

## Spectrum of gastric neoplastic lesions: A Clinicopathological study in the region of North Karnataka

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### Abstract

**Aim:** To know the incidence of various gastric neoplastic lesions and their clinical presentation, risk factors and histomorphology.

**Materials and Methods:** Study included all histopathologically confirmed neoplastic lesions of stomach including both endoscopic biopsies and resected specimens, biopsies showing significant dysplasia and intraepithelial neoplasia without inflammatory changes.

**Results:** Of the total 55 gastric specimens (44 endoscopic biopsies & 11 resected specimen), 50 cases were neoplastic (90.90%) and the remaining 5 cases (9.09%) showed intraepithelial neoplasia/dysplasia. Most common age group affected was 6<sup>th</sup> decade and men affected twice as common as women with M:F ratio being ~ 2:1. Most common presenting complaint was dyspepsia and abdominal pain. Most common site of gastric malignancy was pyloric antrum and least common site being greater & lesser curvatures. Most common growth pattern of gastric malignancies was 'ulcerative' and least being 'polypoidal'. Adenocarcinoma (94%) was the most common malignancy followed by lymphoma (4%) and carcinoid (2%). The commonest site of adenocarcinoma was pyloric antrum (64%) followed by cardia (16%) and body (8%). The most common histological type was 'intestinal type' (44.68%, 21 cases) and least common being 'papillary type' (2%, 1 case).

**Conclusion:** When compared with earlier studies, the incidence of adenocarcinoma in cardia and of signet ring cell carcinoma is on the rise. The present study is not free from limitations such as 'false' positives, 'fewer' number of biopsies from representative area and inadequate 'follow up'.

**Keywords:** Gastric adenocarcinoma, Signet ring cell carcinoma, Intestinal type, Diffuse type.

### Introduction

Gastric cancer is a common disease and fourth leading cause of cancer-related death worldwide. Gastric cancers are known for wide geographic and cultural variations suggesting possible role of environmental factors in their pathogenesis. Most of the gastric neoplasms are epithelial and more likely to be malignant, whereas mesenchymal neoplasms are less common and most of them are benign.<sup>1,2</sup> The histological pattern of stomach cancers varies worldwide and is continuously changing. Although the incidence of gastric cancers is on decline, certain histological types such as signet ring cell carcinoma are on the rise. Hence studies should be done periodically in every region to describe the pattern as well as presentation of disease. This study is undertaken to know the clinicopathological features of gastric neoplastic lesions and the information obtained from this study may be useful for future comparison.

### Materials and Methods

This is a prospective (2yrs) and retrospective (1yr) study conducted from October 2010 to September 2013 in a tertiary care centre in the region of North Karnataka. The study included all histopathologically confirmed neoplastic lesions (both benign and malignant lesions) of stomach which includes both resected specimens and endoscopic biopsies, including biopsies showing significant dysplasia and

intraepithelial neoplasia without inflammatory changes. Gastric biopsies with inadequate biopsy material and those showing inflammatory and tumour like lesions were excluded from the study. Brief clinical data including age, sex, habits, presenting symptoms, endoscopic findings and probable clinical diagnosis were obtained from case records. The gastrectomy specimens were analyzed for topography and gross details of the tumor. Hematoxylin and eosin stained paraffin sections were analyzed for histological details including types. Special techniques such as special stains (Giemsa, Periodic acid Schiff and Reticulin) and immunohistochemistry were done wherever necessary.

