Prevalence of Helicobacter Pylori associated Gastritis in Egyptian Patients with Endemic Hepatosplenomegaly

Thesis submitted for partial fulfillment
of Master Degree in Tropical Medicine

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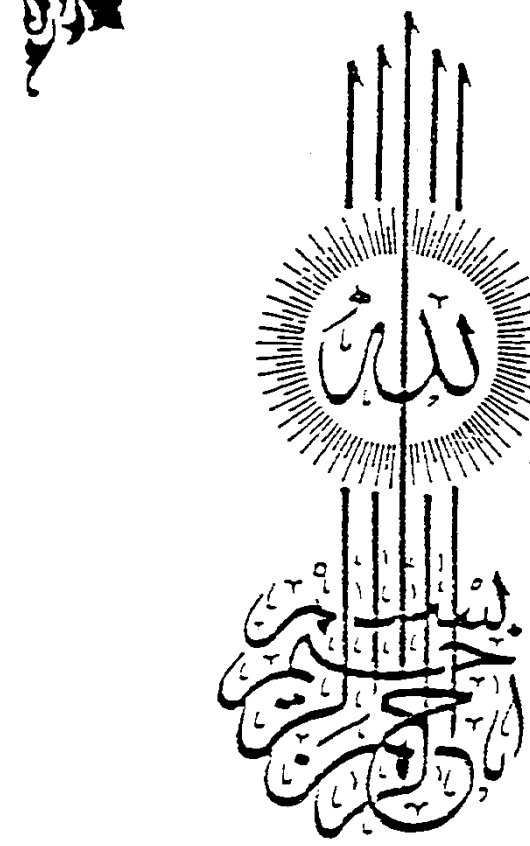

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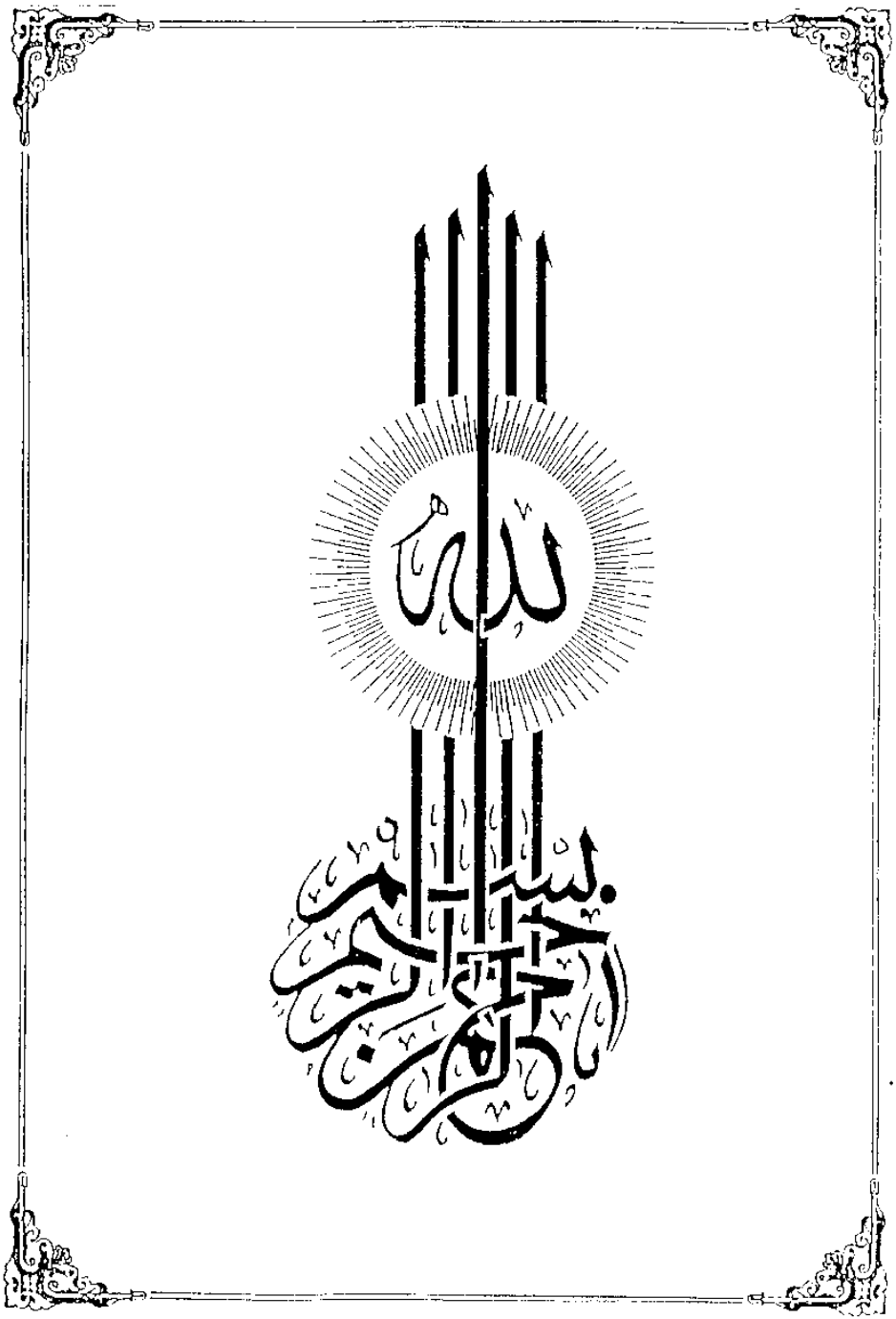

