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Original Research Article

Different Colonoscopy Presentation Patterns with Clinicopathological Features of Colonic Cancer Patients Admitted in Misurata Cancer Center (MCC), Libya

Juwid E. Abdallah¹, Mussa Al Ragig¹, Eshtiwii Ali¹, Boder M. Jamela² and Abdalla B. Fathi^{2*}

¹Department of Surgery, Misurata Cancer Center, Misurata Cancer Center, Misurata, Libya

²Department of Pathology, Misurata Cancer Center, Misurata Cancer Center, Misurata, Libya

*Corresponding author.

Abstract	Keywords
<p>The study evaluates the most common presentation patterns of endoscopic results and their distribution among the gender, age and colon location. The value of Endoscopic Unit (ESU) management was also evaluated. Of 248 patients, only 25 were admitted in MCC with cancer. Clinically, the majority of the patients are female (54.8%) with mean age was 50.5 year. A percentage of 7.4 patients were transferred to Surgical Oncology Unit, while other patients referred as OPD, 31.5% of which were normal, 12.5% have piles, and 7.3% have diverticulitis while 32 patients (12.9%) were poorly prepared. The most common endoscopic pattern is polypoid mass and irregular fungating mass, followed by flat erythema, with and without ulceration. The most common histological lesions is inflammatory hyperplastic polyp (40 patients), followed by malignant tumor (25 patients) and adenomatous polyp (20 patients). The study has found a significant relation between the endoscopic presentations and the type of lesions ($p < 0.0001$). Univariate tests revealed that male gender, older age, and larger and irregular mass endoscopic pattern lesions were associated with high malignancy rate in the MCC hospital. Accurate primary preparations and appropriate selection of complain-related problems such as abdomen pain, melena, and family and past history might be highly recommended to reduce a number of patient that need real endoscopy services.</p>	<p>Adenoma Cancer Colonoscopy Endoscopy unit Presentation patterns</p>

Introduction

Colon tumors are one of the most common pathological problems in the world particularly in population that living in western countries. Colorectal cancer (CRC) is contributing to 13% of all cancers (Boyle and Ferlay, 2005; Hamilton and Aaltonen, 2006). It is well known that the male-female ratio about 1.2 and the prevalence

increases with age in both gender (Boyle and Ferlay, 2005). Colon cancer accounts for 10-13% of all cancer deaths. It is the second most common cause of female death and the third common cause of male mortality (Hamilton and Aaltonen, 2006; Walker and Quirke, 2002). While many colorectal cancers can be diagnosed in their early, more curable stages using colonoscopy, no such screening test exist for less common cancer of the

digestive tract (American Society of Clinical Oncology, 2007). Majority of colon tumor patients' complain of polypoid lesions that may cause intestinal obstruction and bleeding per rectum (Boyle and Ferlay, 2005; Hamilton and Aaltonen, 2006).

Generally the chronic colon diseases can be classified into three classes: benign adenomas, malignant tumors of colon, and colitis specific and non-specific (Hamilton and Aaltonen, 2006). In African population it similar to other cancers there are low rates of colorectal cancer. However, they also have relatively higher colorectal cancer mortality rates and they are more likely to be diagnosed at an advanced stage of disease (Sabratha Cancer Registry, 2006; El Mistiri et al., 2007; Boder et al., 2011; Misurata Cancer Registry, 2010; Nadia et al., 2007).

Colon malignancy in our hospital accounts for 10% of all cancers (Boyle and Ferlay, 2005). Whereas, the great majority of colon lesions are benign (Sabratha Cancer Registry, 2006; Misurata Cancer Registry, 2010). The ability to distinguish benign from malignant lesions is essential to avoid unnecessary operations. The recent decades have shown development in the knowledge and understanding of the basic science of the colon disease. Today, the treatment of colon tumors improved from surgical therapy only to multidisciplinary management that needed surgeons, radiologists, histo and molecular pathologists and chemotherapists.

Early diagnosis is important because patients with early stage cancer have better survival than those with advanced disease. Endoscopic examination with punch biopsy is minimally invasive and has high specificity and sensitivity particularly in well prepared patients. Colon endoscopy is simple to perform, commonly available, safely applicable and is easily combined with biopsy. Colon endoscopy is non-invasive method and giving direct results. Several studies have been established the capability of Colon endoscopy to distinguish the benign colon mass from malignant one (Smith et al., 2004; Advisory Committee on Cancer Prevention, 1999; Labianca et al., 2004; Beretta et al., 2003). Among the different patterns of Colon endoscopy, mass formation, hardness and the absence of smooth surface were confirmed to be a helpful in predicting colon cancer (Smith et al., 2004).

