; 30:451–7.
4. Goong, H.J.; Kim, T.J.; Nam, K.; Park, J.; Kim, J.O.; Kim, H.G.; Ko, B.M.; Jeon, S.R.; Histological Diagnostic Yield and Clinical Significance of the First Biopsy in Device-Assisted Enteroscopy in Patients with Small Bowel Diseases: A KASID Multicenter Study. Diagnostics. 2022; 12: 964-5.
5. Greenson JK, Stern RA, Carpenter SL, et al. The clinical significance of focal active colitis. Hum Pathol 1997; 28:729–33.
6. Bjarnason I, Hayllar J, MacPherson AJ, et al. Side effects of nonsteroidal anti-inflammatory drugs on the small and large intestine in humans. Gastroenterology 1993; 104:1832–47. 12.
7. Maaser, C.; Sturm, A.; Vavricka, S.R.; Kucharzik, T.; Fiorino, G.; Annese, V.; Calabrese, E.; Baumgart, D.C.; Bettenworth, D.; Nunes, P.B.; et al. ECCO-ESGAR Guideline for Diagnostic Assessment in IBD Part 1: Initial diagnosis, monitoring of known IBD, detection of complications. J. Crohn's Colitis. 2018; 13: 144–164K.
8. Mehta, V.; Desai, D.; Abraham, P.; Rodrigues, C. Making a Positive Diagnosis of Intestinal Tuberculosis with the Aid of New Biologic and Histologic Features: How Far Have We Reached? Inflamm. Intestig. Dis. 2019; 3: 155–160.
9. Abou Rached, A.; ElHajj, W. Eosinophilic gastroenteritis: Approach to diagnosis and management. World J. Gastrointest. Pharmacol. Ther. 2016; 7: 513–523.
10. Shepherd NA. Pathological mimics of inflammatory bowel disease. J Clin Pathol 1991; 44:726–33.
11. GeboesK, Ectors N,d'Haens G, et al. Is colposcopy with biopsy worthwhile in patients presenting with symptoms of inflammatory bowel disease? Am J Gastroenterol 1998; 93:201–6.
12. KimB, Barnett JL, Kleer CG, et al. Endoscopic and histological patchiness in treated ulcerative colitis. Am J Gastroenterol 1999; 94:3258–62.
13. Joo M, Odze RD. Rectal sparing and skip lesions in ulcerative colitis: a comparative study of endoscopic and histologic findings in patients who underwent proctocolectomy. Am J Surg Pathol 2010; 34:689–96.

14. Levine TS, Tzardi M, Mitchell S, et al. Diagnostic difficulty arising from rectal recovery in ulcerative colitis. J Clin Pathol 1996; 49:319–23.
15. Dyson JK, Rutter MD. Colorectal cancer in inflammatory bowel disease: what is the real magnitude of the risk? World J Gastroenterol 2012; 18:3839–48.
16. Eaden JA, Abrams KR, Mayberry JF. The risk of colorectal cancer in ulcerative colitis: a meta-analysis. Gut 2001;48: 526–35.
17. Francisci S, Capocaccia R, Grande E, Santaquilani M, Simonetti A, Allemani C, et al. Eurocare Working Group. The cure of cancer: a European perspective. Eur J Cancer. 2009; 45:1067-79.
18. Carter MJ, Lobo AJ, Travis SPL. Guidelines for the management of inflammatory bowel disease in adults. Gut 2004; 53: V1–16.
19. Ullman T, Croog V, Harpaz N, et al. Progression of flat low-grade dysplasia to advanced neoplasia in patients with ulcerative colitis. Gastroenterology 2003; 125:1311–19
20. Strate LL, Syngal S. Timing of colonoscopy: impact on length of hospital stays in patients with acute lower intestinal bleeding. Am J Gastroenterol 2003; 98: 317-22.
21. Strate LL, Orav EJ, Syngal S. Early predictors of severity in acute lower intestinal tract bleed ing. Arch Intern Med 2003; 163: 838-43.