### Results

Neoplastic lesions of stomach constituted 12.3% (55 cases) of all upper gastrointestinal neoplastic lesions (446 cases). Majority of them (90.9%, 50 cases) were malignant and the remaining (9.1%, 5 cases) showed intraepithelial neoplasia/dysplasia. Most common age group affected was 6<sup>th</sup> decade followed by 5<sup>th</sup> and 7<sup>th</sup> decade. Men were affected twice as commonly as women with M: F ratio being ~2:1 (38 men and 17 women). Most frequent presenting complaints with advanced gastric cancer were dyspepsia, abdominal pain, vomiting, anorexia, weight loss. Most common site of gastric malignancies was pyloric antrum (64%, 32 cases) and least was greater and lesser curvature (6%, 3 cases each). Intraepithelial

neoplasia/dysplasia was seen in 5 cases (9.1%), majority (60%, 3 cases) of them were seen in pyloric antrum and remaining (40%, 2 cases) were seen in cardia. Most of gastric cancers were adenocarcinoma (94%, 47 cases) and remaining were non hodgkin's Lymphoma and Carcinoids (6%, 2 cases and 1 case respectively). The commonest site of involvement of gastric adenocarcinoma in descending order of frequency were the pyloric antrum (30 cases, 63.82%), cardia (8 cases, 17.0%), body (4 cases, 8.5%), lesser curvature (3 cases, 6.3%) and greater curvature (2 cases, 4.2%) [Table 1]. The most common gross

presentation of gastric adenocarcinoma was an ulcerative growth (57.44%, 27 cases), followed by infiltrating (21.27%, 10 cases), fungating (14.89%, 7 cases) and polypoidal (6.38%, 3 cases) [Fig. 1a,b & d]. 4 cases of dysplasias (80%) presented as flat lesion and one showed ulcerative lesion (20%) [Table 2]. Two cases of Non-Hodgkin's lymphoma presented as ulcerative growth involving antrum. One case of carcinoid showed polypoidal growth involving the greater curvature [Table 1 & 2].

**Table -1 Location and Spectrum of gastric neoplastic lesions.**

Location	Malignant tumors			IEN/ Dysplasia	Total
	Adenoca	NHL & Carcinoid	Total		
Pyloric antrum	30	2	32 (64%)	3 (5.45%)	35
Cardia	08	0	8 (16%)	2 (3.63%)	10
Body	04	0	04 (8%)	0	4
Lesser curvature	03	0	03 (6%)	0	3
Greater curvature	02	1	03 (6%)	0	3
Total	47	3	50(100%)	5	55

IEN-Intraepithelial neoplasia, Adenoca-Adenocarcinoma, NHL- Non-Hodgkin's Lymphoma

**Table 2: Endoscopic/gross findings and histological diagnosis of gastric neoplasms**

Gross/Endoscopic finding	Malignant Tumors		Total	IEN/ Dysplasia	Total
	Adeno ca	NHL & Carcinoid			
Ulcerative	27	2	29 (58%)	1	30
Infiltrating	10	0	10 (20%)	0	10
Fungating	07	0	07 (14%)	0	7
Polypoidal	03	1	04 (8%)	0	4
Flat lesions	00	0	00	4	4
Total	47	3	50(100%)	5	55

IEN-Intraepithelial neoplasia, Adenoca-Adenocarcinoma, NHL- Non-Hodgkin's Lymphoma

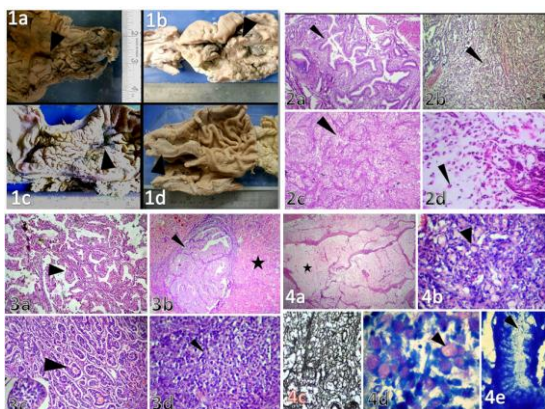
**Table 3: Macroscopic (endoscopic) pattern of gastric adenocarcinoma and locations**

Form/Type Macroscopic	Pyloric antrum	Body	Cardia & Fundus	Greater curvature	Lesser curvature
Ulcerative	16 (53.33%)	-	5 (62.5%)	-	-
Polypoidal	02 (6.66%)	-	1 (12.5%)	-	1(33.33%)
Fungating	04 (13.33%)	2 (50%)	-	-	-
Infiltrative	08 (26.66%)	2 (50%)	2 (25%)	2 (2%)	2 (66.66%)
Total- 47 cases	30 (100%)	4 (100%)	8 (100%)	2 (100%)	3 (100%)

