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ORIGINAL ARTICLE

GASTROINTESTINAL MALIGNANCIES: GETTING A DECADE YOUNGER?

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ABSTRACT: INTRODUCTION: Gastrointestinal malignancies are one of the most common malignancies encountered frequently, with rising incidence in young age due to the changing lifestyle and food habits in India. Oesophagus, stomach and colonic cancers are the commonly affected regions of the GI tract. These malignancies is known to occur in older age of fifth decade onwards. This is a study intended to highlight the rising incidence of such malignancies in the younger age in second to third decade as observed in and around Mangalore. Upper gastrointestinal malignancies are common in oesophagus and stomach, whereas lower gastrointestinal malignancies occur more commonly seen in colon. Colorectal cancer (CRC) is one of the most common of all familial malignancies with peak incidence in 60 to 70 years of age, 90% of cases occur in people aged 50 or older.Risk factors include a genetic predisposition, diet and lifestyle changes in the current era. Inheritance plays a role in the pathogenesis of upto a third of CRC cases. **AIMS AND OBJECTIVE**: To study the prevalence of gastrointestinal malignancies in patients less than fifty years and the association of positive family history and polyps with colorectal carcinomas. **MATERIAL AND METHODS**: This is a retrospective study of 128 cases of gastrointestinal malignancies from June 2010 to May 2012 received in and around Mangalore. The study includes endoscopic biopsies, colonoscopic biopsies partial and total colectomy specimens with growth seen anywhere from oesophagus to rectum. Representative sections are taken, processed routinely and stained with H & E. The pathological findings are then correlated with clinical data like age and sex distribution, site, family history and presence of other malignancies. **RESULTS**: In this study gastrointestinal malignancies were studied as upper and lower gastrointestinal lesions. Upper gastrointestinal (GI) lesions were those in oesophagus, stomach, and duodenum. A total of 128 cases were studied with 98 cases in upper GI and 30 cases in lower GI. Out of the 98 upper GI malignancies, 36 were from oesophagus, 57 were from stomach and 5 were from the duodenum. Out of the 36 oesophageal malignancies, 13(36%) were in patients less than fifty years of age. However the gastric carcinomas were more in patients over fifty years. Colorectal malignancies were higher in <50 years age group i.e. 15 out of 30 cases (50%). CRC in the present study has male: female ratio of 1: 1.5.26% of carcinoma in young shows positive family history. 3 out of 15 (20%) carcinoma in young show polyps. Incidence of familial carcinoma is higher between 20-40 years of age. Out of 4 cases with positive family history, one is FAP (familial adenomatous polyposis) and 2 are Lynch syndrome with second malignancies in ovaries.

KEYWORDS: Gastrointestinal biopsies, age incidence, familial colonic carcinoma.

INTRODUCTION: Upper gastrointestinal tract is a common site for neoplasms, especially malignant tumors. Worldwide carcinoma stomach is the second most common cancer and carcinoma oesophagus is the sixth leading cause of death.[1,2] In India, according to the National Cancer Registry, oesophageal and gastric are the most commonly found cancers in men, while oesophageal cancer

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ranks third among women after carcinoma of breast and cervix.[3] Early detection of malignancy greatly improves the survival rate of patients.

The 5 year survival rate of early oesophageal cancer is 83.5%[3,4] and early gastric cancer is more than 90%.4 Colorectal cancer (CRC) is one of the most common of all familial malignancies with peak incidence in 60 to 70 years of age,[5,6] 90% of cases occur in people aged 50 or older [7]. Risk factors include a genetic predisposition, diet and lifestyle changes in the current era. Inheritance plays a role in the pathogenesis of up to a third of CRC cases.[8,9]

MATERIALS AND METHODS: This is a retrospective study of 128 cases of gastrointestinal malignancies from June 2010 to May 2012 received in and around Mangalore. The study includes endoscopic biopsies, colonoscopic biopsies partial and total colectomy specimens with growth seen anywhere from oesophagus to rectum. The biopsy specimen, usually 1 to 5 mm in diameter, includes the epithelium with a variable amount of lamina propria and occasionally a slip of muscularis mucosae.[7] In some situations, an aspiration technique may instead be used, yielding specimens that are larger and deeper, typically including part of the submucosa.

