

Clinico-Pathological Correlation of Intestinal Lesions in a Tertiary Care Hospital

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Abstract: This study was undertaken to find out clinico-pathological profile of various intestinal lesions and correlate clinico-radiological findings with tissue diagnosis on the basis of histopathological study in this institute. The materials were collected in the form of biopsy and resected specimens of intestine with relevant clinical history. All patients presenting with symptoms and signs of intestinal disease and who have undergone surgical exploration were included in the study. Appendicectomies were excluded from the study. The histopathological diagnoses were categorized as Non Neoplastic and Neoplastic Lesions. Amongst 215 cases studied of intestinal lesions, majority were Non-Neoplastic (181) including intestinal Tuberculosis cases (33) and 34 were Neoplastic. M: F ratio was 1:0.3 and Pain in abdomen was the most common symptom. Overall correlation of clinical with radiology diagnoses was seen in 149 cases out of 166 cases (89.75%). The role of pathologist in gastrointestinal oncology has greatly expanded in recent years. Evaluation of diagnostic accuracy of a modality for various pathological lesions is essential to improvise upon existing modalities and to choose pertinent, cost effective diagnostic modality for a particular clinical setting.

Keywords: Intestine, Histopathology, Benign, Malignant.

INTRODUCTION

Initial knowledge of Gastrointestinal Pathology in the early years of twentieth century was largely based on autopsy studies which were often erroneous because of tissue autolysis. An increase in the number of surgically resected specimens and in the number of gastrectomies and intestinal resections was seen in later years.

New techniques of gastric biopsy, small bowel biopsy and colonoscopic biopsy followed and added to the abundance of tissue available to pathologists for the diagnosis and the study of the pathogenesis of gastrointestinal disease thus gastroenterology became a rapidly developing and expanding branch of medicine in which histopathology plays an important role in diagnosis and treatment no less than in research [1].

Myriad of non-neoplastic and neoplastic lesions occur in the gastrointestinal tract (GIT) because of its relatively large surface area and most of them are rather difficult to diagnose on the basis of clinico-radiological features due to relative inaccessibility of the portions of the GI tract. In GIT, stomach and intestines are affected by morphologically varied neoplastic and non-neoplastic conditions [2].

Disorders of stomach and intestine account for a large portion of human disease. Many conditions such as infections, inflammatory diseases and tumours affect stomach and intestine but symptoms of gastric and intestinal disorders are often vague and signs of abnormality few, unless the disease is advanced [2].

Worldwide gastrointestinal tract malignancies stand among top ten leading sites for cancer.³ Cancer of the gastrointestinal tract constitute between 15-25% of all cancer burden. Very remarkable and striking differences are observed in the occurrence of this cancer in different regions of the world and in different races. They remain asymptomatic for long period and are often very advanced at the time of diagnosis [4]. Careful analysis of the clues provided both from the gut

itself and from the effect of gut disease on the body as a whole are required if early diagnosis is to be achieved [2].

Role of histopathology of either biopsy or surgical resection becomes imperative for: For final tissue diagnosis, confirmative adequacy of surgical exploration and further management and planning.

Thus this study is being undertaken to know pattern of pathological lesions of intestine in this institute with following aims and objectives: i) To study clinico-pathological profile of various intestinal lesions from the available materials and records. ii) Correlate clinico-radiological findings with tissue diagnosis in intestinal lesions on the basis of histopathological study in this institute.

MATERIALS AND METHODS

This descriptive study was carried out in Department of Pathology, of our college over a period of two years and nine months from 1stJanuary 2012 to 30 September 2014. All patients presenting with

symptoms and signs of intestinal disease and who have undergone surgical exploration were included in the study. Detailed clinical history and investigation data for each patient was entered and analysed using case proforma. Appendicectomies were excluded from the study.

For histopathological study paraffin embedded sections stained by H and E stain. Special staining like PAS, ZN etc. may be used wherever necessary. The histopathological diagnoses were categorized as Non Neoplastic and Neoplastic Lesions. The results and observation were organised and correlated in light of clinical, radiological and histopathological findings of various intestinal lesions.

RESULTS

The present study comprises histopathology of 215 Intestinal lesions studied in the Department of Pathology over a period of two and half years (1stJanuary 2012 to 30 September 2014).

