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Pathology

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

Dr. Balaji D. Baste[1*], Dr. Poonam B Gurlewad[2], Dr. Sandhya Poflee[3], Dr. Anuradha V. Shrikhande[4]
[1]Assistant Professor, Department of Pathology, Seth G. S. Medical College and K.E.M. Hospital, Mumbai, Maharashtra, India
[2]Resident, Department of Anaesthesia, Lokmanya Tilak Municipal Medical College & Sion Hospital, Mumbai, India
[3]Associate Professor, Department of Pathology, Government Medical College and Hospital, Nagpur, Maharashtra, India
[4]Professor and Head, Department of Pathology, Indira Gandhi Government Medical College and Hospital, Nagpur, Maharashtra, India

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***Corresponding author**
Dr. Balaji D. Baste

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Abstract: Disorders of the stomach are frequent cause of clinical disease. Inflammation and neoplastic disease are particularly common. We undertake this study to find out clinico-pathological profile of various gastric lesions and clinico-radiological findings with tissue diagnosis in gastric lesions. The materials were collected in the form of biopsy and resected specimens of Stomach with relevant clinical history. All patients presenting with symptoms and signs of gastric disease and who have undergone surgical exploration were included in the study. Appendicectomies and lesions of oesophagus were excluded from the study. The histopathological diagnoses were categorized as Non Neoplastic and Neoplastic Lesions. Amongst 45 cases studied of Gastric lesions, majority were Non-Neoplastic (33) including one rare case of gastric tuberculosis and 12 were Neoplastic. M: F ratio was 1:1.1 and Pain in abdomen was the most common symptom. Overall correlation of clinical with radiology diagnoses was seen in 41 cases out of 45 cases (91.1%) Gastric diseases present with non -specific symptoms and in most cases imaging techniques substantiate diagnosis of surgical indications/complications like gastric outlet obstruction and perforation peritonitis. Causes of these complications cannot be known preoperatively by clinico- radiological findings. Histopathology becomes mandatory for all gastric lesions. Morphological examination establishes final diagnosis and can guide clinicians in planning further management tuberculosis.
Keywords: Gastric, Histopathology, Benign, Malignant.

INTRODUCTION

Most studies pertain to endoscopic gastric biopsies and neoplasms of stomach. Description of gastric cancer specimen probably dates to 500 BC. Avicenna (980-1037) gave the first account of cancer of the stomach. The detailed paper on malignant lesions of the stomach however was written by Morgagni in 1761. In 1865 Baddle published a text describing the symptoms and lesions of gastric malignancy[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[3].

Radiographic examination of the stomach will demonstrate the neoplastic lesion in most cases, but in about ten percent of cases it will be difficult to determine whether it is benign or malignant. Other investigations like gastric analysis, stool examination and serum markers in most cases have supportive role in the diagnosis. Radiological studies like X-ray, abdominal ultrasound (USG), barium studies and endoscopic examination give an idea about the presence of a lesion but not its nature. i.e whether it is neoplastic or non- neoplastic[4].

The role of pathologist in gastrointestinal oncology has greatly expanded in recent years. Pathologist are essential at each stage of a disease starting from establishing a diagnosis to decide second

and third line neoadjuvant therapy in later stages of the disease especially at speciality centres.

Thus this study is being undertaken to know pattern of pathological lesions of stomach in this institute with following aims and objectives: i) To study clinico-pathological profile of various gastric lesions from the available materials and records. ii) To correlate clinico-radiological findings with tissue diagnosis in Stomach lesions.

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 gastric 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 and lesions of oesophagus 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 gastric lesions.

RESULTS

The present study comprises histopathology of 45 gastric 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=45)

Age Group In Years	Gastric Lesions	
	No.	(%)
0- 10	00	0
11- 20	03	6.7
21- 30	03	6.7
31-40	13	28.8
41-50	05	11.1
51- 60	08	17.8
61- 70	12	26.6
71- 80	01	2.2
TOTAL	45	100

Table 1 Indicates the overall age distribution of gastric lesions in 45 cases. The age of presentation ranged from 11 years to 80 years. Table 2 Male to female ratio was – 1:1.1

Table-2: Sex Wise distribution of total cases (n= 45)

Site Of Lesion	Total Cases	Male		Female	
	No.	No.	(%)	No.	(%)
Gastric	45	21	46.7	24	53.3

Table-3: Clinical symptoms in patients with gastric lesions

Symptoms	Gastric	
	No.	(%)
Pain in abdomen	32	71.1
Distension of Abdomen	14	31.1
Lump in Abdomen	06	13.3
Fever	05	11.1
Bleeding per Rectum	00	00
Weight loss	06	13.3
Anorexia	04	8.9
Vomiting	21	46.7
Nausea	26	57.8
Diarrhoea	03	6.7
Constipation	08	17.8
Altered Bowel Habits	06	13.3
Trauma	05	11.1
Pain during Defecation	08	17.8

Table No 3 - Pain in abdomen was the most common symptom in gastric lesions (71.1%).