The biopsy specimens ideally should be mounted at the time of procurement by placing them, sub mucosal side down on a supporting medium such as filter paper, nylon mesh, or gel foam, and then placing them immediately in fixative, thus facilitating proper orientation during embedding and sectioning. When mounting procedures are not available, the specimen can be promptly dropped unmounted into fixative, although the orientation may be less than optimal. Standard formalin fixation generally suffices, although picric acid fixatives or mercury- based fixatives are preferred by some pathologists.[6,7]

Each biopsy specimen were sectioned at 3 to 5 micrometer, and 20 to 30 serial sections should be prepared.[10] These were mounted on one to three slides, depending on the size of the biopsies. Haematoxylin and Eosin (H&E) staining is satisfactory for routine purposes. The ideal number of biopsies to be taken will vary with the disease present.[6] Samples in 10% formalin were received in the laboratory were processed. Sections were taken from formalin fixed paraffin embedded tissues. Representative sections are taken, processed routinely and stained with H & E.

Periodic Acid Schiff (PAS) stain was performed wherever necessary. The pathological findings are then correlated with clinical data like age and sex distribution, site, family history and presence of other malignancies.

Inclusion Criteria: All patients undergoing endoscopic biopsy for dysphagia and dyspepsia and colonoscopic biopsies for altered bowel habits were included in the study. Patients of all age groups and both sexes were included in the study. Resected specimens for known cases of colonic cancer were also included in the study.

Exclusion Criteria: Biopsy samples diagnosed as non-malignant or inflammatory were excluded.

RESULTS: A total of 128 cases were studied. Out of this, 98 were upper gastrointestinal lesions and 30 were lower gastrointestinal lesions.

In the present study, 36 endoscopic biopsies positive for malignancy in the oesophagus and the commonly encountered oesophageal lesion was squamous cell carcinoma followed by

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adenocarcinoma and Barrett oesophagus. The highest incidence of squamous cell carcinoma was seen between 61-70 years of age. The lowest incidence of oesophageal lesions was in the age group 21- 30 years. There were 6 cases of adenocarcinoma primarily involving the oesophagus endoscopically.

Oesophageal squamous cell carcinoma was most common in the middle third of oesophagus in the present study. All the cases of adenocarcinoma oesophagus were found in the lower third of oesophagus. Out of 36 malignant biopsies, 6 were in the age group of 31 to 40 years, seven were in the age group of 41 to 50 and seven were in the age group of 51 to 60 years. And twelve cases were in the age group of 61 to 70 years and four cases in the age group of 71 to 80 years.

These observations were similar to studies carried out by Qureshi et al[8] and Sandhya et al.[9]

Sandhya et al[9] states that studies on oesophageal carcinoma claimed that >80% cases can be attributed to exposure to tobacco, alcohol and chewing betel leaf.[11,12,13,14]

Oesophageal malignancy in the young (age <50 years) was 13/36 (36%) cases with highest incidence between 41-50 years of age.[15,16] In the present study 57 endoscopic biopsies from stomach were positive for gastric malignancy. In the lesions of the stomach, malignancy was most common between 61-70 years. Only one case of duodenal biopsy was positive in the age group of 41 to 50, and four cases were positive for malignancy in the age group of 51-60 years. Gastric malignancy in the young (age <50 years) was 11/57 (19%) with highest incidence between 41-50 years of age.

In a similar study by Sumathi et al[5] in South India (Tamilnadu), out of the 284 patients with malignancy, 49 patients (18.3%) had malignant lesions between 25 and 45 years of age, with 10% of patients between 35 and 44 years of age. Sumathi et al[5] states age is an important criterion while screening patients with dyspepsia for cancer.

Out of 36 cases of oesophageal malignancy, 20 resection specimens were received in the laboratory. Out of the total 57 cases of gastric malignancy reported in our study, 29 periampullary carcinoma 2 resection specimens were received in the laboratory. On histopathology of resected specimen, all the cases were confirmed as having the same diagnosis given on endoscopic biopsy. Hence there was a concordance of endoscopic biopsy findings with post biopsy resected specimens.