Table-1: Age Wise distribution of total Cases (n=215)

| Age Group In Years | Intestinal Lesions | |
|--------------------|--------------------|------|
| | No. | (%) |
| 0- 10 | 07 | 3.3 |
| 11- 20 | 16 | 7.4 |
| 21- 30 | 38 | 17.7 |
| 31-40 | 49 | 22.8 |
| 41-50 | 42 | 19.5 |
| 51- 60 | 33 | 15.3 |
| 61- 70 | 25 | 11.6 |
| 71- 80 | 05 | 2.3 |
| TOTAL | 215 | 100 |

Table No 1- indicates the overall age distribution of intestinal lesions in 215 cases. The age of presentation ranged from 3 years to 80 years in our study of two years and nine months.

Age of the youngest patient in this series was 3 years with a histopathological diagnosis of Juvenile rectal Polyp. The oldest patient was of 80 years with histopathological diagnosis of haemorrhoids.

Table-2; Sex Wise distribution of total cases (n= 215)

| Site Of Lesion | Total Cases | Male | | Female | |
|----------------|-------------|------|-----|--------|-----|
| | No. | No. | (%) | No. | (%) |
| Intestinal | 215 | 157 | 73 | 58 | 27 |

Table no 2 - Shows that in the Present study: M: F ratio was- 1:0.3

Table-3: Clinical symptoms in patients with Intestinal lesions

| Symptoms | Intestinal | |
|-----------------------|------------|------|
| | No. | (%) |
| Pain in abdomen | 196 | 89.3 |
| Distension of Abdomen | 61 | 26 |
| Lump in Abdomen | 22 | 10.2 |
| Fever | 21 | 9.8 |
| Bleeding per Rectum | 57 | 26.5 |
| Weight loss | 16 | 7.4 |
| Anorexia | 06 | 2.8 |
| Vomiting | 94 | 43.7 |

| | | |
|------------------------|----|------|
| Nausea | 89 | 41.4 |
| Diarrhoea | 12 | 5.6 |
| Constipation | 32 | 14.9 |
| Altered Bowel Habits | 27 | 12.6 |
| Trauma | 17 | 7.9 |
| Pain during Defecation | 34 | 15.8 |

Table No 3- Pain in abdomen was the most common symptom (89.3%)

*Sum of percentages of all symptoms is not equal to 100% because multiple complaints were present in a single patient.

Table-4: Duration of symptoms in intestinal lesions (n=215)

| Symptoms | Intestinal | |
|---------------------|------------|-----|
| | No. | (%) |
| ≤5 days | 116 | 54 |
| 5 – 15 days | 71 | 33 |
| 16 – 30 days | 14 | 6.5 |
| 1 month – 3 months | 04 | 1.9 |
| 3 months – 6 months | 04 | 1.9 |
| 6 months – 1 year | 03 | 1.4 |
| 1 year – 3 years | 02 | 0.9 |
| ≥ 3years | 01 | 0.5 |
| Total | 215 | 100 |

Table No 4 - shows that out of 215 cases, the maximum number of patients of intestinal lesions (54.0%) presented with duration of symptoms being less than five days.

Only one case of intestinal lesion had symptom duration of more than three years and was a case of haemorrhoids.

Table-5: Distribution of intestinal lesions on the basis of clinical diagnosis

| Clinical Diagnosis | Intestinal (n=215) | |
|----------------------------|--------------------|------|
| | No. | % |
| NON NEOPLASTIC | | |
| Polyp | 06 | 2.8 |
| Perforation peritonitis | 34 | 15.9 |
| Intestinal Tuberculosis | 08 | 3.8 |
| Intestinal Obstruction | 60 | 28.0 |
| Haemorrhoids | 26 | 12.1 |
| Fistula in ano | 23 | 10.1 |
| Sigmoid Volvulus | 06 | 2.8 |
| Intestinal Gangrene | 05 | 2.4 |
| Lump | 05 | 2.4 |
| Hirschsprungs Disease | 02 | 1.0 |
| NEOPLASTIC | | |
| Small intestinal neoplasms | 06 | 2.8 |
| Large intestinal neoplasms | 34 | 15.9 |
| TOTAL | 215 | 100 |

Table No 5- shows the distribution of Intestinal cases on the basis of clinical diagnosis in the present study. Intestinal Obstruction (28%) was the most common clinical diagnosis in non- neoplastic

category. In neoplastic category large intestinal malignancy (15.9%) was the most common clinical diagnosis.