**Table 4: Microscopic type and site of gastric adenocarcinoma**

Form/Type Microscopic	Pyloric antrum	Body	Cardia & Fundus	Lesser curvature	Greater curvature
Intestinal	16 (34%)	1 (2%)	4 (8%)	-	-
Signet ring cell	05 (11%)	1 (2%)	1 (2%)	-	1 (2%)
Mucinous	03 (6%)	1 (2%)	1 (2%)	2 (4%)	-
Diffuse	03 (6%)	1(2%)	1(2%)	-	1 (2%)
Tubular	02 (4%)	-	1 (2%)	1 (2%)	-
Papillary	01 (2%)	-	-	-	-
Total- 47 cases	30 (64%)	4 (8%)	8 (17%)	3 (6%)	2 (4%)

The most common histological type of the gastric adenocarcinoma was 'intestinal type' (44%) followed by 'signet ring' cell carcinoma (18%), 'mucinous' adenocarcinoma (15%) and then 'diffuse' infiltrating (13%), tubular (8%) and lastly 'papillary' adenocarcinoma (2%) [Fig 2a-d & 3a-b] [Table 4]. Over half of 'intestinal' type was moderately differentiated (55%) and the remaining being well differentiated (30%) and poorly differentiated (15%). 'Intestinal type' showed recognizable glands lined by columnar mucinous epithelium with hyperchromatic nuclei [Fig. 2a]. The signet ring adenocarcinomas showed single as well as clusters of round tumor cells with clear cytoplasm containing mucin (PAS positive) and an eccentric hyperchromatic nucleus seen diffusely infiltrating the gastric wall layers with recognizable desmoplastic response [Fig 2c-d & 4d]. The tubular adenocarcinoma showed branching tubules lined by cuboidal to columnar cells with hyperchromatic nuclei [Fig 2b].



**Fig. 1:** Showing gross appearance of gastric malignancies. 1a-ulcerative type, 1b- fungating type, 1c and 1d- diffuse infiltrating type (linitis plastica). **Fig. 2** Showing gastric adenocarcinoma 'intestinal type' (2a), tubular type (2b), 'diffuse' infiltrating type (2c) and signet ring cell type (2d) [H & E, x 10]. **Fig. 3** Showing 'papillary' type (3a) with liver metastasis (3b [H&E, x10], Carcinoid (3c) [H & E, x 10], and non hodgkin's lymphoma (3d) [H & E, x 40]. **Fig. 4** Showing 'mucinous' type (4a) [H & E, x 10], Signet ring cell type metastatic to ovary (4b) [H & E, x 40], Reticulin stain of non Hodgkin's lymphoma (4c) [x 40], PAS positive signet ring cells [x 100] (4d) and Giemsa stain positive H.pylori (4e) [x 100].

## Discussion

The incidence of gastric cancer has declined dramatically over past half century due to widespread use of refrigeration, which has had several beneficial effects, increased consumption of fresh fruits and vegetables, decreased intake of salt, lower rates of chronic helicobacter pylori infection owing to improved sanitation and use of antibiotics and increased screening

programmes.<sup>3</sup> Most gastric cancers present at a late advanced stage. Endoscopic examination with endoscopic biopsy of suspected cases is the preferred method of early diagnosis.