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Introduction & Aim of Work

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Helicobacter Pylori gastritis is probably the most common form of chronic gastritis world wide.

Helicobacter pylori inhabits the mucus layer which overlies gastric epithelial cells. The discovery of *Helicobacter pylori* has led to reappraisal of gastric pathology ***(Anderson et al, 1990)***. The realization that the formerly "idiopathic type B gastritis" is in fact the result of *Helicobacter pylori* infection, has enabled pathologists to reclassify mucosal inflammation of the stomach etiologically ***(Thompson et al, 1990)***.

The *Helicobacter* associated gastritis is predominantly antral in distribution ***(Sugiyama et al., 1991)***. The pattern is chronic with mononuclear cells predominance with activity (i.e. neutrophils are present).

Various factors influence the frequency, severity, distribution and extent of gastritis. These factors include the virulence of the infecting strain, the age at which infection occurs and the host response ***(Sipponen et al., 1991)***. Subjects who acid secretion is in the lower range or those infected with a virulent strain of *Helicobacter pylori* are more susceptible to develop pangastritis ***(Sobala et al., 1991)***.

The relationship between endemic liver disease (schistosomal & post-hepatitic liver disease) and *Helicobacter Pylori* associated gastritis hasn't been extensively investigated in Egypt although both conditions (diseases) are among the important health problems in Egypt.

Aim of work

The aim of the work was to assess the prevalence of *Helicobacter pylori* associated gastritis in patients with endemic hepatosplenomegaly in Egypt.

STOMACH

Anatomy of the stomach

The stomach is the most dilated part of the digestive system, and is situated between the end of the esophagus and the beginning of the small intestine. It lies in the epigastrium, umbilical and left hypochondrial regions. It has two opening (cardiac and pyloric orifices), two surfaces (antero-superior and postero-inferior surfaces) and two curvatures (lesser and greater curvature). The two curvature are important surgically, because of their relation to the major vascular and lymphatic arcades of the stomach ***(Belly and Love, 1988)***.

Dum and Eisenberg (1985) stated that the anatomical divisions of the stomach are:

1) The cardiac portion :

It is that part of the stomach immediately adjacent to the oesphago-gastric junction. Its cephalic border is well demarcated internally by the change from the squamous epithelium to the gastric glands. The distal mucosal border is not well defined.

2) The fundus :

It is that part of the stomach lying above a horizontal line drawn from the gastro-oesophageal junction to the greater curvature. There is no gross anatomic boundary to the fundus and the histologic boundary is still ill defined as well.

3) The corpus (body of the stomach) :

It lies between the funds and a point on the lesser curvature designated "incisura angularis" the distal margin of the fundus is inconstant and changes with age.

4) The antrum :

It begins where the corpus ends and extends to the pylorus. The distal margin of the antrum is constant as the antral mucosa does not extend beyond the pylorus under normal circum stances.

The cardiac orifice :

It lies between the oesophagus and the stomach about one inch below the xiphisternum and one inch to the left of the median plane, and is placed about 10 cm from the anterior abdominal wall. The right margin of the esophagus is continuous with the lesser curvature of the stomach, while the left margin joins the greater curvature at an acute angle termed the cardiac notch. The part of the stomach which lies to the left and above the level of the cardiac orifice is called fundus ***(Belly & Love, 1988)***.

The pyloric orifice :

It lies between the duodenum and the stomach, and is indicated by a circular groove on the outer surface of the stomach termed the pyloric constriction, which indicate the position of the pyloric sphincter, it can be identified by prepyloric vein of Mayo, which runs vertically across its anterior surface. It lies 1-2 cm to the right

of the median plain near the level of the lower border of the first lumbar vertebra in the supine position when the stomach is empty ***(Belly and Love, 1988)***.