Lower Gastrointestinal lesions: Colonic carcinoma incidence in this study is higher in <50 years age group i.e. 15 out of 30 cases. (50%) CRC in the present study has male: female ratio of 1: 1.5. 26% of carcinoma in young shows positive family history.3 out of 15 (20%) carcinoma in young show polyps. Incidence of familial carcinoma is higher between 20-40 years of age.

DISCUSSION: Pathologic evaluation of gastrointestinal tumor includes gross features, size of biopsy pieces, portion of tissue submitted, microscopic evaluation, tumor type, histologic grade, depth of invasion.[6]

Total number of upper GI malignancies were 48% (96 cases), out of which 18% were oesophageal malignancy, 28.5 % were gastric malignancy and 1.5 % were duodenal malignancy, with male predominance in all malignancies. Out of the upper GI malignancies oesophageal malignancies showed predominantly squamous cell carcinoma. Squamous cell carcinoma that is confined to the mucosa and submucosa, regardless of nodal status, are referred to as superficial squamous cell carcinomas.[7,18,19,21,22]

Those tumours limited to the lamina propria are referred to as intramucosal carcinoma. Early cancer of the oesophagus is a clinical concept which in terms of pathology corresponds to superficial carcinoma.[6,7,23] Few of the Adenocarcinoma detected were in the lower one third of oesophagus.

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Gastric carcinomas showed highest incidence in older individuals over fifty years and incidence was not raised in young in our study. Majority were 61 to 70 years of age during presentation. All of the cases were Adenocarcinoma. According to a similar study done by Gul Javid et al,[11,24,25] 45.28% of the cases studied were under the age of fifty years.

Overall incidence rates of CRC per 100, 000 young adults (ages 20-49 y) increased 1.5% per year in men and 1.6% per year in women.[10] Colonic carcinoma occurring in young were predominantly with family history, but majority (26%) were with family history and colonic carcinomas were on the rise in young when associated with familial adenomatous polyposis and Lynch syndrome. Two of the cases studied had Lynch syndrome with associated ovarian malignancy. It is noted in the present study that colonic carcinomas also occurred in patients with our family history less than fifty years (33%).

This rising incidence in young needs to be considered seriously and is attributed to the changing food pattern with low fibre content.[26, 27] Out of the thirty cases, two cases were in the age group of 10-19 years. One of the case was diagnosed as MALT lymphoma in a male patient who presented with intussusception. The other case was diagnosed as Adenocarcinoma in a young female at 15 years without family history.

Endoscopic histopathologic correlation was achieved in most of the cases with discrepancy mainly due to ill targeted biopsy, inadequate sampling, tiny biopsy material, handling, and processing artifacts. There was concordance of endoscopic biopsy findings with post biopsy resected specimens.

CONCLUSION: This study has unveiled the rising incidence of oesophageal and colorectal carcinomas in younger age group (<50 years). This also underscores the importance of family history and also the influence of environmental and geographic factors in the development of CRC. Hence younger age is not any criteria not to consider the gastrointestinal malignancies in suspicious cases. This is more so with positive family history especially in colonic carcinomas. However oesophageal malignancies are also seen at third and fourth decade unlike earlier highlighted to be in fifth to sixth decade.

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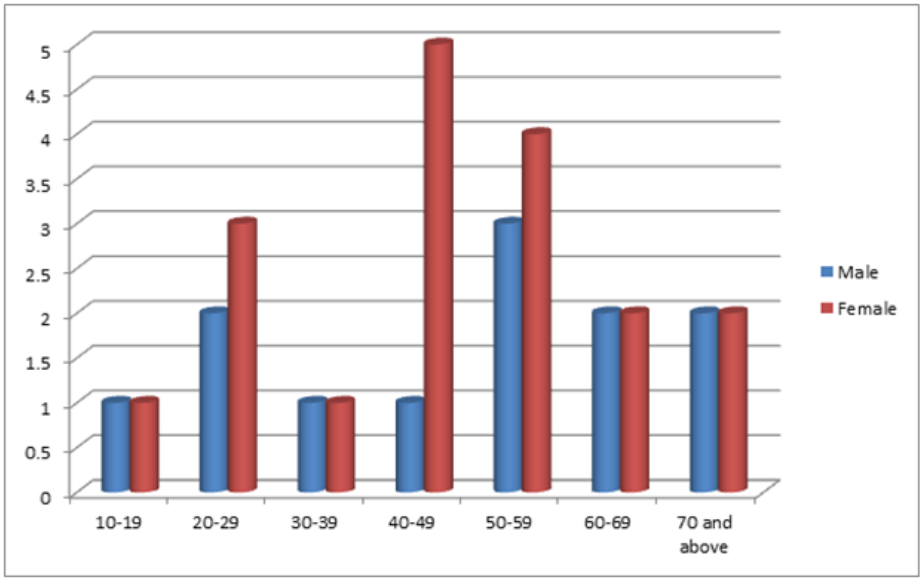