Table-6: Distribution of intestinal lesions on the basis of radiological diagnosis

| Radiological diagnosis | Intestinal(n=166) | |
|----------------------------|-------------------|------|
| | No. | % |
| Non neoplastic | | |
| Polyp(Rectal) | 03 | 1.8 |
| Perforation Peritonitis | 41 | 24.7 |
| Intestinal Tuberculosis | 06 | 3.6 |
| Intestinal Obstruction | 58 | 35.0 |
| Sigmoid Volvulus | 08 | 4.8 |
| Intestinal Gangrene | 09 | 5.4 |
| Lump in Abdomen | 04 | 2.4 |
| Hirshprungs disease | 02 | 1.2 |
| NEOPLASTIC | | |
| Small intestinal neoplasms | 06 | 3.6 |
| Large intestinal neoplasms | 29 | 17.5 |
| TOTAL | 166 | 100 |

Table No 6 - shows the distribution of Intestinal cases on basis of radiological diagnosis in 166 cases. Intestinal Obstruction (35 %) was the most common radiological diagnosis offered in non- neoplastic category.

And in neoplastic category large intestinal malignancy (17.5 %) was most common.

** Radiological investigations and diagnosis was not done for 49 cases.

Table-7: Clinico- radiological correlation in intestinal lesions (n=215)

| Clinical diagnosis | No. of cases | Radiological diagnosis | Correlation | |
|-------------------------|--------------|-------------------------|-------------|-------|
| | | | No. | % |
| Non neoplastic | | | | |
| Polyp(Rectal) | 06 | Polyp | 03 | 50 |
| Perforation Peritonitis | 34 | Pyoperitoneum | 34 | 100 |
| Intestinal Tuberculosis | 08 | intestinal tuberculosis | 06 | 75.0 |
| Intestinal Obstruction | 60 | Intestinal obstruction | 58 | 96.6 |
| Sigmoid Volvulus | 06 | Sigmoid volvulus | 06 | 100 |
| Intestinal Gangrene | 05 | Intestinal Gangrene | 05 | 100 |
| Lump | 05 | Lump | 04 | 80.0 |
| Hirschprungs Disease | 02 | Hirschprungs Disease | 02 | 100 |
| NEOPLASTIC | | | | |
| Carcinoid Tumour | 02 | Carcinoid Tumour | 02 | 100 |
| GIST | 02 | GIST | 02 | 100 |
| NHL | 02 | NHL | 02 | 100 |
| Ca Rectum | 13 | Ca Rectum | 09 | 73.3 |
| Ca Sigmoid | 05 | Ca Sigmoid | 03 | 60.0 |
| Ca Colon | 16 | Ca Colon | 13 | 81.2 |
| Total | 166 | | 149 | 89.75 |

Table no 7 - shows that maximum number of cases in our study was diagnosed as intestinal obstruction (60) on clinical basis in the 166 cases wherein clinical vs radiology correlation was available.

The overall correlation of clinical vs radiology diagnoses was seen in 149 cases out of 166 cases (89.75%).

Table-8: Comparison of age group in intestinal malignancies (n=34)

| Age in years | No of cases | % |
|--------------|-------------|------|
| 10 - 19 | 01 | 3.0 |
| 20- 29 | 02 | 5.9 |
| 30- 39 | 04 | 11.8 |
| 40 - 49 | 03 | 8.7 |
| 50 - 59 | 09 | 26.5 |
| 60 -69 | 15 | 44.1 |
| Total | 34 | 100 |

Table-9: Comparison of sex distribution in Intestinal malignancy

| Total cases | Males | Females |
|-------------|-------|---------|
| 34 | 20 | 14 |

Table No 9- Males were 20 and 14 females and M: F ratio was 1: 0.7.

Table-10: Macroscopic types in Intestinal malignancy (n= 34):

| Macroscopic | No of cases (n=34) | % |
|------------------|--------------------|------|
| Polypoidal mass | 15 | 44.1 |
| Ulcerated | 11 | 32.4 |
| Fungating growth | 08 | 23.5 |
| Total | 34 | 100 |

Table No 10 - shows macroscopic appearances in 34 cases of intestinal malignancies in the present study where 15 cases presented with polypoidal mass.

