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RELATIONSHIP BETWEEN HELICOBACTER PYLORI INFECTION AND UPPER GASTRO-INTESTINAL BLEEDING IN NORTHERN IRAN CHILDREN

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Abstract:

Background: *There are controversies regarding relationship between Helicobacter pylori (H. pylori) and upper gastro-intestinal bleeding (UGIB) in children. The goal of this study was to assess the relationship between H. pylori infection and UGIB in Northern Iranian children.*

Material and method: *One hundred children who had UGIB indicated for upper gastrointestinal endoscopy and 100 children without UGIBwho were candidate for upper endoscopy because of chronic abdominal pain considered as their controls. After stabling vital sign, nasogastric tube inserted and washing was done then within 24 hours of admission, endoscopy conducted for all children in the case group (under general anesthesia). Upper endoscopy was done for all participants by a children gastroenterologist. A single pathologist reviewed all specimens.*

Results: *Mean age of cases was 6.2±3.2 years and mean age of controls was 7.1±2.9 years respectively. There was no relationship between H. pylori and UGIB .Erosion in fondus was significantly higher in cases (0.001) and erythema in antrum was significantly higher in controls(p<0.001). Inactive gastritis was significantly higher in H .pylori negative cases (0.006) while moderate gastritis was present in all H .pylori positive ones(0.009).*

Conclusion: We found no relationship between H. pylori infection and UGIB in children. More studies are needed.

Key words: ***H pylori, children, Gastro intestinal bleeding***

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INTRODUCTION:

Bleeding could occur in any part of gastrointestinal (GI)system which makes discomfort for both children and their caregivers(1). Incidence of upper GI bleeding(UGIB) in children who had Intensive Care Unit (ICU) admission ranged from 6.4 to10%(2, 3). UGIB mostly presents as melena or hematemesis and rarely as hematochezia. Mucosal lesions, variceal
haemorrhage, infections and drugs are common causes of UGIB(4).

A gram negative spiral- bacterium which could be found in the gastric mucous layer or near to the epithelial lining of the stomach is Helicobacter pylori (H. pylori). Its prevalence in children ranges from 10% to 80%(5). More than 90% of duodenal ulcers and near 80% of gastric ulcers are related to H. pylori (6-8).

Literature shows that there is relation between H. pylori and UGIB in adults (9-11). In a previous study, El-Mazary reported higher prevalence of H. pylori in children with non-variceal bleeding than controls(12).

We designed this study to assess the relationship between H. pylori infection and UGIB in Northern Iran children.

MATERIAL AND METHODS:

This cross sectional study conducted in Amikola children hospital (affiliated hospital of Babol university of medical sciences in north of Iran) between 2009 and 2016.

Children with age more than 6 months, who had UGIB indicated for upper gastrointestinal endoscopy considered as case groups while age and sex matched children without UGIB who were candidate for endoscopy because of chronic abdominal pain considered as their controls.

Exclusion criteria were: coagulopathy, bleeding disorders, diabetes mellitus
or chronic illness, unstable hemodynamic, foreign body ingestion, oesophageal and gastric varices,caustic ingestion ,recent PPI(proton pomp inhibitor) and antibiotic consumption.

Informed consent forms were taken from all parents before study entrance.

After stabling vital sign, nasogasrtic tube inserted and washing was done then within 24 hours of admission, then endoscopy conducted for all children in the case group (under general anaesthesia).

Upper endoscopy was done for all participants by a children gastroenterologist. Pentax (EPM 3500) paediatric gastroscope was used for the procedure. Samples from oesophagus, gastric and duodenum collected for all cases. Macroscopic findings of endoscopy were recorded.

A single pathologist reviewed all specimens for microscopic assessment (with Giemsa staining for H.pylori). Sydney classification was applied for endoscopic report of gastritis. (13)All data were analyzed using SPSS software version 22 (SPSS Inc., Chicago, IL, USA). Data were presented as Mean± SD for continuous or frequencies for categorical variables. Independent sample t test was used for comparison of continuous variables. P value less than 0.05 was considered as significant.

RESULTS:

One hundred cases in bleeding group and 100 in control group enrolled.

Demographic characteristics are summarized in table 1. There was no relationship between H .pylori and UGIB(table 1).

Table 1: Demographic characteristics

	Cases	controls	P value
Age (mean± SD)(years)	6.2±3.2	7.1±2.9	0.07
Sex Male Female	 58(58%) 42(42%)	 46(46%) 54(54%)	 0.1
H. pylori infection Yes No	 10(10%) 90(90%)	 12(12%) 88(88%)	 0.8

Mean age in cases who were positive for H pylori was 10.2±3.3 years and 8.1±2.7 in controls (p<0.001).