Incidence of gastric cancer increases progressively with age. Most patients are elderly at the time of diagnosis with male predilection.<sup>7</sup> Smoked foods, preserved and processed meat with high salt content, pickled vegetables and H. pylori infection increase the risk of gastric cancer while fruits & vegetables, green tea rich in carotenoids and antioxidants protect against gastric cancer. Processed meat contains not only high amounts of salt but also chemical carcinogens such as N-nitroso compounds. Antioxidants of green tea inhibit the nitrosation of polyphenols.<sup>3,4,12</sup> H pylori infection is an important risk factor and a preventable cause of gastric cancer. It is associated with two types of gastric cancers, gastric adenocarcinoma and lymphoma (Maltoma). It is found that eradication of H. pylori causes clinical regression of the lymphoma in 75% of the cases. It is postulated that H. pylori first induces superficial chronic non-atrophic gastritis and then to severe atrophic gastritis with subsequent intestinal metaplasia.<sup>13-15,17</sup> Present study observed H. Pylori infection in 3 cases, chronic atrophic gastritis in 3 cases and hyperplastic polyp with intestinal metaplasia and foci of dysplasia in 1 case. Other risk factors of gastric cancer include family history of gastric cancer, familial clustering of susceptibility to H.pylori infection, gastric polyps and blood group A. Most gastric cancers occur sporadically, however about 8-10 % are familial where germ line mutations of p53 and BRCA2 are common.<sup>18</sup> Important predisposing lesions associated with increased risk of gastric cancer include chronic atrophic gastritis, hypertrophic gastropathy, gastric polyps, intestinal metaplasia, post gastrectomy stomal site, pernicious anemia and obesity.<sup>18,20,21,24</sup> Atrophic gastritis results in a state of decreased acid output progressing through metaplasia, dysplasia to carcinoma.<sup>14,19,20</sup> Pernicious anemia have 2 to 3 fold increased risk of gastric cancer as well as gastric carcinoids. Various studies found gastric polyps an important predisposing lesions with adenomatous polyps having more malignant potential than hyperplastic polyps and malignant potential increases with size and degree of dysplasia.<sup>21</sup>

Various studies including Chanda et al and the present study observed Pyloric antrum (64%) as the most common site for gastric malignancies and adenocarcinoma as the most frequent histological type and other less common tumors include lymphomas, gastrointestinal stromal tumors, carcinoids, adenoacanthomas and squamous cell carcinoma.<sup>2,3,4,18</sup> Recently there is a gradual shift in the location of gastric carcinoma from the antrum to the body and fundus because of the rapidly increasing incidence of carcinoma in the gastric cardia and lower esophagus where the risk factors include GERD and obesity.<sup>5</sup>

**Classification of Gastric Adenocarcinoma:** During the last century, a variety of classifications have been proposed for gastric carcinomas by various authors. Bormann's (1926) classification was mainly based on gross morphology (polypoidal, fungating, ulcerated, infiltrative); Stout's classification (1953) was based on both gross morphology and histology (Fungating, Penetrating, Superficial spreading, Linitis plastica and No special type); Lauren's classification (1965) (Intestinal & Diffuse) mainly based on histology and Ming's classification (1977) (Expanding, Infiltrative) was mainly based on gross morphology. In 1981, Japanese Society for Gastric Cancer proposed classification mainly based on histology (Papillary, Tubular, Poorly differentiated, Mucinous, Signet ring), degree of differentiation and architectural pattern. In 2000, World Health Organization proposed a classification (adenocarcinoma, intestinal type, diffuse type, papillary adenocarcinoma, tubular adenocarcinoma, mucinous adenocarcinoma, Signet-ring cell adenocarcinoma, adenosquamous carcinoma, small cell carcinoma, undifferentiated carcinoma) based on both gross morphology, histology, degree of differentiation and prognosis.<sup>9-11</sup> Various studies including study by Chanda et al, Ming CS et al and the present study observed 'intestinal type' of carcinoma to be more common in the antrum while 'diffuse type' occurred at all sites including antrum, body and cardia-fundus.<sup>5,10,18-20</sup>

Various studies found a progressive decline in the incidence of the 'intestinal type' and an increase in the 'diffuse type' of gastric carcinoma, especially the Signet ring cell type (SRCC). SRCC tends to affect young, infiltrate diffusely and frequently metastasize to distant sites, while 'intestinal' type occurs after 40 years of age, has longer survival and better prognosis. 'Intestinal' type is frequently associated with atrophic gastritis and intestinal metaplasia while SRCC has no definite risk factors and frequently negative for H.Pylori.<sup>7,8</sup>

