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Case Report
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Giant Stomach with Mucosal Atrophy - a Case Report

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ABSTRACT

Introduction: the stomach is situated between the end of the esophagus and the duodenum. It occupies epigastric, umbilical, and left hypochondrial regions of the abdomen having a capacity of approximately 1000–1500 ml in the adult. Shape, volume and position of the stomach may vary without any pathological or physiological disturbances. Variations of the stomach may be congenital or acquired in later stages of life.

Case report: here we report a case of unusually large stomach in a adult male cadaver. Length of stomach was 30 cm long, and width was 20 cm, pyloric end 18 cm, cardiac end 19 cm. The thickness of the stomach wall was measured using vernier calipers and it ranged from 0.6-1mm. There were no significant lesions inside the stomach. Inner surface of the stomach was smooth without any rugae With H & E stain the gastric wall showed pan atrophic changes with inflammation.

Conclusion: it is very important to evaluate the degree and extent of gastric mucosal atrophy which may be a high risk for developing gastric cancer. The association between Helicobacter pylori infection and gastric cancer has been demonstrated through various studies and the risk of gastric carcinoma occurrence is known to increase with the progression of atrophic changes associated with chronic gastritis. A simple and most reliable means to identify the degree and extent of gastric mucosal atrophy in a subject who are at high risk for gastric cancer is by endoscopic evaluation.

Keywords: Atrophy; Dilatation; Gastric mucosa.

Introduction

The stomach is the widest part of the gastro-intestinal tract or also called as alimentary tract. It is a muscular bag fixed at both ends i.e., cardiac and pyloric ends, which lies between the esophagus and the duodenum. The parts of stomach are fundus, body and pylorus with a mean capacity of the stomach which increases from approximately 20–30 ml at birth to approximately 1000–1500 ml in adults. Stomach wall is made up of mucosa, muscularis externa and serosa from inside to outside respectively. Mucosa mainly constitutes gastric glands and lined by simple columnar epithelium[1, 2].

Gastric mucosal atrophy is a common, age-related multifactorial disease which is associated with Helicobacter pylori infection and also dietary patterns of an individual. Globally as many as 25% of people are at risk of loss or atrophy of normal gastric mucosal glands. Gastric mucosal atrophy is considered to be a precursor lesion in the development of gastric carcinoma. H. pylori infection alone may not cause gastric cancer even though the World Health Organization considers it to be a class-I carcinogen[3]. The hallmark features of Helicobacter Pylori infection reports erythema, erosions, thickened folds or absence of rugae, mosaic appearance, with or without hyperemia, and visible submucosal vessels in the gastric mucosa[4,5,6,7]. Dietary patterns and habits also play an important role in gastric carcinogenesis[3]. In the present case we are reporting a unique abnormally large stomach with pan mucosal atrophy.

Case Report

During routine dissection for under Graduate students at JSS medical college, we found an unusually large stomach. This was found in an adult male cadaver aged approximately 65 years. The stomach occupied left hypochondriac, epigastric and Right hypochondriac region extending partly to umbilical, right and left lumbar region (Fig 1a). Length of stomach was 30 cm long, and width was 20 cm, pyloric end 18 cm, cardiac end 19 cm. The thickness of the stomach wall was measured using vernier calipers and it ranged from 0.6-1mm. There were no significant lesions inside the stomach. Inner surface of the stomach was smooth without any rugae (Fig -1b) and tissue was taken for

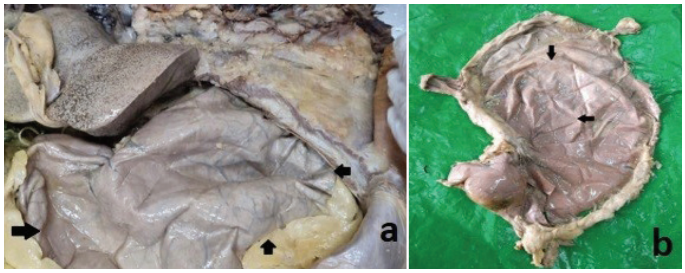

Figure 1. 1a- Intact stomach in the Cadaver extending from left to right hypochondrium pushing the liver upwards, 1b- Smooth Inner surface of stomach without any rugae.

