

510133-009-011

## Study of *Campylobacter Pylori* in Diabetic Patients

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### Abstract

Gastric antral biopsies were obtained from 40 insulin-dependent diabetics (IDDM) and non insulin dependent diabetics (NIDDD) in Kasr El Eini hospital (13 males and 27 females). Endoscopy showed that 47.5% of the patients have normal endoscopic appearance. Antral gastritis was present in 47.5%, oesophagitis in 15% and duodenitis in 12.5% of patients. *Campylobacter pylori* were isolated from the antral mucosa of 22.5% of the patients. 15.8% of these patients have normal endoscopic findings. 31.6% of patients have gastritis. No *Campylobacter pylori* were isolated from biopsies obtained from patients having only duodenitis. No significant difference in prevalence of *Campylobacter pylori* was found between the two groups of diabetes. *Candida albicans* were isolated more frequently from antral gastric biopsies than *Campylobacter pylori*.

### Introduction

IN the past few years *campylobacter pylori* has emerged as an important cause of gastritis and peptic ulcer in man [1]. This relation was accepted mainly because of the high healing rates achieved with bismuth and antibiotics and the occurrence of gastritis after the ingestion of *Campylobacter pylori* by volunteers [2]. Diabetics with poor glycemic control are particularly prone to develop bacterial and fungal infections [3]. Gastrointestinal symptoms have been reported to occur in up to three quarters of diabetic patients [4].

The aim of this work is to study the incidence of *Campylobacter pylori* coloniza-

tion of the gastric mucosa of diabetic patients in Kasr El Eini hospital.

### Material and Methods

*Patients:* Forty patients with known diabetes mellitus were included in the study. They were 13 males and 27 females. The ages ranged between 22 and 60 years, with mean age of 45 years. Diabetics under study were insulin dependent (IDDM) and non-insulin dependent (NIDDM).

*Endoscopy:* was done using fibre-optic gastroduodenoscope. Inspection of stomach and duodenal conditions were noted.

*Sample:* Gastric antral biopsies were obtained using endoscopy. Biopsies were

transported in broth media to the laboratory. Direct films were done for all biopsies after a process of grinding. The films were done fixed and stained by Gram's stain. The processed tissues were cultured on selective media for *Campylobacter* (Oxoid). The selective medium used was formed of chocolate agar added to it Polymixin B, rifampicin, trimethoprim lactate and actidione (Preston campylobacter selective supplement) and placed in a Gas pack jar (BBL) under microaerophilic conditions, using gas generating kit for campylobacters (Oxoid) that create 5% oxygen and 10% CO<sub>2</sub>. The plates were incubated at 37° for one week. Identification of the organisms was based on colony morphology and Gram's stain. Biochemical reactions were done; mainly urease and catalase tests. A positive culture for *Campylobacter pylori* had translucent small colonies, pleomorphic Gram negative bacilli, urease positive and catalase positive.

*Statistical analysis:* Statistical significance was determined utilizing Chi-square analysis, as described by Goldstone [5].

### Results

Endoscopy showed that nineteen patients have normal endoscopic appearance (47.5%). Antral gastritis was present in 19 patients (47.5%), oesophagitis in 6 patients (15%) and duodenitis in 5 patients (12.5%).

Of the 40 patients studied, *Campylobacter pylori* was isolated from the antral mucosa in 9 (22.5%) patients. These included 3 males (23%) and 6 females (22.2%) Statistically no significant difference was found in prevalence of *Campylobacter pylori* infection between both sexes (Table 1).

The mean age was 47 years for the

*Campylobacter pylori* positive patients, compared with 44.6 years for those who were found to be *Campylobacter pylori* negative. The difference in mean age between the two groups was not statistically significant (Table 1).

*Campylobacter pylori* were isolated from 3 out of nineteen gastric biopsies obtained from patients with normal endoscopic findings (15.8%) and from six out 19 biopsies obtained from patients having gastritis with or without concomitant duodenitis (31.6%). No *Campylobacter pylori* were isolated from samples obtained from patients having only duodenitis (Table 2).

*Campylobacter* was isolated from the antral mucosa biopsy specimens in 5 out of 20 patients (25%) with insulin dependent diabetes (IDDM), compared with 4 out of 20 (20%) of patients with non-insulin dependent diabetes (NIDDM). The difference in prevalence between the two groups was not significant (Table 3).

Mixed infections with *Campylobacter* and *Candida albicans* were found in four gastric biopsies. *Candida albicans* were isolated in pure culture from 5 gastric biopsies (Table 4).

### Discussion

In the last few years *Campylobacter pylori* has been considered as one of the important human pathogens. Various curved Gram negative bacilli have been periodically reported in the stomach for a long period, but Warren and Marshall in 1983 [6] were the first to successfully culture *Campylobacter pylori* from the stomach of patients suffering from active chronic gastritis.

