PREVALENCE OF GASTRITIS AND GASTROPATHY AMONG UPPER GI ENDOSCOPIES IN PAKISTANI PATIENTS

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ABSTRACT
Objective: To determine the prevalence of different types of gastritides and gastropathies among upper gastrointestinal (GI) endoscopies in Pakistani patients.
Study Design: Retrospective cohort study.
Methodology: In a retrospective analysis of patients who underwent UGIE from July 2010 to June 2014, the gender, history of liver cirrhosis, types of gastritis and gastropathy, mucosal finding in reactive gastropathy, site of erosions in stomach and gastric mucosal findings in patients with bile reflux were the qualitative variables, while age and weight of the patients were the quantitative variables. The entire data was evaluated on SPSS version 25. During descriptive interpretation of data, means and standard deviations were calculated for the presentation of quantitative variable, and frequencies and percentages were computed for qualitative variables.
Results: Out of the total of 3847 patients who underwent UGIE, 60.6% were male and 39.4% were female. The mean age and weights of the patients were 48.35 ± 12.93 years and 71.76 ± 16.13 Kilogram respectively. 64% patients (2463 out of 3847) were suffering from liver cirrhosis, while 90.3% patients (3474 out of 3847) had endoscopic findings suggestive of gastritides and gastropathies. Amongst the patients with findings suggestive for gastritis (n = 1070), 51.9% patients had acute non-erosive gastritis, 37.5% had acute erosive gastritis, 6.4% had nodular gastritis and 4.3% patients have atrophic gastritis. Amongst patients with findings suggestive for gastropathy (n = 2404), majority patients (n = 2375, 98.8%) had portal hypertensive gastropathy (PHG), 1% (n = 25) patients had prolapse gastropathy and only 0.17% (n = 4) patients had hyperplastic gastropathy. Amongst patients with reactive gastropathy, dominant gastric findings suggestive of the diagnosis were erosions (51.6%, n = 207), linear antral reddish streaks (36.2%, n = 145), subepithelial hemorrhages (8.7%, n = 35) and multiple gastric ulcers (3.5%, n = 14). 71 patients had bile reflux in their stomach where dominant mucosal change was linear antral reddish streaks (n = 32), followed by subepithelial hemorrhages (n = 28) and erosions (n = 11).
Conclusion: Gastritis and gastropathy is a prevalent gastric finding among upper GI endoscopies in Pakistani population. Acute non-erosive gastritis is the commonest subtype of gastritis, and PHG is the commonest gastropathy. Erosions, linear antral reddish streaks, subepithelial hemorrhages, and multiple ulcers are the different types of gastric mucosal changes found in reactive gastropathies, while linear antral reddish streaks is the dominant gastric finding in bile reflux gastropathy patients.
Keywords: Gastritis, Gastropathy, Gastric atrophy, Nodular gastritis, Retrospective analysis.

INTRODUCTION
Gastritis and gastropathy affect the mucosa of stomach.1 Gastropathy can be reactive,2 portal hypertensive3 or hyperplastic.4 Abnormal gastroscopic findings with normal histology are often due to reactive gastropathy.2 Gastritis is a microscopic diagnosis, where inflammatory infiltrates define it. Its incidence is 14% in patients with normal gastroscopic findings;5 hence a set of 5 gastric biopsies must be obtained to diagnose gastritis.6 Acute gastritis7 is categorized into 2 groups: Acute erosive gastritis i.e. with erosions and acute non-erosive gastritis that is generally caused by helicobacter pylori (Hp), where only mucosal erythema and edema is evident. In addition to Hp, other infective organisms of stomach include CMV, measles, mycobacterium, syphilis and fungi. Severe infectious gastritis with thick edematous mucosa and green black
exudate, known as Phlegmonous gastritis, is seen in AIDS, leukemia, massive alcohol or corrosive intake patients. Acute erosive gastritis is also known as reactive gastropathy; where mucosa is damaged by medicine, toxins, bile reflux, stress, radiations, ischemia and prolapse and no significant inflammatory infiltrate is produced. Reddish streaks, subepithelial hemorrhages, erosions, ulcers are the endoscopic findings.

Chronic gastritis can be divided into nodular gastritis, atrophic gastritis, granulomatous gastritis, and many more. Mucosal nodularity with cobblestone appearance are the endoscopic findings of nodular gastritis. H. pylori gastritis is the common etiology; however other causes are CD, syphilitic gastritis, lymphocytic gastritis and collagenous gastritis. Pale shiny mucosa with prominent submucosal vessels is suggestive for chronic atrophic gastritis (AG). Findings are distributed in corpus and corpus as well as antrum of stomach in its subtypes (Autoimmune AG, Environmental AG) respectively. The later is most commonly due to H. pylori gastritis. Narrow distal stomach with thick folds, cobble stone appearance and prepyloric ulcers may be due to granulomatous gastritis. Microscopically, granulomas are found. Sarcoid, TB and CD should be considered.