**Dysplasia/Intraepithelial Neoplasia- Adenomas:** By definition, an adenoma contains dysplastic proliferative epithelium with malignant potential. Gastric adenomas are usually antral in location, generally single and large, either sessile or pedunculated. Most gastric adenomas have an exophytic pattern. Present study found most of Intraepithelial neoplasia (IEN) (80%, 4 cases) being flat lesion and remaining were of ulcerative type [Table 2]. Microscopically, they are composed of dysplastic glands with pseudo stratified epithelium showing nuclear abnormalities and high mitotic count present towards the surface with abnormal mitosis. They are further subdivided into gastric type and intestinal type. They can also be subdivided into tubular adenomas, tubulovillous/tubulopapillary and villous adenomas. The risk of malignancy in gastric adenomas is related to their size, degree of dysplasia and villosity of the pattern of growth. Low grade dysplasia should be

clearly separated from the regenerative/reactive atypia that often occurs in areas of mucosal injury, such as gastritis and peptic ulceration. In reactive atypia there is considerably less stratification than in adenoma, mitoses are often present but not on the surface and abnormal mitoses are absent. Increased cellular differentiation and maturation is usually seen towards the luminal surface with accompanying inflammatory reaction, sometimes intense and focal erosive changes are common.<sup>21</sup>

**Gastric Adenocarcinoma:** Gastric adenocarcinoma can be 'early' gastric carcinoma or 'advanced' gastric carcinoma. 'Early' gastric adenocarcinoma is defined as a carcinoma confined to the mucosa or to the mucosa and submucosa (not extending into the muscularis externa), regardless of the status of regional lymph nodes and can be minute (< 5mm) or small (6-10mm).<sup>11,21,2</sup> Intramucosal carcinoma is the type of superficial carcinoma which is limited to the mucosa with no invasion to muscularis mucosa. This particular variant needs to be differentiated from dysplasia-CIS, which does not show invasion through the basement membrane. 'Advanced' gastric adenocarcinoma can present either as polypoidal or fungating or ulcerative or diffusely infiltrating (linitis plastica) or combinations of above. Various studies including Chanda et al and the present study observed antrum and pylorus as the frequent site of gastric adenocarcinoma and least being the greater curvature<sup>18</sup> [Table 3]. The location of primary gastric cancer has implication to 5 year survival rate and outcome. Various studies found better 5 year survival rate and outcome for distal gastric cancer than proximal tumors.<sup>22</sup> In the present study patients were lost for follow up.

Various studies including the present study found ulcerative and infiltrative tumors being most frequent type in pyloric antrum, while in corpus and lesser curvature it is polypoidal and fungating type.<sup>22</sup> 'Diffuse' infiltrating type is seen in all sites [Table 4]. Ulcerated tumors usually have irregular contours with raised and rolled edges. 'Infiltrating type' often presents with conspicuous thickening of the wall or sometimes entire stomach ('leather bottle' stomach). Various studies including the present study observed 'intestinal type' presenting as ulcerative growth as the most frequent type of gastric adenocarcinoma in the pyloric antrum<sup>22</sup> and the other less common types in this site include signet ring cell type, mucinous type, diffuse type & tubular type and least being papillary type [Table 4]. Microscopically tumor cells may show papillary, tubular, acinar, or poorly cohesive single cells and infiltrate and dissect through layers of gastric wall. The tumor cells usually produce mucin which is positively stained by diastase-PAS or alcian blue. Lauren's classification is widely used in mainly delineating two major types of gastric adenocarcinoma, 'intestinal type' and 'diffuse type'. The patterns of spread also differ, distal blood borne spread being more

common with former and widespread peritoneal dissemination being more common with latter. Present study observed a case 'papillary' adenocarcinoma in a 60 year old man in the pyloric antrum with liver metastasis. It is a rare histological type, commonly seen in elderly, with predilection for proximal stomach, frequently metastasize to liver and hence has poor prognosis with low 5 year survival rate compared to other gastric adenocarcinomas<sup>16</sup> [Fig 3a & b].