Table No 4 – Shows the maximum number of patients (44.4%) presented with duration of symptoms being less than five days.

Table No 5- Carcinoma stomach (33.4%) was the most common clinical diagnosis given.

Table No 6- Carcinoma stomach (31.1%) was the most common radiological diagnosis given radiologically

Table-4: Duration of symptoms in gastric and intestinal lesions (n=45)

Symptoms	Gastric	
	No.	(%)
≤5 days	20	44.4
5 – 15 days	15	33.3
16 – 30 days	05	11.1
1 month – 3 months	02	4.4
3 months – 6 months	01	2.2
6 months – 1 year	01	2.2
1 year – 3 years	01	2.2
≥ 3years	00	00
Total	45	100

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

CLINICAL DIAGNOSIS	GASTRIC(45)	
NON NEOPLASTIC	No.	%
Polyp(Gastric)	03	6.6
Perforation Peritonitis	08	17.9
Morbid Obesity	05	11.1
Gastric Outlet Obstruction	05	11.1
Lump in Abdomen	05	11.1
Gastric Ulcer	01	2.2
Pyloric Stenosis	01	2.2
Stab Injury	02	4.4
NEOPLASTIC		
Ca Stomach	15	33.4
TOTAL	45	100

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

Radiological Diagnosis	Gastric (n=45)	
NON NEOPLASTIC	No.	%
Polyp(Gastric)	02	4.4
Perforation Peritonitis	08	20.0
Morbid obesity	05	11,1
Gastric Outlet Obstruction	05	17.9
Lump in Abdomen	04	8.9
Gastric ulcer	00	00
Pyloric stenosis	01	2.2
Stab injury	02	4.4
Non specific	04	8.9
NEOPLASTIC		
Carcinoma Stomach	14	31.1
TOTAL	45	100

Table-7: Clinico- radiological correlation in gastric lesions (n=45)

Clinical diagnosis	No. of cases	Radiological diagnosis	Correlation	
			No.	%
Non Neoplastic				
Polyp (gastric)	03	Polyp	02	66.6
Perforation Peritonitis	08	Pyoperitoneum	08	100
Morbid Obesity	05	Abdominal wall thickening	05	100
Gastric Outlet Obstruction	05	Pylorus thickening	05	100
Lump in Abdomen	05	Abd. Wall thickening	04	80
Gastric ulcer	01	NA	-	-
Pyloric Stenosis	01	Dilated Bowel Loops	01	100
Stab Injury	02	Stab injury	02	100
NEOPLASTIC				
Ca Stomach	15	Ca stomach	14	93.3
Total	45		41	91.1

Table 7 -shows that maximum number of cases in our study was diagnosed as carcinoma stomach (15) on clinical basis in the 45 cases wherein clinical vs radiology correlation was available. The overall correlation of clinical vs radiology diagnoses was seen in 41 cases out of 45 cases (91.1%).

Table-8: Age groups showing peak incidence of stomach cancer (n=12)

Age in years	No of cases	%
30 – 40	02	16.7
41 - 50	00	0.0
51- 60	07	58.3
61 - 70	03	25.0
Total	15	100

Table No 8- Peak incidence of stomach cancer was maximum in age group of 51 – 60 followed by 61 – 70 age group. Table No 9- Male to Female ratio was 1:0.5

Table NO 10 - shows macroscopic appearances of carcinoma stomach cases in the present study, eight cases presented with Ulcerative type of growth.

Table-9: sex distribution cases of stomach cancer

Total cases	Males	Females
12	08	04

Table-10: Macroscopic types of stomach cancer (n=12)

Macroscopic	No of cases (n=12)	%
Infiltrating	01	08.3
Fungating	00	00.0
Ulcerative	08	66.7
Polypoid	03	25.0
Total	12	100

Table-11: Microscopic types of stomach cancer (n=12)

Microscopic		No of cases (n=12)	%
Adenocarcinoma	1.Tubular	09	75.0
	2.Mucinous	02	16.7
	3.Signet	01	8.3
Undifferentiated Carcinoma		00	00
Total		12	100

Table NO 11 - shows microscopic appearances in 12 cases of carcinoma stomach in the present study. All were diagnosed as adenocarcinomas on histopathology.