Portal hypertension related gastric mucosal changes are of two types: Portal hypertensive gastropathy (PHG) and gastric vascular ectasia (GVE). PHG is defined by mosaic-like pattern; where superimposed red spots differentiate severe form from mild one. In GVE, red spots are usually seen without a mosaic background. Hyperplastic gastropathy is characterized by giant gastric folds with epithelial hyperplasia. It can be due to Menetrier’s disease or Zollinger Ellison syndrome.

The objective of this study was to elaborate the prevalence of different types of gastritides and gastropathies among upper GI endoscopies in Pakistani patients.

**METHODOLOGY**

This was a retrospective cohort study carried out at Liver clinic, 250 Shadman Lahore. Amongst the patients who underwent UGIE from July 2010 to June 2014, the patients with endoscopic gastric findings suggestive for different types of gastritis and gastropathy were evaluated.

The mucosal erythema and edema was named as acute non-erosive gastritis (ANG), where erosions, ulcers, sub-epithelial hemorrhages and reddish streaks defined acute erosive gastritis (AEG). In AEG patients, H/O NSAIDs intake, bile staining of gastric mucosa, major physical trauma, radiation exposure, chronic mesenteric insufficiency and gastric cardia prolapse defined NSAIDs-induced gastropathy, bile-reflux gastropathy, stress ulcers, radiation-induced gastropathy, ischemic gastropathy, and prolapse gastropathy respectively. The term Phlegmonous gastritis was given where thick edematous folds with green black exudates were seen. Inflammation of cardia of stomach just below squamocolumnar junction was named as carditis.

Mucosal nodularity with cobblestone appearance and pale shiny mucosa with prominent submucosal vessels defined the chronic nodular gastritis and chronic atrophic gastritis respectively.

Mosaic-like gastric mucosa pattern in chronic liver disease patient defined PHG; where superimposed red spots differentiated severe subtype from mild form. GVE was also seen as red spots, but usually without a mosaic background in these CLD patients. The giant gastric folds with epithelial hyperplasia gave us the suspicion of hyperplastic gastropathy.

The gender, history of liver cirrhosis, types of gastritis and gastropathy, mucosal finding in reactive gastropathy, site of erosions in stomach and gastric mucosal findings in patients with bile reflux were the qualitative variables, while age and weight of the patients were the quantitative variables. The entire data was evaluated on SPSS version 25. During descriptive interpretation of data, means and standard deviations were calculated for the presentation of quantitative variable, and frequencies and percentages were computed for qualitative variables.

**RESULTS**

Out of the total of 3847 patients who underwent UGIE, 60.6% (n = 2332) were male and 39.4% (n = 1515) were female. Their mean age was 48.35 ± 12.93 years with a range of 3 to 95 years. The weight ranged from 13 – 131 kilogram, with a mean value of 71.76 ± 16.13 Kilogram. 90.3% patients (3474 out of 3847) had endoscopic findings suggestive of gastritis and gastropathies. Amongst the patients with findings suggestive for gastritis (n = 1070), 51.9% (n = 555) patients had acute non-erosive gastritis, 37.5% (n = 401) patients had reactive gastropathy (acute erosive gastritis), 6.4% (n = 68) patients had nodular gastritis and 4.3% (n = 46) patients have atrophic gastritis.

Amongst patients with findings suggestive for gastropathy (n = 2404), majority patients (n = 2375, 98.8%) had portal hypertensive gastropathy (PHG), 1% (n = 25) patients had prolapse gastropathy and only 0.17% (n = 4) patients had hyperplastic gastropathy (Table 1).

Amongst patients with reactive gastropathy, dominant gastric findings suggestive of the diagnosis were erosions (51.6%, n = 207), linear antral reddish streaks (36.2%, n = 145), subepithelial hemorrhages (8.7%, n = 35) and multiple gastric ulcers (3.5%, n = 14) (Picture 1).

The distribution of erosions in stomach was as follow. Erosions in patients without PHG were...
distributed in antrum and prepyloric region (n = 97), fundus (n = 55) and throughout stomach (n = 55) while erosions in addition to PHG were distributed in antrum and prepyloric region (n = 79), fundus (n = 58) and throughout stomach (n = 42) (Table 2).