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histopathological examination (H& E stain). There were no other notable anomalies in the cadaver.

Cardiac Region

Thickness of the section was 0.9-1.2 mm. Mucosa measured 0.1-0.2 mm and muscle layer was 0.8-1.1mm. Section shows atrophic tubular glands with occasional cystically dilated glands with edematous stroma infiltrated by inflammatory cells. The muscular and serosal layers are intact (Fig 2).

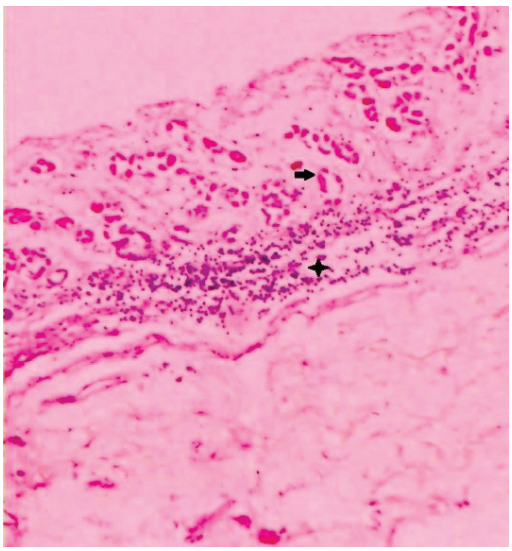

Figure 2: Section shows atrophic tubular glands with occasional cystically dilated glands ( ).
with edematous stroma infiltrated by inflammatory cells ( ) . The muscular and serosal layers are intact.

Fundus and Body

Thickness of the section was 0.85-0.9mm. Mucosa measured 0.1-0.15 mm and muscle layer was 0.5-0.75 mm. Section shows atrophic mucosa with autolytic changes. The muscularis layer is denuded with few congested and dilated blood vessels with intact serosal layer (Fig 3).

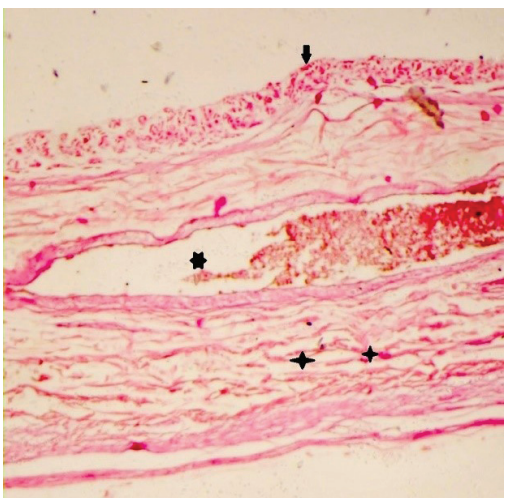

Figure 3. Section shows atrophic mucosa with autolytic changes ( ). The muscularis layer is denuded ( ) with few congested and dilated blood vessels ( ) with intact serosal layer.

Pyloric Region

Thickness of the section was 0.85-1.5mm. Mucosa measured 0.2-0.4 mm and muscle layer was 0.65- 1.1 mm Section study shows simple tubular glands with edematous stroma with intact lamina propria below which are seen congested and dilated blood vessels. The muscularis layer is thinned out with intact serosal layer (Fig 4).

Above features suggestive of Atrophic gastritis.