Table No 11 - In large intestine total 28 cases were malignant in which recto-sigmoid was the most

common site affected having eight cases of adenocarcinoma followed by rectum and ascending colon with six cases each. Transverse colon was the second most common site involved having four cases of adenosquamous (1) and adenocarcinoma(4) followed by sigmoid colon(3) and caecum(1).

Table-11: Site Wise histopathological diagnosis of Intestinal malignancy

| Site | Histopath diagnosis | No of cases | % |
|----------------------|-------------------------------------|-------------|------|
| 1.small intestine | 00 | 00 | 00 |
| | Gist 1 | 01 | 2.9 |
| | Carcinoid = 2 | 05 | 2.9 |
| | Jejunum Gist = 1 | | 2.9 |
| | Ileum Nhl = 2 | | 5.9 |
| Ileo-caecal junction | 00 | 00 | 00 |
| 2.large intestine | Adenocarcinoma = 01 | 01 | 2.9 |
| | Caecum | | |
| | Ascending colon Adenocarcinoma 06 | 06 | 17.6 |
| | Transverse colon Adenosquamous = 01 | 04 | 2.9 |
| | Adenocarcinoma = 03 | | 8.8 |
| | Descending colon | 00 | 00 |
| | Sigmoid colon Adenocarcinoma | 03 | 8.8 |
| | Adenocarcinoma | 08 | 17.6 |
| | Recto-sigmoid Adenocarcinoma | 06 | 17.6 |
| | Rectum and anal canal | | |
| Total | -- | 34 | 100 |

Table-12: Distribution of Intestinal malignancy cases (n=34) on basis of clinical, radiological and histopathological diagnosis

| Site | Clinical diagnosis | Radiological diagnosis(correlated) | No correlation | Histopathological diagnosis | No correlation |
|----------------------------|--------------------|------------------------------------|----------------|-----------------------------|----------------|
| Small intestine | | | | | |
| GIST | 02 | 02 | 00 | 02 | 00 |
| | 02 | 02 | 00 | 02 | 00 |
| | NHL | | | | |
| Carcinoid | 02 | 02 | 00 | 02 | 00 |
| Large intestine | | | | | |
| Colon, rectum & anal canal | 21 | 17 | 04 | 17 | 04 |
| | 13 | 12 | 01 | 11 | 02 |
| Total | 40 | 35 | 05 | 34 | 06 |

Table No 12 - In the present study, 40 cases were diagnosed as intestinal malignancies on clinical basis, while on imaging the number of intestinal

malignancies was 35. On histopathology, 34 cases were confirmed as intestinal malignancies.

DISCUSSION

Distribution of Rectal Polyps: As seen in table no 23 of observations M: F ratio is equal in cases of rectal polyps. In our study, 04 out of 6 cases presented with bleeding per rectum as the most common presentation which is similar to the description given by Ackermann⁵

Perforation Peritonitis in Intestine: In the present study, 34 cases of perforation peritonitis were observed. Age range was from 05 years to 71 years with majority of patients being males (70.6%) which is similar to the study by Jhobta *et al.* [6] who studied 504 patients of perforation peritonitis and majority of patients were males (84%).

Intestinal Obstruction : In the present study 60 cases of intestinal obstruction were studied, Age range was 8 to 65 years which is similar to the findings of Shaikh *et al.* [7]. We observed 25% of intestinal tuberculosis cases presenting as intestinal obstruction which is similar to the findings of Malik *et al.* [8]

Sigmoid Volvulus: In the present study, 06 cases of sigmoid volvulus were observed. Only one female patient of 14 years was there out of 06. Majority of the patients presented with abdominal pain, vomiting. On radiological investigations signs of sigmoid volvulus were seen. On microscopy 04 cases were diagnosed as gangrenous bowel. The mode of presentation of all patients of sigmoid volvulus in our study were similar as described by Primerose J N [9].

Intestinal Gangrene: In our study we found five cases of gangrenous intestine with a male to female ratio 1: 0.2 and majority of them were in ileum. This findings are similar with those of Rehman GA *et al.*[10].

