STUDY THE RELATIONSHIP BETWEEN VARIOUS SUBTYPES OF INTESTINAL METAPLASIA AND HELICOBACTER PYLORI

THESIS

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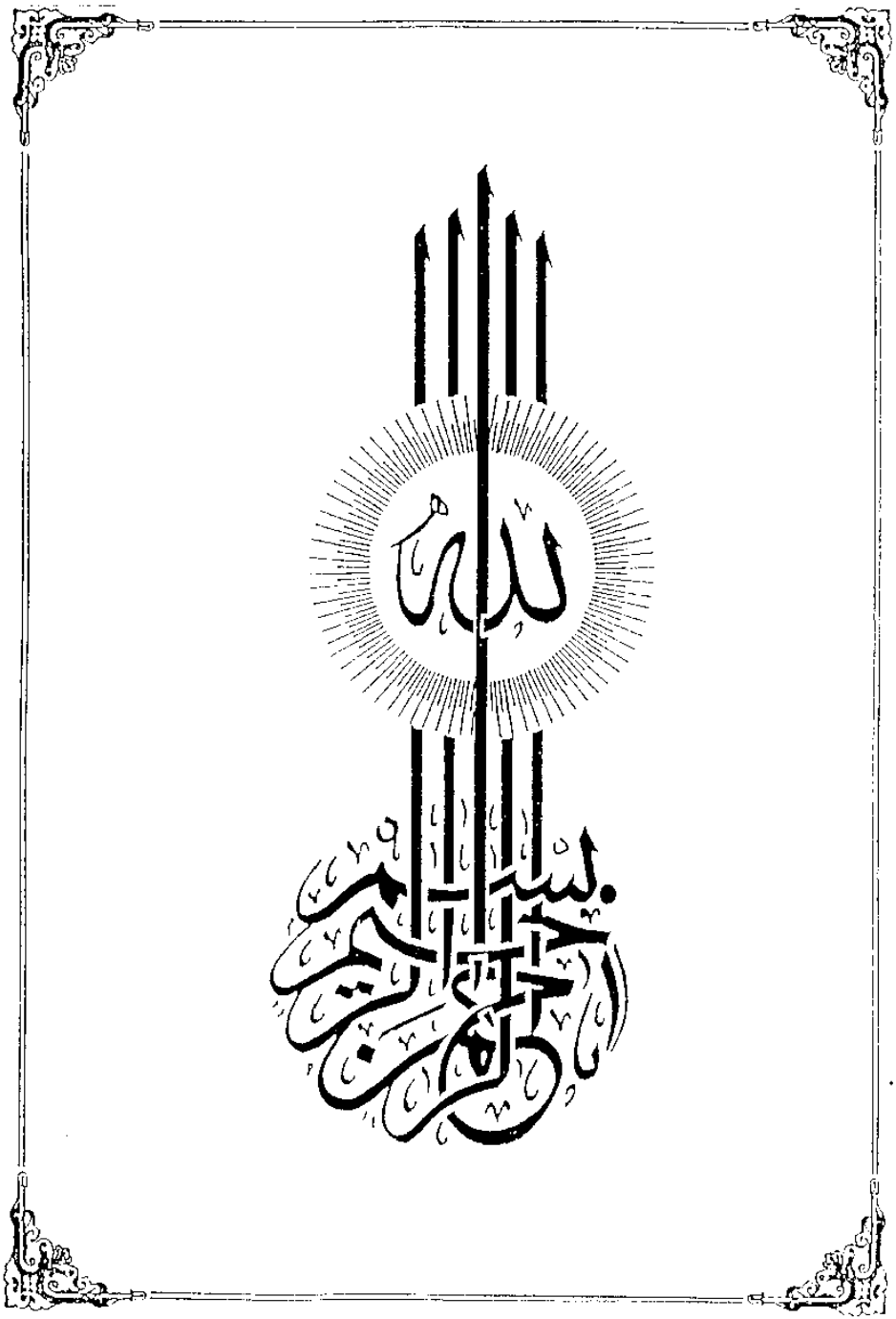

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INTRODUCTION

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Warren and Marshall,(1983) found unidentified curved bacilli in gastric antral biopsies from patients with chronic active gastritis and peptic ulcer disease .