Blood supply of the stomach :

The stomach is supplied by several large arteries which break up to form large anastomosing latticework of vessels in the subserosa, submucosa and lamina propria.

The stomach receives its blood supply along its two mesenteric borders (the lesser and greater curvatures).

a) The right and left gastric arteries, which arise from the hepatic and coeliac arteries respectively, run within the lesser omentum adjacent to the lesser curvature.

b) The right and left gastro-epiploic arteries (which arise from the gastro-duodenal and splenic arteries respectively).

c) The vasa brevia, which arise from the splenic artery and runs within the greater omentum adjacent to the greater curvature. These arteries supply the stomach by sending off specific anterior and posterior gastric branches that penetrate the stomach muscular coat anteriorly and posteriorly. On reaching the submucosa, these gastric branches ramify extensively throughout the entire mucosa, maintaining a relatively large caliber, These submucosal ramifications anastomose frequently with each other to form the submucosal plexus, which consists of both the arteries and their venous counterparts. independent branches from the submucosal plexus supply the mucosa every where except in the lesser curvature, which receive delicate

branches directly from the right and left gastric arteries. Because of its extensive submucosal plexus, the stomach is the most vascularized segment of the alimentary tract *(Griffith, 1986)*.

Functioning arterio-venous anastomosis found in the submucosa close to supply a maximum of blood to the mucosa during its full activity to secrete the gastric juice, and open to divert blood away from the mucosa when it is at rest *(Mohamed, 1966)*.

These shunts with maximum size of about 140 μ do not maintain intermediate position of opening, but remain either open or shut. The degree of vascularity of the gastric mucosa is at least partially dependent upon the opening and closing of these submucosal anastomosis. Conditions which reduce the total rate of flow through the stomach vessels as unusual stress, injury, emotional disturbance and cold produce an increase flow through these arterio-venous shunts *(Belly and Love, 1988)*.

However, more recent studies using modern techniques, deny the presence of such arterio-venous anastomosis *(Guth et al., 1978 and Piasecki, 1980)*.

Histological consideration :

The wall of the stomach is formed of four layers; mucosa, submucosa, muscularis and serosa.

A. The mucosa:

The naked eye appearance of the inside of the mucosa shows that it is grayish pink in color. Thrown into folds called rugae, smooth to touch due to absence of villi and full of minute holes which are the openings of gastric pits ***(Roland and Thomas, 1976)***. The entire thickness is occupied by a mass of gastric glands which open on the surface by gastric pits. The gastric glands are simple tubular or branched tubular and extend deeply to reach the muscularis mucosa. Between them is lamina propria which is a connective tissue layer between the epithelium and muscularis. The lamina propria contains reticular fiber, some lymphocyte, plasma cells and gastric glands, also, it is the part which contain the blood vessels, lymphatics and herven ***(Abdel-Kader, 1982)***.

The surface epithelium :

This is a simple columnar epithelium formed of mucus secreting columnar cells. It covers the mucosa and is interrupted by the openings of the ducts of gastric glands where it is invaginated to line them. The apical parts of the cells appear clear due its contents of dissolved mucin granules which dissolve during processing. They secrete neutral mucopolysaccharide material which provides a protective coat for epithelium. the surface epithelial cells are replaced by mitosis of less

differentiated cells situated in the upper region of the gastric gland (lesson, 1976). The gastric glands are branched tubular in type densely packed and occupy the entire thickness of the mucosa. They open in small groups into the bottom of gastric pits, There are three type of gastric glands ***(Ham, 1979)***. The fundic glands are the most important glands of the stomach and produce the majority of enzymes and hydrochloric acid and some mucin ***(Roland and Thomas 1976)***.

The cells lining the fundic glands are numerous and the most important of them are the chief cells which secrete pepsin also, the parietal cells which secrete free hydrochloric acid and the intrinsic factor essential for absorption of vitamin B_{12} in the small intestine ***(Gilbert, 1962)*** other types of cells include mucus neck cells which produce mucin, surface epithelial cells and enterochromaffin cells which produce serotonin and probably gastrin ***(Lesson, 1976)***. The pyloric glands are characterized by deep duets extending to the half of the thickness of the mucosa, Thus they are short and are simple or branched tubular, but they

are of greater diameter than those of the fundus and so they are coiled upon themselves with the exception of a few parietal cells and enterochromaffin cells, only one cells type is present which is mucus secreting cells ***(Abdel-Kader, 1982)***.

B. <u>Submucosa:</u>

It is a loose connective tissue layer, with blood vessels, Lymphatics and Meissner's plexus of nerves. Most cells and eosinophils are also found in this layer ***(Abdel-Kader, 1982)***.