Fistula in ano; In our study, we got 23 cases of fistula in ano with a M:f ratio of which is similar to the findings of Sainio P *et al.*[11].

Neo plastic Lesions of Small intestine

Even though small bowel occupies a larger surface area in the abdomen, malignancies are few and of rare occurrence. In the present study, we encountered total of 40 intestinal malignancies. Small intestine (06) and colo- rectal 34 cases. There were two cases each of GIST, Carcinoid and Lymphoma.

Gastrointestinal stromal tumour (GIST)

In the present study, two cases of small bowel GIST were encountered. First case was 55 years male with complaints of passage of black stools, abdominal pain and decrease appetite since two months. On CT abdomen a exophytic mass arising from ileum was seen. On gross a congested mass of 10 cm diameter was seen. On microscopy, spindle type gastro-intestinal stromal tumour (GIST) was given.

Second case was a 70 years male with complaints of abdominal pain, diarrhoea and vomiting since 09 days. On gross a mass of 3 cm diameter was seen. On microscopy, epitheloid type gastro-intestinal stromal tumour (GIST) of low malignant potential was given. Hornick J L [12] states that gastrointestinal stromal tumor (GIST) is the most common mesenchymal neoplasm of the small intestine. Around 30% of all GISTs arise in the jejunum and ileum, whereas 5% arise in the duodenum. (FIG 1A, 1B, 1C)

Lymphoma of small intestine (NHL)

In the present study, two cases of non-Hodgkin lymphoma were diagnosed. First case was 32 years male with complaints of diarrhoea, vomiting and abdominal pain since 05 days. On gross there was mass of 2 cm diameter and small multiple nodules ranging from size 1 to 3 cm in diameter in ileum.

Second case was 50 years male with same complaints as of the first case in addition to weight loss since 15 days. A 3 cm mass was found on gross in ileum. Our observation that abdominal pain was most common symptom in cases of gastrointestinal lymphoma was similar with the study of Al-Sayes F M [13] Also, both the cases in our study had small bowel lesion, which has been observed to be the second commonest site for these tumours. (FIG 2A, 2B,)

Carcinoid tumour of small Intestine

In the present study, we observed two cases of carcinoid in small intestine. First case was 45 years female with complaints of vomiting, abdominal pain and weight loss since 15 days of duration. On gross examination, ileum was congested and few necrotic areas were seen. A stricture was identified of size 2 cm diameter.

Second case was a 50 years male with complaints of abdominal pain, tenderness and vomiting since 07 days. On gross, a growth of 4 cm diameter was present involving 2/3rd of ileum and small part of caecum.

On histopathology solid nesting pattern of monotonous cells with small round nuclei and stippled chromatin with granular cytoplasm was seen. Ackerman [5] states that majority of carcinoids of small bowel occur in adults and most of them are located in the ileum, followed in frequency by jejunum and distal duodenum. (FIG 3A, 3B)

Distribution of intestinal lesions on the basis of radiological diagnosis

Rectal Polyps: In the present study six cases were diagnosed as rectal polyps by clinical as well as by histopathology but only three cases of rectal polyps were diagnosed on basis of radiology. Even investigations like CT have limitations in diagnosing polyps which are small in size. These results were comparable with Ha H K *et al.* [14] who said that

conventional CT with thick cross sectional images is insufficient to detect small polyps and small cancers.

Intestinal Obstruction: In the present study 58 cases were diagnosed as intestinal obstruction by radiological investigations. Out of these 58 cases, 11 cases were diagnosed as intestinal tuberculosis followed by malignancy in six by radiology. CT was the investigation of choice in 46 patients of suspected obstruction. This was comparable with the article by Jackson P G [15] who has described CT as appropriate first choice for further evaluation of patients with suspected intestinal obstruction in whom clinical examination and radiography do not yield a definitive diagnosis.

Nature of specimens received in intestinal lesions

In the present study, different types of specimens were received in total of 215 intestinal cases, Out of total resected specimens (146), 79 were of small intestine and 67 were of large intestine.

In small intestine, intestinal obstruction was the most common clinical indication followed by perforation peritonitis. On radiology clinical diagnosis of obstruction and perforation peritonitis was confirmed. On histopathology, 31 cases turned out to be intestinal tuberculosis and six cases were diagnosed as malignancies.