Although, pathology report is considered a final method for the diagnosis of lesion behaviour, the patterns of

endoscopic examination can support the diagnostic decisions in many cases, and improve the sensitivity and specificity of the preoperative clinical diagnosis. Examination is an important tool can occur at any time during the course of a malignancy, from the early diagnostic features to the follow-up period. However, patients with advanced cancer are often admitted to the hospital as emergency cases. This may not always be medically eligible for endoscopic examination (Boyle and Ferlay, 2005; Hamilton and Aaltonen, 2006; Walker and Quirke, 2002).

It is well known that the recurrent visiting to the endoscopic unit (ESU) are important indicators during follow up of family history patients or inadequate prepared patient. Presence of a well-developed tools, and inpatient preparation provide a significantly improvement of endoscopic results, and reduced failure rate (Walker and Quirke, 2002; American Society of Clinical Oncology, 2007; Sabratha Cancer Registry, 2006). Today, modern endoscopies with professional and skillful teamwork and close collaborations with clinician have significantly improved the outcome. This emphasizes the need for best management and maintenance of quality of endoscopy work (El Mistiri et al., 2007; Labianca et al., 2004). The aims of current study are to evaluate the most common colon lesions detected by colonoscopy, to characterize common patterns of clinical presentation at our institution and whether this technique can have a role in the diagnosis of malignant involvement. In addition, consider that the colonoscopy with biopsies can contribute to assess the colon tumours in Libyan patients.

To our knowledge, such study on the outcome of endoscopy examination in Libya has not been published previously. In this concerning, a better understanding of the factors associated with colon abnormality would allow clinicians to distinguish patients who are appropriate for endoscopic examination only from those who need also biopsies.

Patients and methods

Subjects

This retrospective study was conducted on 248 patients. All patients examined and investigated in ESU of Misurata cancer center between years 2008 and 2010 were included in current study. The clinical and pathological data regarding characteristics of patients

were collected from pathology reports, few cases collected from files during hospitalization, clinical features such as (sex, age at presentation, cancer diagnosis, grade, site of lesions and endoscopic patterns of the lesions).

Statistical analyses

The statistical analyses were performed using SPSS software packages for Windows, versions 19.0 (SPSS, Inc., Chicago, USA). The variables of the material were grouped into logical classes and descriptive statistics calculated for the continuous variables. Comparisons were made using the Student’s t test for continuous variables that were normally distributed (e.g., age), the Mann-Whitney test for continuous, nonparametric

variables (e.g., grade), and Pearson’s test for categorical variables (e.g., gender). Pearson and Spearman’s correlation tests were used for comparison between two variables. P-values below 0.05 were regarded as significant. Comparison of numerical data was done by the chi-square test. Student t-tests and ANOVA were also used to test differences between the groups. Univariate analyses were performed for all studied clinicopathological features to estimate their effect on disease histological diagnosis, together or separately.

Results

The characteristics of the 248 patients who were examined in the ESU during the study period are shown in Table 1.

Table 1. Characteristics of 248 patients examined by colonoscopy.

Characteristics		No.	Percent
Sex	Male	112	45.2
	Female	136	54.8
Admission type	Transfers to surgical oncology unit	25	
	OPD investigation	223	
Endoscopic patterns			
	Anal fissure	5	2.0
	Diverticulosis	18	7.3
	Erythemia	20	8.1
	Flat polyp	5	2.0
	Fungating mass	5	2.0
	Mass	6	2.4
	Mass and polyp	4	1.6
	Mass refer to surgery	3	1.2
	Normal	78	31.5
	piles	28	11.3
	Piles and fissure	3	1.2
	Polyp	32	12.9
	Polyp and diverticulosis	4	1.6
	Poor preparation	32	12.9
	Ulceration	5	2.0
Diagnoses of disease			
	* Malignant tumors	25	10.1
	Tubular Adenoma	20	8.1
	Undetermined Ulcerative colitis	2	0.8
	Inflammatory polyp	5	2.0
	Mucosal folding of regeneration	2	0.8
	Non specific colitis	20	8.1
	Repeated biopsies (reactive)	8	3.2
	Ulcerative colitis	3	1.2
	‡Others	163	65.7
		Mean	Range
Age		50.5	11-93
*Malignant= invasive adenocarcinoma (n 20), malignant carcinoid(n 1), carcinoma <i>in situ</i> in villous adenoma (n 4); ‡Others= normal (n 78), piles (n 31), diverticulitis (n 18), anal fissure (n 5), poor preparation (n 32 patients).			