Table 1: Age and sex distribution of CRC

Age[yrs]	Male	Female
10-19	1	1
20-29	2	3
30-39	1	1
40-49	1	5
50-59	3	4
60-69	2	2
70 and above	2	2
Total	**12**	**18**

Table 2: Age and Sex distribution of CRC

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Age [yrs]	Family History		Polyp	
	Male	Female	Male	Female
10-19				1
20-29	1	2	1	1
30-39		1		
40-49				
50-59				
60-69				1
70 and above				1
Total	**1**	**3**	**1**	**4**

Table 3: Association of positive family history and polyps in patients with CRC

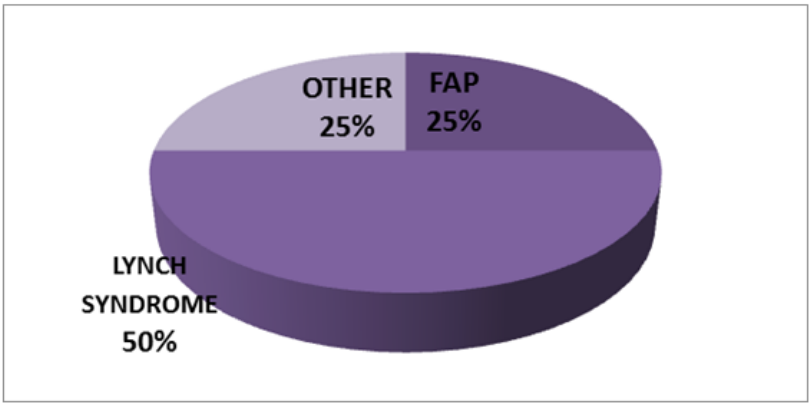

Figure 1: Familial colonic carcinomas

Site of Primary Tumor	Patients under 50 Years		Patients above 50 Years		Total	Percentage
	Number	Percent	Number	Percent		
Rectum	3	20.00%	12	80.00%	15	50.00%
Ascending Colon	7	87.50%	1	12.50%	8	26.67%
Transverse Colon	4	100.00%	0	0.00%	4	13.33%
Descending Colon	1	33.33%	2	66.67%	3	10.00%
Total	**15**		**15**		**30**	**100.00%**

Table 4: Site Comparison of Colorectal Carcinoma Patients Below and above 50 years of age

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Age in years	Present Study 2012(n=30)	Gul Javid et al, Kashmir, 2011(n=212)	Rajesh Singh Laishram et al, Manipur 2010 (n=54)	Meyer et al, Newyork, 2010 (n=7661)
10-19	6.67% (2)	4.25%		2.19%
20-29	16.67% (5)	12.74%	5.56%	17.95%
30-39	6.67% (2)	15.57%	7.41%	79.86%
40-49	20.00%(6)	12.74%	20.37%	
<50	50%(15)	45.28%	33.34%	
>50	50%(15)	54.72%	66.66%	
Total	**100.00%(30)**	**100.00%**	**100.00%**	**100.00%**