Eradication of Helicobacter pylori may lead to rapid reversion of the histological abnormalities found in H.pylori related gastritis.[Dooley et al, 1988]

Detailed studies of the gastric mucosa in populations with a high risk of developing gastric carcinoma have described a series of lesions which may represent a continuum of change from normal to carcinoma [Correa et al, 1976],starting with chronic active gastritis which may progress to chronic atrophic gastritis with intestinal metaplasia and finally to dysplasia and gastric carcinoma. [Correa , 1988]

The finding that intestinal metaplasia was significantly more often in the gastric antrum of H.pylori positive patients as compared with H.pylori negative patients may turn out to be an important observation because it suggests that H.pylori related gastritis may evolve into intestinal metaplasia .[Craanen et al, 1992]

Meister, et al, (1979) found that the majority of the

patients with benign gastric ulcer were intestinal metaplasia positive ,thus this observation limit the use of intestinal metaplasia as an indicator of possibly increased gastric cancer risk

Only type III intestinal metaplasia might be regarded as a marker of increased gastric cancer risk [Jass , Filipe , 1980]

On investigating whether a different relationship could be found between H.pylori and the various subtypes of intestinal metaplasia , it was found that type III intestinal metaplasia was less often in H.pylori positive patients than in H.pylori negative patients .This negative relationship is caused by the altered gastric milieu in type III intestinal metaplasia positive patients. [Craanen et al, 1992]

Scott,et al,(1990) postulated that H.pylori acts as a promotor in the process of gastro-carcinogenesis through progression from normal to metaplastic epithelium possibly by inducing a hyperprolifrative state in the inflammed gastric mucosa.

AIM OF WORK

The aim of this study is to evaluate the relationship between the presence of H.pylori and the various subtypes

of intestinal metaplasia in gastric antral mucosa , as a trial helping for follow up of patients with H.pylori gastritis guarding them against the development of intestinal type gastric carcinoma.

REVIEW OF LITERATURE

I.1 HISTORICAL BACKGROUND OF HELICOBACTER PYLORI DETECTION

Krientz,(1906)was the first discoverer of the spiral bacteria which were isolated from the stomach of a patient with gastric cancer and this was confirmed later by others, including Freedberg and Barron who in 1940 described spirochaetes in the gastric mucosa of 13 out of 35 patients undergoing gastric resection for ulcers or carcinoma.[Rauws and Tytgat, 1989]

Interest in gastric spiral bacteria waned until 1975 , when Steer and Colin-Jones reported the presence of bacteria on gastric mucosa under the mucus layer in association with gastritis but they were absent from normal stomach .Ultra structural illustrations indicated that the bacteria were spiral.

However , recently in 1983 ,Warren and Marshall recognized the significance of gastric spiral organisms and identified the previously detected curved bacilli on the gastric epithelium of the majority of patients with active chronic gastritis by the Warthin Starry silver stain .

Morphologically and in respect to their atmospheric requirement and DNA base composition , these organisms

[Marshall and Warren, 1984]

THE GENUS CAMPYLOBACTER

The genus name Campylobacter is derived from the greek ward meaning curved . organisms in the genus are gram - negative and 0.2 - 0.5 μ.m in width and 1.5 - 5.0 μ.m in length.

The organisms are actively motile , and possess a single unipolar flagellum or bipolar flagella.

The genus Campylobacter include several species widely distributed in nature as both pathogens and saprophytes for both animals and man .[Simbert, 1978]

TAXONOMY AND CLASSIFICATION

Five different species are listed in Bergeys manual 1974 C.fetus

C.jejuni

C.coli

C.sputorum and

C.consisus

* C.fetus is divided into two subspecies

a. *C.fetus subspecies fetus*

b. *C.fetus subspecies venerealis*

* C.coli and C.jejuni

were also previously considered subspecies of C. fetus but DNA hybridization studies have shown those organisms to be two separate species .