Table-12: Distribution of Ca Stomach cases (n=15) on basis of clinical radiological and histopathlogical diagnosis

Age	Sex	Clinical Diagnosis	Radiological diagnosis	Histopathological Diagnosis
60	M	Ca Stomach	Ca Stomach	Ca Stomach
60	F	Ca Stomach	Ca Stomach	Ca Stomach
57	M	Ca Stomach	Ca Stomach	Ca Stomach
62	F	Ca Stomach	Ca Stomach	Ca Stomach
51	F	Ca Stomach	Ca Stomach	Ca Stomach
60	M	Ca Stomach	Ca Stomach	Chronic Gastritis
70	M	Ca Stomach	Ca Stomach	Ca Stomach
65	M	Ca Stomach	Gastric outlet obstruction	Chronic Gastritis
55	M	Ca Stomach	Ca Stomach	Ca Stomach
32	F	Ca Stomach	Ca Stomach	Ca Stomach
70	F	Ca Stomach	Ca Stomach	Chronic Gastritis
62	M	Ca Stomach	Ca Stomach	Ca Stomach
35	M	Ca Stomach	Ca Stomach	Ca Stomach
52	M	Ca Stomach	Ca Stomach	Ca Stomach
54	M	Ca Stomach	Ca Stomach	Ca Stomach

Table No 12 - Shows the distribution of Ca stomach cases (n=15) based on the clinical, radiological and histopathological diagnosis in the present study,

Out of total fifteen cases clinically diagnosed as Ca Stomach, fourteen cases were diagnosed as Ca Stomach and one case was diagnosed as Gastric outlet obstruction after radiological investigations.

On histopathology, twelve cases were confirmed as stomach cancer and three cases were diagnosed as chronic gastritis.

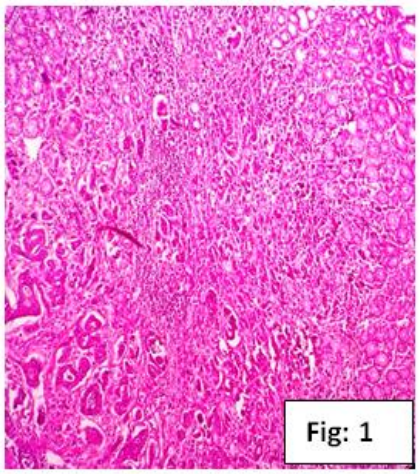

Fig-1: Photomicrograph Adenocarcinoma stomach. Atypical glands (left) admixed with normal gastric glands (right) (H & E, x100)

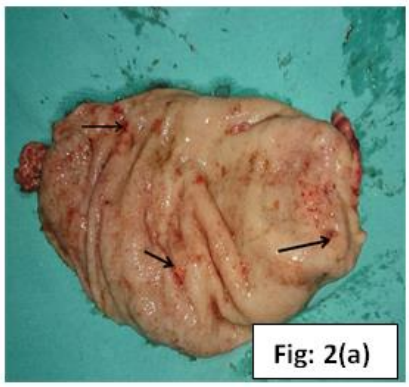

Fig 2(a): Gross. Gastric Tuberculosis. Partial gastrectomy specimen showing multiple pin-point ulcers with undermined edges (arrows)

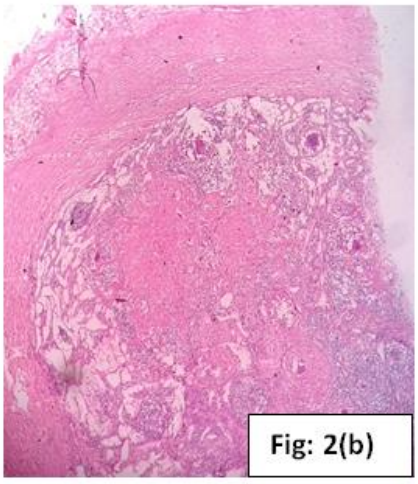

Fig-2(b): Photomicrograph Gastric Tuberculosis. Gastric wall showing multiple caseating granulomas (H & E x 100)

DISCUSSION

Amongst 45 gastric cases, there were 33 cases of Non Neoplastic lesions and 12 cases of Stomach Cancer. Amongst the Non Neoplastic lesions, most common lesion was chronic gastritis.

The study was undertaken with the aims of studying clinico-pathological profile of various gastric lesions, to correlate clinico-radiological findings with tissue diagnosis in gastric lesions.