Erosion in fondus was significantly higher in cases and erythema in antrum was significantly higher in controls (table 2).

Table 2: Endoscopic findings in two groups

	Cases	controls	P value
Esophagus			
Erythema	33%	68%	
Erosion	7%	0	0.08
Ulcer	0	0	
Nodularity	1%	0	
Mallory Weiss	3%	0	
Fondus			
Erythema	12%	12%	0.001
Erosion	18%	1%	
Ulcer	0	0	
Nodularity	0	0	
Sub epithelial bleeding	18%	0	
Body			
Erythema	8%	17%	0.3
Erosion	12%	2%	
Ulcer	2%	0	
Nodularity	0	0	
Antrum			
Erythema	26%	67%	<0.001
Erosion	14%	2%	
Ulcer	2%	0	
Nodularity	18%	37%	
Bulb duodenum			
Erythema	5%	1%	
Erosion	1%	3%	0.07
Ulcer	3%	0	
Nodularity	6%	11%	
Duodenum			
Erythema	1%	2%	
Erosion	2%	3%	0.08
Ulcer	0	0	
Nodularity	2%	2%	

All of duodenal ulcers were H. pylori positive and antral nodularity was more in H.pylori positive cases (table3).

Table 3: Endoscopic findings in GI bleeding group.

		H.pylori positive	H.pylori negative	P. Value
Esophagus	Normal	13.6 %	86.4 %	0.191
	Erythema	3 %	97 %	0.159
	Erosion	14.3 %	85.7 %	0.533
	Ulcer	-	-	-
	Nodularity	0	100 %	1.000
	Mallory Weiss		100 %	1.000
Fondus	Normal	12.9 %	87.1 %	0.311
	Erythema	0	100 %	0.604
	Erosion	5.6 %	94.4 %	0.685
	Ulcer	-	-	-
	Nodularity	-	-	-
	Sub epithelial bleeding	5.55 %	94.45 %	0.583
Body	Normal	11.4 %	88.6 %	0.684
	Erythema	12.5 %	87.5 %	0.583
	Erosion	0	100 %	0.604
	Ulcer	0	100 %	1.000
	Nodularity	-	-	-
Antrum	Normal	2.4 %	97.6 %	0.042
	Erythema	3.8 %	96.6 %	0.447
	Erosion	0	100 %	0.349
	Ulcer	0	100 %	1.000
	Nodularity	56.6%	44.4 %	0.000
D1(duodenum)	Normal	5.9 %	94.1 %	0.006
	Erythema	0	100 %	1.000
	Erosion	0	100 %	1.000
	Ulcer	100 %	0	0.001
	Nodularity	33.3 %	66.7 %	0.109
D2(duodenum)	Normal	10.5 %	89.5 %	1.000
	Erythema	0	100 %	1.000
	Erosion	0	100 %	1.0000
	Ulcer	-	-	-
	Nodularity	0	100 %	1.000

Endoscopic findings were similar between two control groups.(table 4)

Table 4: Endoscopic findings in control group.

		H.pylori positive	H.pylori negative	P. Value
Esophagus	Normal	18.8 %	81.3 %	0.191
		8.8 %	91.2 %	0.191
	Erythema	-	-	-
		-	-	-
	Erosion	-	-	-
	Ulcer	-	-	-
	Nodularity			
	Mallory Weiss			
Fondus	Normal	12.6 %	78.4 %	1.000
		8.3 %	91.7 %	1.000
	Erythema	0	100 %	1.000
		-	-	-
	Erosion	-	-	-
	Ulcer	-	-	-
	Nodularity			
	Sub epithelial bleeding			
Body	Normal	12.3 %	88.7 %	1.000
		11.8 %	88.2 %	1.000
	Erythema	0	100 %	1.000
		-	-	-
	Erosion	-	-	-
	Ulcer			
	Nodularity			
Antrum	Normal	0	100 %	0.208
		11.9 %	88.1 %	1.000
	Erythema	0	100 %	1.000
		-	-	-
	Erosion Ulcer Nodularity	18.9 %	81.1 %	0.120
D1(Duodenum)	Normal	11.8 %	88.2 %	1.000
		0	100 %	1.000
	Erythema	0	100 %	1.000
		-	-	-
	Erosion Ulcer Nodularity	18.2 %	81.8 %	0.618
D2(Duodenum)	Normal	12.5 %	87.5 %	1.000
		0	100 %	1.000
	Erythema	0	100 %	1.000
		-	-	-
	Erosion Ulcer Nodularity	0	100 %	1.000

Esophagitis and inactive gastritis were the most common pathologies in cases and controls (table5).