**'Signet Ring Cell Carcinoma' (SRCC):** Gastric adenocarcinoma consisting predominantly (>50%) of single cells or small clusters of cells with diastase-PAS positive intracytoplasmic vacuoles are considered as 'signet ring cell' carcinoma [Fig 2d & 4d]. Since tumor cells infiltrate diffusely with accompanied fibrosis causing thickening of gastric wall (producing 'linitis plastica' appearance) these tumors are categorized as 'diffuse type' according to Lauren's classification [Fig 1d]. Though majority of cases of 'linitis plastica' are due to SRCC, about 20% of linitis plastica are not due to SRCC. WHO considers SRCC as a distinct clinicopathological entity. While the incidence of non-SRCC gastric cancer is decreasing, the incidence of SRCC is on the rise. SRCC commonly affects younger patients than non-SRCC with female predilection has propensity for middle stomach and most are advanced stage gastric cancer (stage 4) at the time of diagnosis. Typically SRCC has no definite risk factors as compared to non-SRCC, and are negative for H.pylori (hence also called sometimes as 'H. PyloriNGC'). However some cases of SRCC have family history, which show specific germ line mutation in CDH1 gene which codes for an epithelial adhesion molecule (E-Cadherin) and hence are categorized under 'hereditary diffuse gastric cancer' and require prophylactic gastrectomy or at least follow up with annual endoscopic evaluation.<sup>23,24</sup> In the present study signet ring cell carcinoma constituted 18% (8 cases) of all gastric adenocarcinomas, all presented as 'infiltrative type' and majority were found in pyloric antrum and rest occurred in body, cardia & fundus and greater curvature [Table 4][Fig 2c,d & 4d]. Prognostically SRCC in early gastric adenocarcinoma have equivalent or better prognosis than that of non-SRCC and SRCC in advanced gastric adenocarcinoma has poor prognosis.<sup>23,24</sup>

**Malignant Lymphoma:** Gastric lymphomas constitute about 50% of all digestive tract lymphomas and usually affect elderly men. They can present either as low-grade lymphomas or intermediate/high grade lymphomas, though most common type being the marginal zone lymphoma of MALT (Mucosa Associated Lymphoid Tissue) type. Rare types of lymphomas that can occur in the stomach include anaplastic large cell lymphoma, true histiocytic lymphoma, plasmacytoma, multiple myeloma, Peripheral T cell lymphoma and Hodgkin's lymphoma. Maltomas are usually associated with H.pylori infection

and undergo complete regression with eradication of infection. Gastric lymphomas usually occur in the distal half of stomach, low-grade lymphomas tend to form giant convolutions of the mucosa mimicking hypertrophic gastritis or gastric polyps where as intermediate/high-grade lymphomas tend to form large lobulated (sometimes polypoidal) mass, with superficial or deep ulceration.<sup>15,16,17</sup> Present study observed two cases of gastric lymphoma accounting to 4% of all gastric malignancies, affecting elderly men in their 7<sup>th</sup> and 8<sup>th</sup> decade, both involved pyloric antrum and presented as ulcerative masses [Table 1 & 2]. Histologically they showed discohesive large immunoblasts, centroblasts and histiocyte like cells which were immunohistochemically positive for CD10, CD20 and CD79a and negative for CD3, CD45RO, CD46 and CD47. The Ki-67 labelling was 95%. So both cases were diagnosed as 'Diffuse large B-cell lymphoma'. Reticulin stain was also done to aid the diagnosis [Fig 3d & 4c].