In the present study, most common clinical symptom in cases with gastric lesions was pain in abdomen, vomiting and weight loss.

Pain in abdomen was present in 32(71.1%) cases having following histopathological diagnosis, chronic gastritis in 20 cases, Stomach cancer (Fig 1) in 09 cases followed by gastric polyp in 03 cases and gastric ulcer and gastric tuberculosis Fig 2(a) & 2(b) with one case each.

The finding of pain in abdomen as the most common symptom in gastric lesions is similar to that of the study conducted by Afzal *et al*. [5] and Isalnieks *et al*. [5].

Non neoplastic lesions

Distribution of Gastric Polyps

All three cases of gastric polyps in our study were females in their 6th decade and all were of hyperplastic variety. Hyperplastic polyps (also known as regenerative, inflammatory, hyperplasiogenic, hamartomatous and types I and II polyps of Japanese authors) comprise approximately 75% of all gastric polyps[4].

Perforation Peritonitis

In the present study, 08 patients were diagnosed as perforation peritonitis. Four of them were elderly females and all gave a positive history of NSAIDS for chronic osteo- arthritis and one patient was on treatment for gastric ulcer. This findings correlated with those given by Jhobta *et al*. [7] who have said that in gastric cases, patients of perforation most of the times have a positive history of NSAIDS consumption and second common cause of perforation peritonitis in gastric region is perforation of gastric or duodenal ulcers.

Gastric Outlet Obstruction

In the present study**,** 05 cases with a diagnosis of gastric outlet obstruction were encountered. Three were males and two females. All cases presented in third decade of life. Vomiting and abdominal distension was present in all cases. Two cases gave a history of peptic ulcer. On histopathology chronic gastritis was seen in four cases and one case was diagnosed as a case of stomach tuberculosis on the basis of presence of caseating granulomas. Our findings correlate with those given by Primerose [8] J N, Ecka *et al*. [9] and Flores *et al*.[10].

Gastric Ulcer

In the present study, we found a single case of gastric ulcer of chronic type. It was a 54 year male with complaints of abdominal pain mainly in epigastric region along with vomiting episodes since three weeks. Pylorus was the site. On gross, the lesion was oval with sloping borders. Microscopically, necrotic debris and bacteria were seen in the surface coat along with fibrinoid necrosis, granulation tissue and fibrosis. The lesion was superimposed by Candida albicans infection also. This clinic pathological profile of chronic ulcer compares well with the findings given by Ackerman [4].

Pyloric Stenosis

In our study, a 42 years male with a history of taking treatment for gastritis came with complaints of pain in abdomen, vomiting. A malignant condition was suspected and a gastrectomy was done. On histopathology findings were consistent with the diagnosis of pyloric stenosis and no specific cause could be ascertained. This findings correlate with Ackerman [4] who has said that hypertrophy of the pylorus in the adult is a rare condition. Approximately 80% of the cases have occurred in males.

Distribution of gastric lesions on the basis of radiological diagnosis

In most of the cases of Ca stomach and other gastric emergencies like perforation peritonitis and gastric outlet obstruction, radiological investigations have substantiated the clinical diagnosis

.

Gastric Outlet Obstruction

In the present study, we encountered 05 cases of gastric outlet obstruction on radiology. Three were males and two females. All cases presented in third decade of life. One case was diagnosed as gastric tuberculosis on histopathology later which could not be suggested by radiological investigations.

Our findings are comparable to Eisenberg R L [11] who has said that peptic ulcers are one of the most common causes for gastric outlet obstruction and the granulomatous involvement is rare on radiography to present as gastric outlet obstruction.

Gastric Perforation: In the present study, 08 patients were diagnosed as gastric perforation .In all cases x- ray and CT were more reliable radiological investigations as compared with ultra-sonography. This findings are similar with those of study done by Coppolino *et al*.[12] and Singh J P *et al*.[13]

Gastric Carcinoma: In our study, total 15 cases were diagnosed as stomach cancer on clinical basis, 14 of which were diagnosed as stomach cancer radiologically and on histopathology 12 cases were confirmed. So radiological diagnosis was more sensitive and accurate as compared with clinical diagnosis. This finding is comparable with study done by Lim *et al*.[14].

Clinico- radio correlation in gastric lesions (n=45)

Following cases were correlated in the present study

Polyps: 02 out of 03 cases were correlated (66.6%).One case was not correlated on radiology because of its size less than 2 cm in diameter. CT detects epithelial polyps that are larger than 2 cm when the stomach is well distended with air or when contrast material has been given Ha H K [15].

