PERIOD PREVALENCE RATE OF HELICOBACTER PYLORI INFECTION IN EGYPTIAN CHILDREN WITH TYPE ١ DIABETES

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Dedication

With all my love,

To my mother, father, husband

And my beloved son

And all my Colleagues.

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List of Abbreviations

H. Pylori ---------- Helicobacter Pylori
DEMPU----------Diabetic endocrine metabolic pediatrics unit
CagA----------cytotoxin associated gene antigen
VacA:---------- vacuolating cytotoxin associated gene antigen
Cag-PAI ----------cag pathogenicity island
OIP ---------- outer inflammatory proteins
DUP----------Duodenal ulcer promoting gene
ROS---------- Reactive oxygen species
PUD----------Peptic Ulcer Disease
NSAD ---------- non-steroidal anti-inflammatory drugs
NUD----------Non-ulcer dyspepsi
PPI---------- Proton Pump Inhibitor
GERD ----------Gastro oesophageal reflux disease
RAB----------recurrent abdominal pain
STFR---------- soluble transferrin receptor
IDA ---------- Iron deficiency anemia
ITP---------- Idiopathic thrombocytopenic purpura
PCR ----------polymerase chain reaction
EGD----------Esophagogastroduodenoscopy
HPSA----------Meridian Diagnostics Inc., Cincinnati, Ohio
UBT ---------- urea breath test
ELISA---------- enzyme linked immunos-orbent assay
PCR----------Polymerase chain reaction
IgG ---------- Immunogloblin G
DM ---------- *Diabetes mellitus*
ICA ---------- islet cell cytoplasm
IDDM----------insulin dependent diabetes mellitus
NIDDM----------non insulin dependent diabetes mellitus

GDM ----------Gestational diabetes mellitus
IAA----------autoantibodies to insulin
GAD---------- glutamic acid decarboxylase
T١ DM ----------Type I diabetes mellitus
T٢ DM---------- Type ٢ diabetes mellitus
MODY ----------maturity onset diabetes of the young
HLA ---------- human leucocyte antigen
GK ----------glucokinase
WP ----------western pacific
SEA---------- Southeast Asian
lDDNl٢---------- Insulin locus
ICA----------islet cell antibody
GABA---------- glutamic acid to amino butyric acid
IAA---------- insulin autoantibodies
FPG---------- Fasting Plasma Glucose
OGTT---------- oral glucose tolerance test
DKA---------- diabetic Ketoacidosis
HHS---------- Non ketotic hyperosmolar coma
Po----------per oral
CSII---------- continuous subcutaneous insulin infusion
MDD---------- multiple day injection

Abstract

This study included ٥٠ diabetic pediatric patients (age ranged from ٤ to ١٦ years) complained of gastrointestinal symptoms, who presented to the endocrinology unit at Cairo University Specialized Pediatric Hospital with gastrointestinal complaints and had been tested for the presence of H. pylori infection by the C ١٣ urea breath test. Only Twelve positive cases approved for undergoing endoscopy for confirming H. pylori infection by biopsy specimens obtained by upper gastrointestinal endoscopy and for assessment of gastritis. The overall incidences of H.pylori infection in all children (cases and controls) we have studied were ٥٥ % In our study no statistically significant difference was found regarding H .pylori positivity between diabetic cases and controls, as ٦٥% of cases were positive compared to ٤٥٪ of controls .

Key words: H.pylori , gastrointestinal symptoms, urea breath test, endoscopy

Aim of Work

Our Aim in this study to :

١-Evaluate the period prevalence rate of H.pylori in type ١ diabetes patients with gastrointestinal trouble at the diabetic endocrine metabolic pediatrics unit (DEMPU).

٢-Study the correlation of H.pylori with the age, duration of diabetes, clinical, laboratory and histopathological findings.

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Introduction

Helicobacter Pylori is a worldwide bacterium that infects human gastric mucosa, generally persists for life in the infected tissue unless adequately treated ***(Yakoob et al., ٢٠٠٤),*** Fifty percent ٠f the world's population carry Helicobacter pylori in their stomach with the incidence up to ٨٠٪ in developing countries ***(Adrienne et at., ٢٠٠٢).***

The prevalence of H.Pylori varies greatly among countries and among, population groups within the same country ***(Feldman , ٢٠٠١)***, its prevalence is extremely high among Egyptian schoolchildren and is one of the main causes of growth failure in Egyptian children ***(Abu zekry et al., ٢٠٠٠, Mohammad et al., ٢٠٠٥).***