In large intestine, intestinal obstruction and perforation peritonitis were the most common indications on clinical basis which were confirmed by radiology. On histopathology, two cases were of intestinal tuberculosis and 28 cases turned out to be malignant.

In intestinal lesions colon or colorectal resection specimen can give extensive and important information about colorectal carcinoma. This finding was comparable with Ahmed *et al.* [16].

Gross findings in Intestinal lesions

In the present study, haemorrhagic external surface was the most common finding on gross examination. The sum of percentages of all gross

findings was not equal to 100% because there were multiple findings present in a single case.

Gross findings in intestinal lesions are not specific for any particular lesion because same gross findings can be seen in neoplastic as well as non-neoplastic lesions. Findings like ulceration, strictures, gangrene, haemorrhage and thickened mucosa are observed in both benign and malignant conditions.

Clinico – Radiological correlation in intestinal lesions (n=215)

Rectal polyps 03 out of 06 cases correlated (50%). This is because conventional CT with thick cross sectional images is insufficient to detect small polyps and small cancers. Ha H K [15].

Following cases were correlated in the present study:
 Perforation peritonitis: 34 out of 34 cases correlated (100%).
 Intestinal tuberculosis: 06 out of 08 cases correlated (75%).
 Intestinal obstruction: 58 out of 60 cases correlated (96.6%).

Clinical symptoms and signs of intestinal obstruction are non- specific, radiological studies are considered essential for a diagnosis. Nevertheless, plain radiographic study is diagnostic in only 46 to 80 % of cases, with common occurrence of false positive and false negative interpretations; upto 20 % of patients may have no radiologic evidence of obstruction.

Sigmoid volvulus: 06 out of 06 cases correlated (100%)
 Intestinal gangrene; 05 out of 05 cases correlated (100%)
 Lump in abdomen: 04 out of 05 cases correlated (80%)
 Hirschsprungs disease: 02 out of 02 cases correlated (100%)
 Carcinoid tumour: 02 out of 02 cases correlated (100%)
 GIST: 02 out of 02 cases correlated (100%)
 NHL: 02 out of 02 cases correlated (100%)
 Ca rectum: 09 out of 13 cases correlated (73.3%)
 Ca sigmoid: 03 out of 05 cases correlated (60%)
 Ca colon: 13 out of 16 cases correlated (81.2%)

Table-13: Comparison of age group in intestinal malignancy

| Author | Year | Age group(yrs) |
|------------------------------------|------|----------------|
| Umap and Dhamne <i>et a</i>) [17] | 1995 | 41-60 |
| Peedikayil <i>et al</i> [18] | 2009 | 61-70 |
| Abdulkareem <i>et al</i> [19] | 2009 | 60-69 |
| Present study (2014) | 2014 | 60-69 |

Age group in which peak incidence of colorectal cancer was observed in present study i.e. 60-69 years was comparable with studies done by Peedikayil *et al.* [18] and Abdulkareem *et al.* [19].

In the present study, M: F ratio was 1: 0.8. Male preponderance was observed in the intestinal cancer patients in the present study which is comparable with all studies, as seen in the above table.

Table-14: Comparison of sex distribution of cancer of intestinal malignancy in various studies

| Author | Year | M:F ratio |
|--------------------------------|------|-----------|
| Kulkarni <i>et al.</i> [20] | 1996 | 1.6:1 |
| Xu An- gao <i>et al.</i> [21] | 2006 | 1.4:1 |
| Abdulkareem <i>et al.</i> [19] | 2008 | 1.3:1 |
| Peedikayil <i>et al.</i> [18] | 2009 | 2:1 |
| Present study | 2014 | 1:0.7 |

Comparison of Macroscopic features of intestinal Malignancy

In the present study, 34 cases were of intestinal malignancies out of 215 cases of intestinal lesions. 67.9 % of cases were polypoidal/fungating, 32.1% were ulcerated/infiltrative. Ahmad *et al.* [16] also found

polypoidal mass as the most common findings in intestinal malignancies of 54.12 % which is comparable with the present study. While Abdul Kareem *et al.* [19] found 62% of intestinal malignancies with infiltrative growth on gross findings (Fig 4A, 4B, 4C).