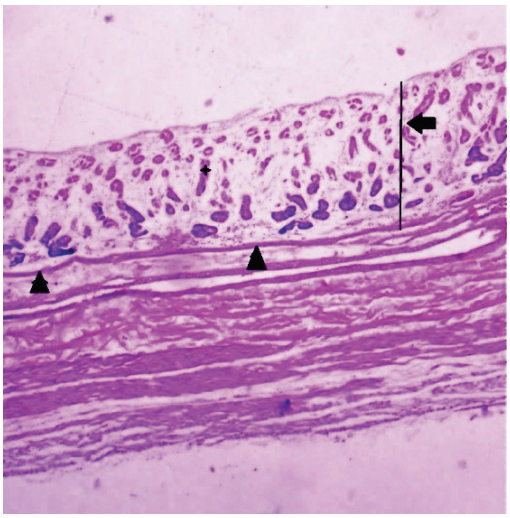

Figure 4. Section shows simple tubular glands ( ) in the mucosa ( ) with edematous stroma with intact lamina propria ( ) below which are seen congested and dilated blood vessels. The muscularis layer is thinned out with intact serosal layer.

Discussion

The different shape and positions of the stomach are strongly associated with organogenesis. The topography of stomach depends on the contents of the stomach, respiratory phase, age and body type of the individual[8].

Morphological classification of the shape and topography of unoperated stomach[8]

I- Abnormal positions along the longitudinal axis of the organ (organoaxial)

Ia. Malrotation

Ib. Translocation to the chest cavity

1. Through the esophageal diaphragmatic hiatus (hiatal hernias) Sliding hiatal hernia (type I) a Paraesophageal hiatal hernia (type II) a mixed form (type III) a
2. Intrathoracic stomach-upside-down hernia (type IV) a Congenital short esophagus
3. Through other esophageal openings (diaphragmatic hernias) Posterolateral (Bochdalek) hernia Anterolateral (Morgagni) hernia Central (septum-transversum) hernia

II- Abnormal positions along various horizontal axis (mesenteroaxial) Cascades (mesenteroaxial volvulus)

III- Abnormal shape of the stomach

1. Lack of the whole organ

2. Lack of the fundus short body
3. Advanced enlargement (dilatation)

IV- Abnormal congenital connection of the stomach
1. Gastroduodenal fistula
2. Gastrointestinal fistula (-ileal, -jejunal)
3. Gastrocolic fistula
4. Gastro cutaneous fistula
5. Other, less common fistulas

V- Mixed form of the stomach shape

The stomach in discussion is of type III – advanced enlargement[8]. Normal gastric wall thickness of stomach was 5-7mm[9]. In the present case, maximum thickness noted was 1.5mm.

Conclusion

Until the discovery of Helicobacter pylori, aging and foods which may damage the gastric mucosa was considered to be causative factors for gastric mucosal atrophy. Infection with H. pylori is known to cause gastric mucosal atrophy and intestinal metaplasia which later increases the risk of gastric carcinoma[10].

Endoscopic findings of gastric mucosal atrophy obtained by routine observation were classified according to the Kimura and Takemoto classification, a) closed type (C-1 to C-3), characterized by borders of atrophy not exceeding the cardia on the lesser curvature side of the gastric corpus, and b) the open type (O-1 to O-3), characterized by borders of atrophy exceeding the cardia into the greater curvature side[11].

Characteristic features of each type are as follows:

- atrophic mucosa is limited to the antrum in C-1;
- limited to the gastric angle or the lower corpus in C-2;
- limited to the upper corpus in C3,
- limited to the surroundings of the gastric cardia, with maintained folds of the greater curvature, in O-1;
- atrophy is present in the entire stomach, with lack of folds in the greater curvature as a whole in O-3,
- O-2 is an intermediate type between O-1 and O-3.
- Atrophy is absent in C-0[11].

In the present case atrophy was seen throughout the stomach O-3, with lack of rugae throughout.

The proportion of infected subjects that develop atrophic gastritis is greater in populations of developing countries, and is closely related to the incidence of gastric cancer. The relationship between atrophic gastritis and gastric cancer has been established in numerous epidemiological and pathological studies. Therefore, the recognition and quantification of atrophy is important in determining cancer risk and ultimately helps in the prevention of gastric cancer. Hence this giant stomach with pan mucosal atrophy is of clinical interest for physicians treating acid peptic disorders.

Acknowledgement

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