71 patients had bile reflux in their stomach where

**Table 1:** Prevalence of gastritis and gastropathy among upper GI endoscopies (n = 3474/3847).

<table>
<thead>
<tr>
<th>Gastritis/ gastropathy</th>
<th>Frequency (Percent)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Gastritis (30.8%, n=1070)</strong></td>
<td></td>
</tr>
<tr>
<td>1. Acute non-erosive gastritis</td>
<td>555 (51.9%)</td>
</tr>
<tr>
<td>2. Reactive gastropathy</td>
<td>401 (37.5%)</td>
</tr>
<tr>
<td>3. Nodular gastritis</td>
<td>68 (6.4%)</td>
</tr>
<tr>
<td>4. Atrophic gastritis</td>
<td>46 (4.3%)</td>
</tr>
<tr>
<td><strong>Gastropathy (69.2%, n = 2404)</strong></td>
<td></td>
</tr>
<tr>
<td>5. Portal Hypertensive gastropathy</td>
<td>2375 (98.8%)</td>
</tr>
<tr>
<td>6. Prolapse gastropathy</td>
<td>25 (1.0%)</td>
</tr>
<tr>
<td>7. Hyperplastic gastropathy</td>
<td>4 (0.17%)</td>
</tr>
</tbody>
</table>

**Table 2:** Distribution of erosions in stomach (n = 386/3847).

<table>
<thead>
<tr>
<th>Without PHG Gastritis (53.6%, n = 207)</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Antrum&amp;prepyloric region</td>
<td>97 (51.9%)</td>
</tr>
<tr>
<td>Fundus</td>
<td>55 (37.5%)</td>
</tr>
<tr>
<td>Throughout stomach</td>
<td>55 (6.4%)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>In addition to PHG (46.4%, n = 179)</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Antrum&amp;prepyloric region</td>
<td>79 (98.8%)</td>
</tr>
<tr>
<td>Fundus</td>
<td>58 (1.0%)</td>
</tr>
<tr>
<td>Throughout stomach</td>
<td>42 (0.17%)</td>
</tr>
</tbody>
</table>

PHG = Portal hypertensive gastropathy

**DISCUSSION**

Today, we are able to classify gastritides into acute and chronic forms depending on endoscopic features. Further, subtypes of gastritides like acute non-erosive gastritis, acute erosive gastritis, Phlegmonous gastritis, nodular gastritis, and atrophic gastritis can be labelled on the basis of physical findings. Similarly, gastropathies can be named PHG, prolapse gastropathy, and hyperplastic gastropathy. The national and even international data regarding the frequency of different types of gastritides and gastropathies is scarce. Our study provided first time the whole elaboration about the prevalences of different types of gastritides and gastropathies. Our study also explained the percentage distribution of different types of endoscopic findings in reactive gastropathy patients like erosions, linear antral reddish streaks, subepithelial hemorrhages, and multiple ulcers. Medicines and toxins are the commonest etiology for reactive gastropathy. Bile reflux gastropathy is common after surgery of stomach or gallbladder and even after sphincterotomy. In our data, 71 patients had obvious bile reflux where dominant endoscopic gastric mucosal change was linear antral reddish streaks. Further larger studies are required to validate the association between bile reflux and this mucosal finding.

In a study from Kenya, amongst 1690 patients who underwent UGIE, dyspepsia was the most common symptom for referral (62.7%, n = 1059). In our study, 64% (n = 2463) patients had liver cirrhosis as the referral reason for UGIE. In our study, 30.8% patients had gastritides and 69.2% had gastropathies. In a similar study from Uganda, gastritides were 40.2% diagnoses in patients who underwent UGIE. In 2010, Abbasiet al found the frequency of PHG in liver
cirrhosis of 79.27%, while in our study, PHG was seen in 96.4% patients suffering CLD.

All the data favors that the liver disease is the main burden on UGIE suite in our population, where PHG is the commonest gastric finding followed by different types of gastritides.

CONCLUSION
Gastritis and gastropathy is a prevalent gastric finding among upper GI endoscopies in Pakistani population. Acute non-erosive gastritis is the commonest variety of gastritis followed by acute erosive, chronic nodular and chronic atrophic gastritis, while PHG is much more common than other gastropathies like prolapse gastropathy and hyperplastic gastropathy. Erosions, linear antral reddish streaks, subepithelial hemorrhages, and multiple ulcers are the different types of gastric mucosal changes found in reactive gastropathies, while linear antral reddish streaks is the dominant gastric finding in bile reflux gastropathy patients.

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