Table5: Pathology findings in two groups.

Pathology	Cases	Controls
Normal	39 %	23 %
Esophagitis	20 %	35 %
Inactive gastritis	29 %	53 %
Mild gastritis	6 %	3 %
Moderate gastritis	2 %	2 %
Severe gastritis	0	0
Duodenitis	8 %	4 %
Inadequate sample	2 %	2 %

Inactive gastritis was significantly higher in H .pylori negative cases while moderate gastritis was present in all H .pylori positive ones in cases (table 6).

Table6: Pathology in H .pylori positive and negative cases.

Pathology	H.pylori positive	H.pylori negative	P. Value
Normal	0	100 %	0.006
Esophagitis	0	100 %	0.205
Inactive gastritis	24.1 %	75.9 %	0.006
Mild gastritis	16.7 %	83.3 %	0.478
Moderate gastritis	100 %	0	0.009
Severe gastritis	-	-	-
Duodenitis	0	100 %	1.000
Inadequate sample	0	100 %	1.000

Pathologic findings were similar between two control groups.(H. pylori positive and negative) (table7)

Table7: pathology in H .pylori positive and negative control groups.

Pathology	H.pylori positive	H.pylori negative	P. Value
Normal	4.3 %	95.7 %	0.286
Esophagitis	2.9 %	97.1 %	0.052
Inactive gastritis	15.3 %	84.7 %	0.368
Mild gastritis	33.3 %	66.7 %	0.321
Moderate gastritis	50 %	50 %	0.227
Severe gastritis	-	-	-
Duodenitis	0	100 %	1.000
Inadequate sample	0	100 %	1.000

DISCUSSION:

The results of current study showed that there was no relationship between UGIB and H. pylori infection in children between 6 months and 14 years.

We also found that H.pylori was present in 11% of cases with UGIB.

In a study conducted by Usta and Urganci, H.pylori rate in children with GI bleeding reported as 20%(13). El-Mazary et al evaluated 70 children with UGIB and 38 controls and reported higher rate of H. pylori infection in bleeding group(12). They suggested that this could be indicative of strong relationship between H .pylori infection and gastric and duodenal ulcers as the main causes of bleeding which is not in agreement with our findings.

Motamed et al reported prevalence of H. pylori infection as 9% in children suffering from gastrointestinal symptoms(14). They also reported relationship between antral nodularity and H. pylori Infection which was present in current study. Like our findings, gastritis was the most common pathological observation in H. pylori positive group.

Inactive gastritis, esophagitis, duodenatitis, and active gastritis were the most common pathological findings in our study groups. In Varanasi et al study, H.pylori infection was found in 30.7% of patients with esophagitis(15). In our study like Motamed et al study, most cases with negative H. pylori result showed gastritis or esophagitis(14). In their study such as ours, there was significant association between H. pylori and antral nodularity.

Three cases in this study who had duodenal ulcer had positive H. pylori infection.

In Javid et al study, 80% of cases with duodenal ulcer had H. pylori infection(16). Antral nodularity was higher in H. pylori positive cases which is consistent with previous studies(14, 17). In Parsad and Luzza's studies nodularity was found in near 40% of H. pylori positive cases (17, 18).

H.pylori and EBV were considered to be associated with abnormal pathology in the stomach(19). Active gastritis and moderate and severe active gastritis were reported in 17.8% and 2.9% of the patients in Cardenas-Mondragon et al's study(19).

Nodularity was the most common pathological finding in duodenum in both H.pylori positive and negative cases while in Kori et al study, mild and chronic duodenal inflammation reported in 6.5% of H.pylori positive cases(20).

In 1985, association between H. pylori and peptic ulcer was reported. This infection is acquired during childhood and adolescence both in developing and developed countries. Due to factors such as age, socioeconomic class and geographic distribution, prevalence of H. pylori differs between 10-80%(21, 22).

But there are controversies regarding association between this infection and peptic ulcers or GI bleeding(14, 23).

Larger multi centric studies are needed to evaluate association between H .pylori and GI bleeding or peptic ulcers.

CONCLUSION:

We found no relationship between H. pylori infection and UGIB in children. More studies are needed.

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