Table 5: Age comparison with other studies

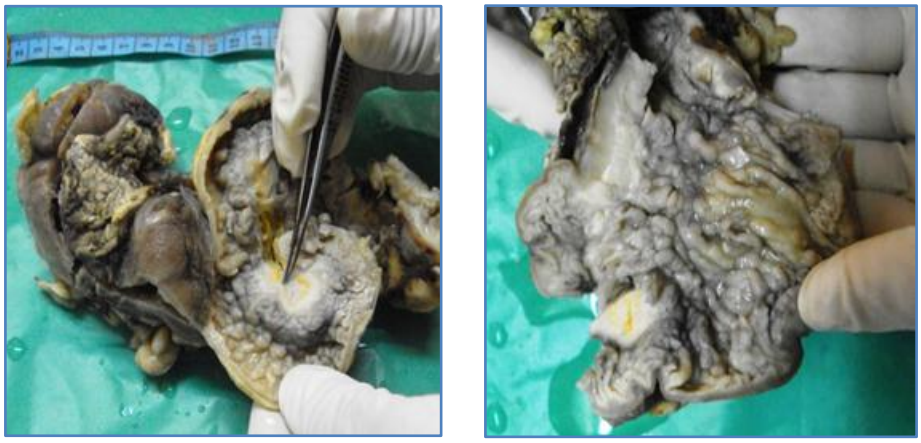

Figure 2: numerous sessile polyps with a larger malignant polyp

Figure 3: Histopathology of Adenocarcinoma in a case of Familial Adenomatous polyposis Hematoxylin Eosin stain [10x].

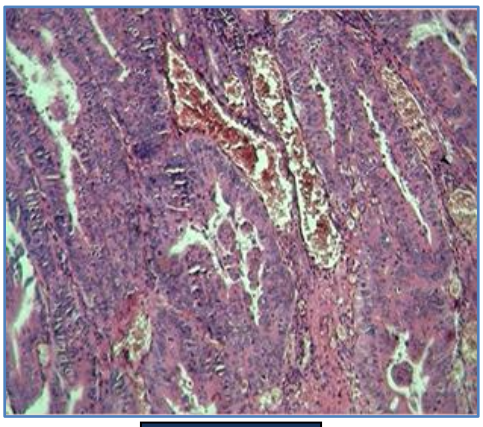

Figure 3

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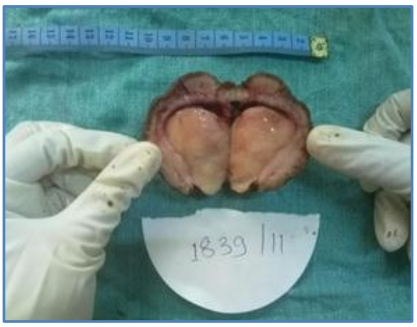

Figure 4: Primary MALT Lymphoma in a 12year old Boy

Figure 5: Histopathology of MALT lymphoma in 12 year old boy Hematoxylin Eosin [40x] CD 45 Positivity [10x], CD 19 Positivity[40x].

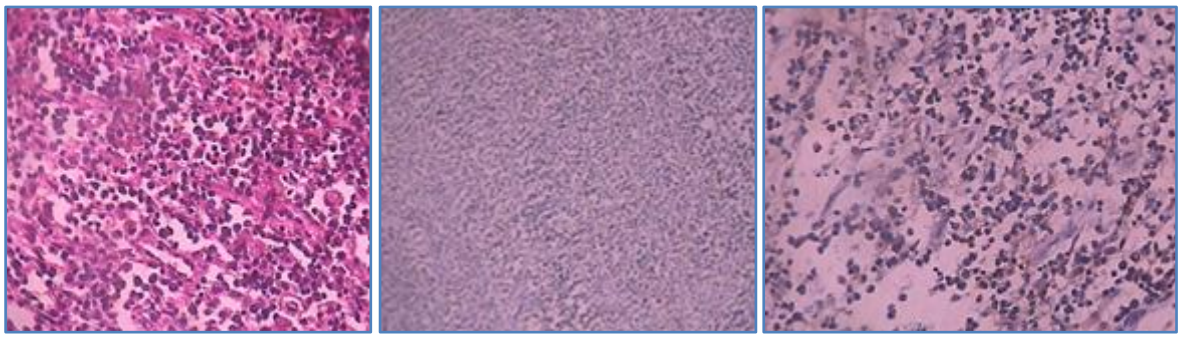

Figure 5

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