Table-15: Comparison of site distribution of Intestinal malignancy

| Site | MeherHomji and Gangadharan[22] | Falterman <i>et al.</i> [23] | Abdulkareem <i>et al.</i> [19] | Alijibreen <i>et al.</i> [24] | Present study(2014) |
|------------------|--------------------------------|------------------------------|--------------------------------|-------------------------------|---------------------|
| Caecum | 04.1% | 10.4% | 7.14 | 10 | 5.9 |
| Ascending colon | 3.7% | 8.4% | 6.21 | 10.5 | 17.6 |
| Transverse colon | 2.5% | 9.1% | 4.04 | 3.5 | 11.8 |
| Descending Colon | 1.7% | 5.1% | - | 14 | - |
| Sigmoid | 4.9% | 24.3% | - | 14 | 8.8 |
| Rectosigmoid | 4.4% | - | 60.25 | - | 17.6 |
| Rectum | 78.7% | 42.5% | - | 48 | 17.6 |

In the present study, majority of the neoplastic lesions of the bowel were found to be located in the recto-sigmoid region. This was consistent with the observations of Meher, Homiji and Gangadharan *et*

al. [22] Falterman *et al.* [23] Abdulkareem *et al.* [19], and Aljebreen *et al.* [24].

Majority of the remaining cases were located, in decreasing order of frequency, in ascending and transverse colon and the caecum.

Table-16: Comparison of microscopic types of intestinal malignancies

| Author & Year | Adenocarcinoma+ Mucinous+ Signet ring |
|--|---------------------------------------|
| Meher, Homiji and Gangadharan <i>et al.</i> [22] | 71.7 |
| Falterman <i>et al.</i> [23] | 87.0 |
| Ahmad <i>et al.</i> [16] | 97.6 |
| Abdulkareem <i>et al.</i> [19] | 88.3 |
| Present study (2014) | 79.4 |

Adenocarcinoma and its variants were the most commonly observed histopathological feature in lesions diagnosed as intestinal malignancy in the present study. This finding is consistent with the observations of Meher, Homiji and Gangadharan *et al.* [22], Falterman *et al.* [23], Abdulkareem *et al.* [19], and Ahmad *et al.* [16].

Small bowel malignancies, which are otherwise rare, were observed in 17.6% of the cases in the present study.

Distribution of Intestinal malignancy cases (n=34) on basis of clinical, radiological and histopathological diagnosis

In cases of intestinal malignancy, both clinical examination and imaging were found to be highly sensitive in diagnosing the lesion. Radiological examination is more specific than clinical diagnosis. Histopathology is however the confirmatory diagnostic modality with the highest specificity. Intestinal lesions diagnosed as neoplastic either on clinical examination or imaging should be further subjected to histopathological examination (biopsy or resected specimen) for confirmation

Comparison of diagnostic parameters on clinico-histopathological correlation in cases of intestinal malignancy:

The sensitivity for diagnosing intestinal malignancies on clinical examination alone was

100% however its specificity was found to be inferior to both radiological and histopathological examination at 96.8 %. Clinical diagnosis, followed by radiological confirmation, combined together provides a highly sensitive and specific means for diagnosing intestinal malignancy. Histopathology however remains as the mainstay in diagnosing lesions which are equivocal on both the modalities.

Comparison of diagnostic parameters on radio – histopathological correlation in cases of intestinal malignancies:

Imaging alone has a diagnostic sensitivity of 100% and has superior specificity of 99.2% as compared to that of clinical examination. However, radiological diagnosis needs to be confirmed on histopathology as the latter remains the gold standard with the highest specificity.

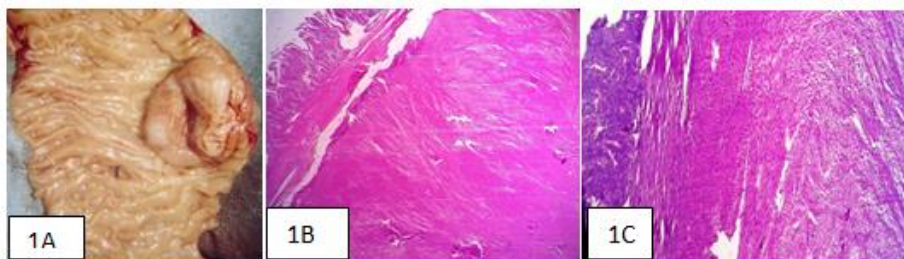


Fig-1(A): Gross GIST. Resected part of jejunum- a well circumscribed mass protruding into the lumen of the small intestine