A retrospective study of 136 (54.8%) females of mean age 48.8 ± 17.05 years (range 25-85 years) and 112 (45.2%) males of mean age 52.5 ± 13.2 years (range 11-93 years) who had GIT complain and admitted to ESU for Endoscopic examined. The occurrence of colon cancer in Libyan population is strongly related to the old age with nearly 65% of cases arising in patient who are 50 years or older. The mean age was 58.9 years (Fig. 1)

Fig. 1: Age distribution at diagnosis of histologically verified colon cancer patients in middle Western-Libya (Misurata region) in 2008-2010. The graph is based on 248 patients.

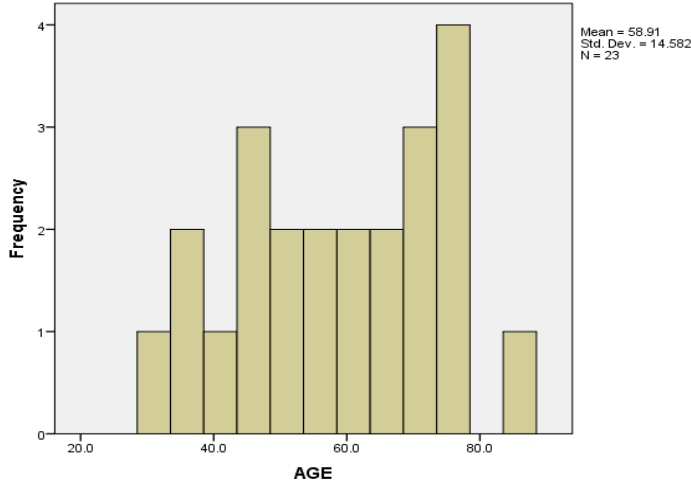
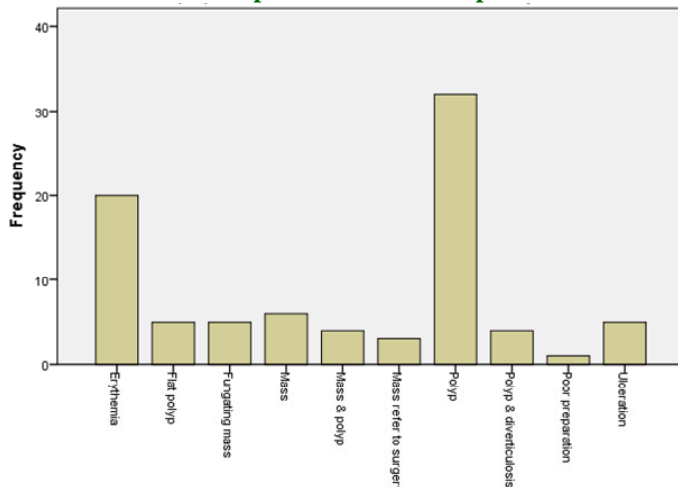


Fig. 2 shows the most frequent endoscopic patterns, which including polypoid pattern such as pediculate polyp, hard mass and fungating mass. Followed by flat erythematous lesions and ulceration pattern after exclude piles, fissures and diverticulosis as well as normal mucosa and those cases which need to be repeated endoscopy as result of poor preparation.