**Gastric Carcinoid:** Gastric carcinoids constitute less than 1% of the neoplasms of the stomach and are commonly associated with chronic atrophic gastritis. They present as small, firm, well-circumscribed, polypoidal elevations of the mucosa and submucosa with a yellow-gray cut surface. Based on their pathologic features, gastric carcinoids can be classified into benign, borderline, low-grade malignant and high-grade malignant<sup>2</sup>. Present study observed one case of carcinoid in the greater curvature and grossly it was polypoidal growth measuring 3x4 cm and cut section of which showed multiple nodules of varying sizes along with diffuse thickening of stomach wall and omental deposits. Histologically showed small uniform cells arranged in cords and trabecular pattern with pseudo rosettes having round to oval nuclei with stippled chromatin, minimal pleomorphism with mitotic figures >2/ 10 hpf and immunohistochemically positive for neuron specific enolase, chromogranin and synaptophysin [Fig 3c]. The tumor extended beyond submucosa with angioinvasion. Thus a diagnosis of 'high grade malignant carcinoid' was made.

**Gastrointestinal Stromal Tumours (GIST):** They are the most common mesenchymal tumors of the gastrointestinal tract. A majority of these tumors are seen in the stomach (60-70%), but they occur anywhere in the gastrointestinal tract. These tumors may be single or multiple and vary in size from tiny intramural lesions to bulky tumor masses. They commonly present as endophytic polypoidal submucosal growth with surface ulceration and bleeding. They can also present as exophytic subserosal lesions. Some of the tumors can have both the features, thus producing a dumbbell appearance. They are usually well circumscribed with a gray to pink color on cut section, with areas of necrosis, hemorrhage, infarction and cystic change. The gross features, which suggest malignancy, include tumor size, and of course obvious invasion.

Microscopically they have a wide range of appearances, but two basic cell types are recognized-spindle cell and epitheloid types. GISTs of the stomach are known to exhibit KIT and PDGFRA mutations. Immunohistochemically all GISTs show consistent positivity for CD 117 (c-kit), a tyrosine kinase receptor normally expressed by the interstitial cells of Cajal.<sup>25</sup> The present study did not observe any case of GIST.

**Prognosis:** The overall prognosis for gastric malignancies is disappointingly poor. The gastric adenocarcinoma spread by direct extension, metastasis or peritoneal dissemination. 'Intestinal type' gastric cancers frequently metastasize to the liver while the 'diffuse type' cancers preferentially metastasize to peritoneal surfaces. The frequency of lymphovascular invasion with lymph node metastasis and direct extension to duodenum with serosal involvement is high in 'diffuse type' gastric cancers. An equal incidence of lymph node metastasis occurs in both types of lesions. The TNM staging system for gastric cancer is widely used and it provides important prognostic information. The five year survival rate is better for 'intestinal type' than the 'diffuse type'. The usual treatment for gastric cancer includes, complete surgical resection of the gastric tumor with resection of the adjacent lymph nodes. Partial gastrectomy with resection of adjacent lymph nodes is the treatment of choice for patients with distal tumors, whereas total gastrectomy is necessary for proximal lesions, midgastric lesions or disease involving the entire stomach. The overall prognosis for 'high-grade' gastric lymphoma is comparatively better than that for gastric carcinoma with a disease free 5 year survival rate of 60%. Unlike, the high-grade lymphomas, the low-grade lymphomas have a slow clinical evolution with a tendency to remain localized for a long time with less frequent regional lymph node involvement.

### Conclusion

Although pyloric antrum is the most frequent site for gastric malignancies, the occurrence in cardia is on the rise (possibly due to rising incidence of adenocarcinoma at Esophagogastric junction). Gastric adenocarcinoma is the most frequent type of gastric cancer and 'intestinal' type and SRCC are frequent histological types. Less common gastric neoplasms include lymphoma and carcinoid. The present study however is not free from 'limitations' such as (1) 'false negative' diagnosis due to site and depth of biopsy being not representative and may include necrotic tissue and or only mucosa. (2) Fewer number of biopsies were taken from the representative and surrounding areas to avoid inconvenience and trauma to the patient which accounts for less number of cases showing associated/predisposing lesions and (3) Follow-up was lost in most of the cases as the patients were referred to regional cancer institute for further management.

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