With regard to malignant diseases , H.pylori has been recognized as a class ١ human carcinogen as identified by the international Agency for Research on Cancer ***(Xiao-Qin et al., ٢٠١١),*** this actually due to extensive epidemiological data, showing an association between H.pylori seropositivity and increased gastric cancer risk. However, it seems plausible that H.pylori colonization might also promote tumor formation in extra gastric target organs such as the colorectal mucosa, pancrease and liver through stimulation of circulating growth factors or other local, more site-specific mechanisms ***(Suerbaum and Michetti, ٢٠٠٢).***

On the other hand, H. Pylori is considered the most important risk factor for non-cardia gastric mucosa-associated lymphoid tissue (MALT) lymphomas ***(Moss, ٢٠٠٧).***

Type ١ diabetes is an autoimmune disease in which destruction of pancreatic islet beta cells leads to insulin deficiency ***(Fourlanos et al., ٢٠٠٤).***

In children with type ١ diabetes, gastrointestinal symptoms are frequently observed although their prevalence and impact on glycemic control are poorly defined ***(Quan et al., ٢٠٠٨),*** Delayed gastric emptying and antral dysmotility is recognized as a major cause of H.pylori colonization in diabetes mellitus ***(Quid, ١٩٩٨).***

Alteration of glucose metabolism in diabetes has been suggested as promoting H.pylori colonization ***(Dore et al., ٢٠٠٠).***

Several studies have investigated the prevalence of H.pylori in diabetic patients and a possible role of the infection in their metabolic control with discordant results ***(Ojetti et al., ٢٠٠١),*** some studies did not exhibit a higher prevalence of H.pylori in diabetics patients and did not support any correlation between metabolic control and infection ***(Peach et al, ٢٠١١),***while others have demonstrated a higher seroprevalence of the infection in diabetic patients and significantly worsens metabolic control in children and adolescents with type ١ diabetes mellitus ***(Toporowska , ٢٠٠٧).***

PATIENTS AND METHODS

This study included ٥٠ diabetic pediatric patients (age ranged from ٤ to ١٦ years) complained of gastrointestinal symptoms, who presented to the endocrinology unit at Cairo University Specialized Pediatric Hospital with gastrointestinal complaints and had been tested for the presence of H. pylori infection during period of six months by the C ١٣ urea breath test. Only Twelve positive cases from thirty positive cases approved for undergoing endoscopy for confirming H. pylori infection by biopsy specimens obtained by upper gastrointestinal endoscopy and for assessment of gastritis.

Twenty healthy non diabetic children (age and sex matches) were included as controls and together with the ٥٠ diabetic pediatric patients were screened for H. pylori by the c١٣ urea breath test accordingly classified into H. pylori positive and H. pylori negative in an attempt to compare the two groups and correlate between H. pylori infection with the age, duration of diabetes, clinical, laboratory and histopathological findings.

Inclusion Criteria:

A- Age: below l٨ years.

B- Diagnosis of diabetes according to WHO definition.

C- complaining of GIT symptoms as Recurrent abdorninal pain ,Anorexia , Recurrent vomiting

Exclusion criteria

١- Children who used antimicrobial therapy or proton pump inhibitors within one month from the study

٢- Cardiovascular. Pulmonary or genitourinary causes of abdominal pain

٣- Anatomic abnormalities

٤- helminthes infestation or Urinary tract infection

❖ The children underwent:

A-History:

- A careful history was taken from each case including:

١- Personal history:

-Name. - Age.

-Sex - Residence.

-Consanguinity - number and order between sibiling

٢. Present History:

- Age of onset
- Nature of symptoms:

- Diarrhea - Vomiting

- Anorexia - Recurrent abdominal pain

Growth failure

Drugs:

- Antibiotics, antacid, metronidazole and others

٣-Diabetic history:

- Daily insulin requirement .

٤-Past History:

- Drug intake. -Any significant illness

٥-Family history:

- Socio-economic standard
  - Overcrowding considered positive when(No of rooms <٢,No of family member>٥,positive bed sharing)
  - Socioeconomic standered scored by Fahmy and EL-Sherbini ,١٩٨٣ (low socioeconomic stander score<٤٠)estimating income/year, residence ,overcrowding.
  - Bad feeding habits was considered when using common food utensils for eating , eating spicy food.

- similar condition

B-Full clinical examination with special emphasis on:

l- General appearance as pallor ٢- height

٣- Weight . ٤- Nutritional status

٥- Chest examination ٦- Back and limbs

٧- Abdomen: Tenderness, distention, organomegally intestinal sounds' back and spine

٨- Heart.

C-Investigations:

١-CBC

٢-Urine analysis and culture & sensitivity

٣-Stool analysis to exclude helminthes infestation .

٤- Hba١c one reading at duration of six months survey

٥-one random blood sugar reading .

٦-UBT

٧-Endoscopy