Fig-1(B): Photomicrograph: Section from jejunum showing normal mucosal glands and spindle cell tumour in submucosa (H&E, x100)

Fig-1 (C): Photomicrograph GIST. Section from jejunum showing normal mucosal glands and spindle cell tumour in submucosa (H&E, x400)

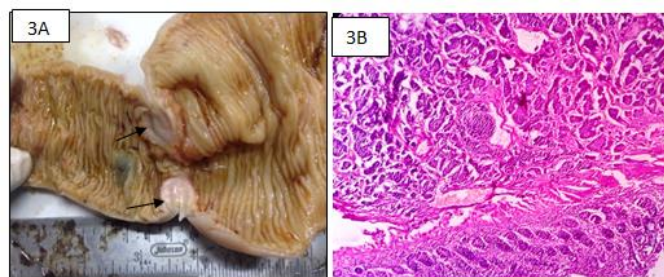


Fig-3(A): Gross carcinoid. Resected specimen of ileum showing multiple circumscribed masses protruding into the lumen (arrows)

Fig-3(B): Photomicrograph Carcinoid of ileum .showing characteristic nesting pattern of the sub mucosal tumour (H&E, x100)

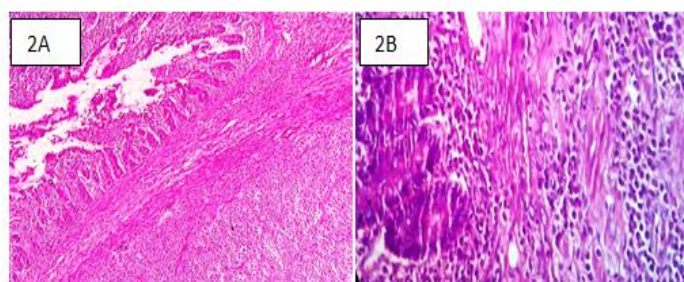


Fig-2(A): Photomicrograph .section from ileum showing infiltration of the submucosa by monotonous population of atypical lymphocytes (H&E, x100)

Fig-2(B): Photomicrograph. Lymphoma Section from ileum showing infiltration of the sub mucosa by monotonous population of atypical lymphocytes (H&E, x400)

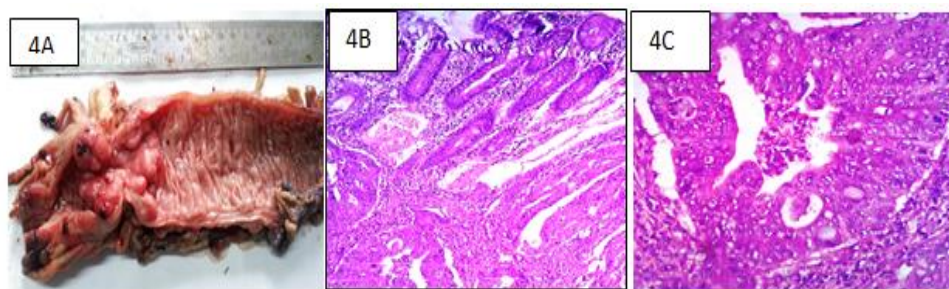


Fig-4(A): Gross. Right hemicolectomy from patient with adenocarcinoma Fungating growth seen involving the entire circumference of the caecum and Ileo-caecal junction (arrow)

Fig-4(B): Photomicrograph: adenocarcinoma colon. Normal intestinal glands (top) along with atypical glands (bottom & right) (arrow). (H&E, x100)

Fig-4(C): Photomicrograph: Adenocarcinoma colon. Showing atypical glandular epithelium with nuclear pleomorphism, hyperchromatism, atypical mitotic figures and central necrosis (H&E, x 400)

CONCLUSION

Many of the Causes of the complications of gastrointestinal lesions cannot be known preoperatively by clinico- radiological findings. Histopathology becomes mandatory for all gastric and intestinal operative surgical specimens. Morphological examination establishes final diagnosis and can guide clinicians in planning further management. Special stains and Immunohistochemistry (IHC) are helpful additionally in selected cases.

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