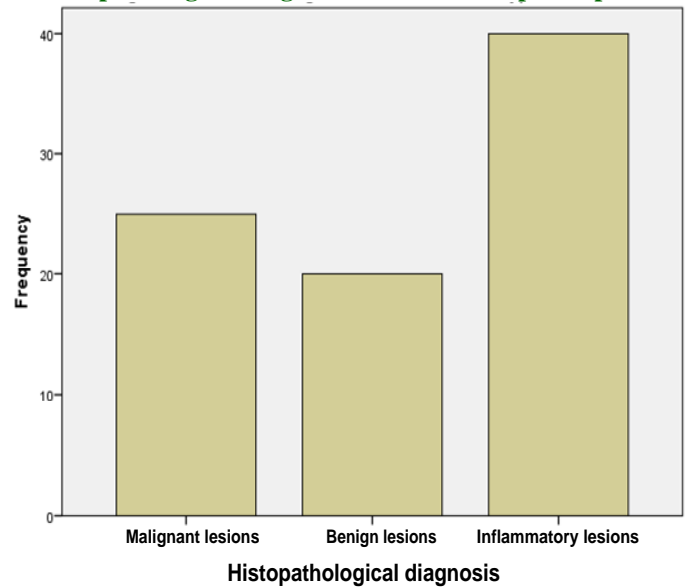
Fig. 2: Most frequent endoscopic presentations that are indicators for neoplastic and non-neoplastic lesions.



Several endoscopic patterns were stated for example, 8.1% of cases showed erythema and minimal changes, smooth polypoid lesion in 16.1%. In addition, eight patients (3.2%) with horn-like polypoid mass, two patients showed flatted polyp and two patients showed ulcerated mucosa (Table 1).

In our study, we have found that 203 patients (92.6%) were non-neoplastic patients cases; directly received from OPD, whereas 25 patients (7.4%) were transferred to oncology units; 20 of them were invasive cancer patient, while 5 patient had carcinoma *in situ*. Those were examined via colonoscopy as a routine follow up work during and after period of treatment. The most frequent neoplastic lesion sites were the left side 39 (86.7%) particularly, recto-sigmoidal region and the right side colon 6 (13.3%) (Table 1 and Fig. 3).

Fig. 3: Malignant, Benign and reactive inflammatory of histopathological diagnosis of the endoscopic biopsies.



Although colonic cancer were more frequent in male patients (60.0%) than in female patients (40.0%), there is no significance difference ($p=0.3$). On the other hand, majority of patients with ulcerative colitis were female (Table 2).

Interestingly, the study has found a significant relation between the endoscopic patterns and the histological type of lesion ($p<0.0001$). For example, the majority of patients with mass or fungating polyp were seen in cancer. Whereas, majority of patterns showing of erythema with or without ulceration, they had either nonspecific colitis or ulcerative colitis.

The study has also found that outcome of the endoscopic biopsies were significantly influenced by size of lesion ($p < 0.0001$), specific endoscopic pattern (particularly irregular horn shape and hard mass lesions) ($p < 0.0001$),

and older age ($p = 0.02$), these features were associated with high risk of malignancy. On other hand gender and specific side lesion or colon regions have no influence on the outcome (Table 2).

Table 2. Factors correlated with gender and neoplastic type.

Characteristics		Gender		p-value	Diagnosis			p-value
		Female (no.)	Male (no.)		Malignant (no.)	Benign (no.)	Inflammation (no.)	
Age	Above the mean	13	23	0.09	8	9	28	0.02
	Below the mean	24	21		15	9	12	
Endoscopic patterns				0.5				<0.0001
Erythema		11	9		1	0	19	
Flat polyp		1	4		0	2	3	
Fungating mass		2	3		5	0	0	
Mass		3	3		6	0	0	
Mass & polyp		1	3		4	0	0	
Mass refer to surgery		1	2		3	0	0	
Polyp		16	16		5	16	11	
Polyp & diverticulosis		0	4		1	2	1	
Poor preparation		1	0		0	0	1	
Ulceration		3	2	0	0	5		
Regions				0.2				0.3
Anorectal		0	2		2	0	0	
Ascending		0	3		2	0	1	
Cecum		3	1		2	0	21	
Descending		3	3		1	3	2	
Lt colon		4	2		0	2	4	
Rectosigmoid		2	9		3	3	5	
Rectum		10	7		2	5	10	
Sigmoid		14	15		12	6	11	
Transverse		1	2		1	0	2	
Whole colon		1	2		0	1	2	
Size of lesion in cm				0.5				<0.0001
Above the mean		12	17		0	20	9	
Below the mean		10	14	24	0	0		
Histological behavior of the lesions				0.3				
Benign		29	31					
Malignant		10	15					

Discussion

The present study was carried out to evaluate the most common endoscopic presentation of colon lesions in patients examined in ESU and evaluate the most common tumors. The relationship between each endoscopic patterns and gender, age, size of lesion and histological type of tumors with reference to the present study is briefly discussed.