In this study *Campylobacter pylori* was isolated from the antral mucosa in 9 out of

Table (1): Characteristics of Patients Studied.

	Charaacteristics of		
	All patients	Patients with C. pylori	Patients without C. pylori
No. of patients (%)	40	9 (22.5%)	31 (77.5%)
Males / females	13/27	3 (23.1%) / 6 (22.2%)	10 (76.9%) / 21 (77.8%)
Age (year)	45.1	47.2	44.6
Mean	22-	30.60	22-60
Range	60		
Duration of D.M. (year)		8.1	7.5
Mean	7.7	2-12	3-20
Range	2-20		

Table (2): Correlation between Endoscopic and Micrpbiology Findings.

Endoscopic appearance	Total of patients	C. pylori (positive /total)	% of total	<i>p</i>
Normal endoscopy	19	3/19	15.8%	NS
Abnormal endoscopy:	21	6/21	28.6%	
Oesophagitis alone	1	0/1	0%	
Antral gastritis	19	6/19	31.6%	
Duodenitis alone	1	0/1	0%	

*p* = Probability

Table (3): Relation between the Type of Diabetes and C. Pylori.

Culture	IDDM	NIDDM	<i>p</i>
Positive	5 (25%)	4 (20%)	NS
Negative	15 (75%)	16 (80%)	NS
Total	20	20	

Table (4): Summary of Culture Findings.

Culture findings	No. of cases	% of total
No. growth	26	65 %
C. pylori	9	22.5%
Pure C. pylori culture	5	12.5%
Pure candida culture	5	12.5%
Mixture growth of C. pylori and candia	4	10%

40 diabetics (22.5%). This result obtained is comparable with the 21-25% prevalence reported in normal asymptomatic volunteers [7]. This is significantly less than the 40-65% prevalence found by Taylor et al. [8] in unselected patients undergoing upper gastrointestinal endoscopy and the 60% prevalence found by Graham et al [9] in patients with non-ulcer dyspepsia.

The noted 22.5% prevalence of *Campylobacter pylori* in diabetic patients in this study suggests that diabetic patients are no more infected with *Campylobacter pylori* than normal population and did not support the view that diminished resistance in diabetes may predispose to infection with this bacterium. If reduced immunity was a main predisposing factor in colonization by *Campylobacter pylori*, then we would expect to find an increased prevalence of this organism. Rathbone et al. [10], reported considerably raised Ig G and Ig A serum antibody titres to *Campylobacter pylori* in colonized patients with gastritis. Bernatowska et al. [2] stated that specific antibodies which are raised in patients with *Campylobacter pylori* gastritis appear to have no relevance to either protection or resolution of infection and that patients with severe hypogammaglobulinaemia are not particularly prone to attack by *Campylobacter pylori*. The dominant antibody class of seromucous secretions is the dimeric secretory Ig A. Wyatt et al. [11] reported Ig A coated *Campylobacter pylori* on antral mucosal surface and in the upper portions of the gastric pits in all cases with active gastritis, and concluded that the presence of these antibodies clearly does not eliminate infection in the gastric pits.

No significant difference in the prevalence of *Campylobacter pylori* was found among IDDM and NIDDM in this study. Most patients have gastritis and the organ-

isms were not isolated from patients suffering only from duodenitis.

Mixed infections with *Campylobacter pylori* and *Candida albicans* were found in four gastric biopsies. *Candida albicans* were isolated in pure culture from 5 gastric biopsies.

The suppressive action of the gastric acid contributes a major non-specific defense against infection with pathogenic microorganisms. Pronounced reduction of gastric acid by different types of drugs (antacids, antimuscarinics, H<sub>2</sub>-receptor antagonists) will result in significant bacterial overgrowth [12]. O'Connor et al. [13] found that the prevalence of antral *Campylobacter pylori* was low in patients with pernicious anaemia so that a high pH of gastric juice does not encourage colonization. On the other hand in patients with duodenal ulcer disease acid levels are high and up to 90% of patients exhibit antral gastritis associated with *Campylobacter pylori* [14]. Thus situation in which antral pH is likely to be raised are those in which *Campylobacter pylori* are absent and vice versa.

*Candida albicans* were isolated frequently from antral gastric biopsies than *Campylobacter pylori*. This could be explain the fact that diabetes is one of the conditions that promote candidiasis due to diminished resistance to local and general infection [15].

In conclusion, this study suggests that diabetic patients with upper gastrointestinal symptoms have a prevalence of *Campylobacter pylori* colonization similar to that reported in normal volunteers.

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