Perforation peritonitis: 08 out of 08 cases (100%), Morbid Obesity: 05 out of 05 cases (100%).

Gastric outlet obstruction: 05 out of 05 cases (100%), Lump in abdomen: 04 out of 05 cases (80%), Gastric ulcer: There was no correlation in the ulcer case .CT has no specific role in patients with uncomplicated ulcers, it is effective in detecting its complications such as acute perforation and penetration. Our case was uncomplicated type of ulcer. Pyloric stenosis: 01 out of 01 case (100%). Stab Injury: 01 out of 01 case (100%). Stomach cancer: 14 out of 15 cases (93.3%)

Out of total 45 gastric cases, On histopathology 12 cases were diagnosed as stomach cancer as compared with clinical diagnosis where 15 cases were labelled as stomach cancer as seen in Table No 19 (a).Sensitivity of 100 % and Specificity of 91 % to diagnose stomach cancer by clinical and histological study is same as described by Pailoor *et al*. [16].

Out of total 45 gastric cases, On histopatholgy 12 cases were diagnosed as stomach cancer as compared with radiological diagnosis where 14 cases were diagnosed as stomach cancer as seen in Table No 19 (b). Radiology has more accurate with Specificity of 94% as compared to clinical diagnosis with specificity of 91% in diagnosing cases of stomach cancer.

These findings are similar to Haa H K *et al*. [15] who have said that radiological investigations are superior than clinical examination for diagnosing cases of stomach cancer. In cases of gastric malignancies clinical diagnosis should be substantiated by radiological investigations.

Table-13: Comparison of age group showing peak incidence of stomach cancer in various studies

Author	Year	Age (in years)
(AbdulKareem *et al*.) [17]	2009	50-59
(Afzal *et al*.) [5]	2006	50-60
(Chanda *et al*.)[18]	2007	50-60
Present study	2014	51-60

Peak incidence of stomach cancer was seen in 50-60 years age group in the present study. Total seven cases were present in the age group 50-60 out of twelve cases of stomach cancer. It was comparable with studies done by AbdulKareem *et al*. [17], Afzal *et al*. [5] and Chanda *et al*. [18].

Table-14: Comparison of sex distribution for cancer of stomach

Author	Year	M:F Ratio
Umap and Dhamne [19]	1995	1.7:1
Afzal *et al*. [5]	2006)	6:1
Chanda *et al*. [18]	2007	3:1
Pailoor K *et al*. [17]	2013	2.7:1
Present study	2014	1:0.5

Table No 14 -shows the comparison of sex distribution of Stomach cancer cases in the present study, M: F ratio was 1:0.5 in our study of stomach cancer cases. A male preponderance was observed which is similar to other studies mentioned in the table.

Table-15: Comparison of Macroscopic features of cancer of stomach in various studies

Author	Infiltrating	Fungating	Ulcerative	Polypoid
Chanda *et al.* [18]	68.8	6.7	18.9	5.4
Pailoor K *et al*. [17]	00	6.9	93.1	00
Present study (2014)	8.3	00	66.7	25.0

Chanda *et al*. **[**18] reported infiltrating type as commonest on macroscopic features. In the present study ulcerative type of lesion was the most commonly observed lesion on gross examination. This corresponded well with the findings of Pailoor K *et al*.[17].

Table-16: Comparison of microscopic type of stomach Cancer in various studies

Author &Year	Adenocarcinoma
Marjani *et al*. [20]	78.6
Chanda *et al.* [18]	98.1
Afzal *et al*. [5]	87.51
Pailoor K *et al*. [17]	100.0
Present Study (2014)	100.0

In the present study adenocarcinoma was the commonest observation on histopathological examination in cases with cancer of stomach.

Comparison of diagnostic parameters on clinico- histopathological correlation in cases of stomach cancer: In the present study, out of 45 gastric cases 30 were benign and 12 were malignant on clinical basis. This corresponded well with studies by Chanda *et al*. [18] and Pailoor K *et al*. [17].

CONCLUSION

Gastric diseases present with non -specific symptoms and in most cases imaging techniques substantiate diagnosis of surgical indications/complications like gastric outlet obstruction and perforation peritonitis. Causes of these complications cannot be known preoperatively by clinico- radiological findings. Histopathology becomes mandatory for all gastric operative surgical specimens. Morphological examination establishes final diagnosis and can guide clinicians in planning further management especially in cases of gastrointestinal tuberculosis.

In selected cases anicillary methods like special stains, immunohistochemistry (IHC) can further increase diagnostic accuracy of histopathological examination.

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