C.coli and C.jejuni are identical except in the ability to hydrolyze hippurate , C.jejuni is hippurate positive and C.coli is hippurate negative .

* C.sputorum is divided into three species

a.C.sputorum subspecies sputorum .

b.C.sputorum subspecies bubulus .

c.C.sputorum subspecies mucosalis .

[Simbert,1978]

Other newly described organisms include

C.fecalis ,

C.laridis ,

C.cinaedi ,

C.fennelliae ,

C.pylori , and

C.hypointestinalis .

[Weissfeld and Kaplan, 1987]

The new organisms were originally called Campylobacter like organism [CLO] , *then it was changed to* Campylobacter pyloridis [C. PYLORIDIS] *then to* Campylobacter Pylori [C. PYLORI] , *while more recently they were named* HELICOBACTER PYLORI [H. PYLORI]. [Maddoks,1990]

The specific epithet of C. pyloridis was grammatically incorrect , so the name was changed to C. pylori [Marshall,Goodwin,1987]. *The ultrastructure of C.pylori and its fatty acid composition were found to be very different from that of Campylobacters, so a new genus name was required. Helicobacter pylori has been suggested as the recent name , it reflects the two morphological appearances of the organism being helical in vivo but often rod-like (bacter) in vitro.* [Dooley,Cohen,1989]

I.2 A SCOPE ON HELICOBACTER PYLORI REGARDING

i. MICROBIOLOGICAL AND HISTOLOGICAL CHARACTERS

ii. METHODS FOR ITS DETECTION

i. MICROBIOLOGICAL AND HISTOLOGICAL CHARACTERISTICS OF HELICOBACTER PYLORI

FIRST : MICROBIOLOGICAL CHARACTERISTICS OF H.PYLORI

A- MORPHOLOGY *Fig (1,2,3)*

*** Light Microscopical Examination**

In examination of fresh specimens of gastric mucous, H.pylori appeared as a slender , curved , spiral rods with two or three curves [s - shaped] and occasionally appeared in a semi - circular configuration gram negative rods [**Jones et al, 1985** *].*

H.pylori are transformed to coccoid forms under unfavourable circumstances - like other helicobacters.

*[***Langen-berg et al, 1984** *]*

*** Electron Microscopical Examination**

It revealed a structurally homogeneous population of organisms , has an average diameter of 0.5 μ.m *[maximum* 0.9 μ.m *]* *[***Phillips et al, 1984** *]*

H.pylori were described as they characteristically

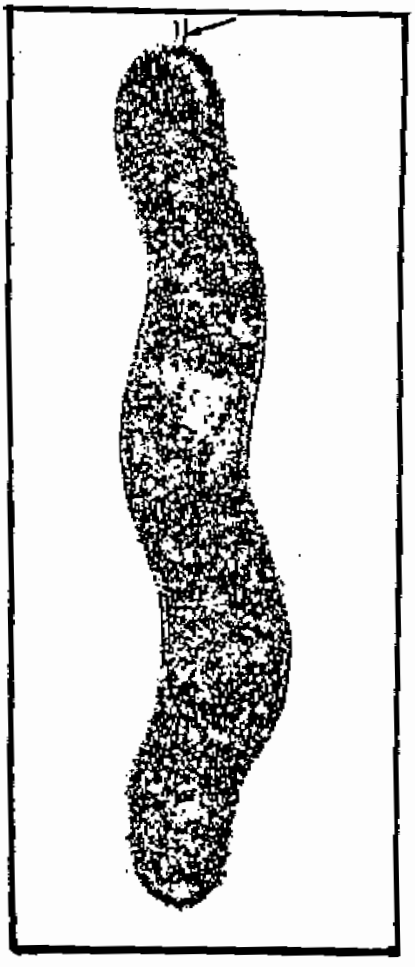

Fig.1 Longitdinal thin section of H.pylori organism showing the general ultra structural appearance. Note the smooth bacterial surface and the blunty riunded ends Arrow shows a single sheathed flagellun here (Bar=500nm)

Reproduced from (Goodwin, et al, 1985)