The indicators for endoscopic examination

Some studies have showed that the bleeding per rectum and abdominal pain symptoms were the most frequent reasons for colonoscopy investigation (Beretta et al., 2003). In current study, the most common presentations are abdominal pain, bloody mucus, diarrhoea and constipation.

The fraction of cancers among studied ESU patients

In current study, we have found that about 7.4 % of the biopsied patients were diagnosed as cancer patients and admitted to MCC hospital. This is might be lower than the results from Cancer American Society of Clinical Oncology in 2007 who concluded that approximately 18% of colorectal cancers are detected through an endoscopy presentation and biopsies (American Society of Clinical Oncology, 2007). This difference might be due to small number of patients in this study.

The endoscopic cancer patterns and clinico-pathological features

Gender and age at presentation: Several studies stated that males and old age were correlated with more frequent of endoscopic cancer patterns, current study has recognised a similar association between males and old age and endoscopic cancer patterns rate. We find higher cancer rate in men and old age than women and younger age. These results are in line with neighboring North African countries and other western countries (Boyle and Ferlay, 2005; Hamilton and Aaltonen, 2006; Walker and Quirke, 2002; American Society of Clinical Oncology, 2007; Sabratha Cancer Registry, 2006; El Mistiri et al., 2007; Misurata Cancer Registry, 2010; Nadia et al., 2007) (Table 2). The mean age was 50.5 years (range 11-93 years). Difference between the mean ages of men and women patients is statistically not significant (p value = 0.09). This unsubstantial difference might be due to the majority of colon cancers in Libya is due to the diet factors which are similar in both gender (El Mistiri et al., 2007; Misurata Cancer Registry, 2010).

Grade: The Libyan colon cancer grading in our institute was based on the double scale system (high and low grade). Although, most patients in current study had low grade (well differentiated tumors), 20% of our patients still had aggressive behavior disease with high grade. The aggressiveness presentation of these patients may be because the biological aggressiveness of these Libyan cancers or affecting the delay-time of diagnosis that could be further explaining the increase risk of advanced tumors (Jackson et al., 1995; Ermiah et al., 2012).

Cancer location among the studied patients

Our results are consistent with the results found by several studies (Boyle and Ferlay, 2005; Hamilton and Aaltonen, 2006; Walker and Quirke, 2002; American

Society of Clinical Oncology, 2007; Sabratha Cancer Registry, 2006; El Mistiri et al., 2007), that the most common primary cancer sites were left side. Increase of these tumors could be explained by the predominantly of precancers lesions on the left side such as polyps and ulcerative colitis. Indeed, studies from our institution and from others have consistently demonstrated that patients with prolonged ulcerative colitis have complication of sever dysplasia and malignant transformation (Hamilton and Aaltonen, 2006; Jackson et al., 1995; DeVita et al., 2011).

Histopathological outcome

The outcome of our study, we have found that 78 patients were normal endoscopy (31.5%), 40 (16.2%) were show inflammatory hyperplastic polyp, 7.3% and 1.2% of patients have diverticulitis and ulcerative colitis, in respectively. On other hand, 39 patients (15.7%) advised for repeat the investigation either due to inadequate biopsies or badly preparation, and 45 patients (18.1%) were have neoplastic lesions that transferred to oncology unit to complete their management. Our results demonstrated that patients with endoscopic presentation pattern of hard large and irregular polypoid mass, and old male were found to be associated with cancer histopathological results, this results is in agreement with results of other researches (Boyle and Ferlay, 2005; Hamilton and Aaltonen, 2006; Walker and Quirke, 2002; American Society of Clinical Oncology, 2007; Sabratha Cancer Registry, 2006; El Mistiri et al., 2007).

Conclusion

To conclude our findings showed significant correlation between the histopathological type and both of patient age and endoscopic lesion pattern in term of lesions' size and shape. There were significantly higher size and more irregular mass shape in high grade malignant tumor than low grade, benign tumor or inflammatory lesions. This change in lesion size and shape may be indicative of disease progression. Accurate primary preparations and appropriate selection of complain-related problems might be highly recommended to reduce a number of patients who are in need of real endoscopy services.

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