



ORIGINAL ARTICLE

Helicobacter pylori infection in children with recurrent abdominal pain.

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ABSTRACT... Objective: To find out the frequency of Helicobacter Pylori infection in children with recurrent abdominal pain. **Study Design:** Cross Sectional study. **Setting:** Pediatric Medicine, Children Hospital and Institute of Child Health, Multan. **Period:** November 2020 to May 2021. **Material & Methods:** A total of 148 children of both genders aged 4-12 years presenting with recurrent abdominal pain were included. Detailed history and physical examination was conducted. Frequency of helicobacter pylori was noted and its association with characteristics of the children studied was noted employing chi square test considering p-value < 0.05 as significant. **Results:** In a total of 148 children with RAP, 83 (56.1%) were male. Overall, mean age was noted to be 7.6 ± 1.9 years while 103 (69.6%) children were aged below 8 years. There were 77 (52%) children who belonged to rural areas whereas 103 (69.6%) were having poor socioeconomic status. Frequency of H. pylori was noted to be positive in 78 (52.7%) children with RAP. Male gender (p=0.001), age between 4-8 years (p=0.012) and poor socioeconomic status (p=0.001) were noted to have significant association with the frequency of H. pylori. **Conclusion:** Among children with RAP, frequency of H. pylori was very high. The H. pylori infection was linked with male gender, younger age and low socioeconomic status.

Key words: Abdominal Pain, Helicobacter Pylori, Stool.

INTRODUCTION

The Helicobacter pylori (H. pylori) is considered to be an important causative agent related to various gastrointestinal diseases.¹ H. Pylori is more common among elderly population as well as males.^{2,3} Poor socio-economic status, poor hygiene and large family size are some of the other commonly related risk factors for H. pylori.^{4,5}

Recurrent abdominal pain (RAP) is a common phenomenon among children and it is described as at least 3 episodes of pain during a period of 3 months that interfere with normal activities. Prevalence of RAP is estimated to range between 10 to 20% in children.⁶ A local study from Islamabad analyzing 43 cases reported prevalence of H. pylori as 75% among children suffering with RAP.⁷ Another study from India revealed prevalence of H. pylori to be 60.3% among children with RAP while this was noted to be 10% in controls.⁸

In Pakistan, not much work is seen in recent years analyzing prevalence of H. pylori especially in children having RAP while most studies conducted have been done on comparatively small sample size. This study was planned with a relatively larger sample to give more authentic information regarding frequency of H. Pylori in our local pediatric population with RAP as there is not much work seen locally.

MATERIAL & METHODS

This cross-sectional study was done at "Department of Pediatric Medicine, Children Hospital and Institute of Child Health, Multan, Pakistan from November 2020 to May 2021. Approval from Institutional Ethical Committee RE-23/75-7/05/20 was acquired. Written informed consent was taken from parents/guardians of all study participants. A sample size of 148 was calculated using: " $n = z^2 * p * (1-p) / e^2$ "

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Where $z = 1.96$, $p = 75\%$ and e (margin or error) as 7% .

Inclusion criteria was children of both genders aged 4-12 years presenting with RAP. Recurrent abdominal pain was labeled as minimum 3 discrete episodes of abdominal pain (assessed clinically on history) spanning more than 1 hour over a period of not less than 3 months. *H. pylori* infection was labeled by stool antigen testing. Severe pain was mentioned in visual analogue scale (VAS) at a score >6 at a scale between zero to 10 where zero was no pain while a score of 10 was worst possible pain. Exclusion criteria was children already taking antibiotics, bismuth and/or proton pump inhibitors, or those whose parents/guardians refuse to give consent of participation.

All the patients who met inclusion as well as exclusion criteria were registered from Outpatient Department. Detailed history was recorded and physical examination was done. Hemoglobin was measure. Fresh stool specimens from studied cases were sent to the "Institutional laboratory" for *H. pylori* stool antigen testing.

For data analysis, SPSS version 26 was utilized. Quantitative data was described as mean and standard deviation (SD) while qualitative variables were shown as frequencies and percentages. Post-stratification chi-square test was employed considering $p\text{-value} < 0.05$ as significant.

RESULTS

In a total of 148 children with RAP, 83 (56.1%) were male. Overall, mean age was 7.6 ± 1.9 years (ranging between 5 to 12 years) while 103 (69.6%) children were aged below 8 years. Mean height of our study cases was 84.5 ± 16.3 centimeters, mean weight 22.3 ± 47 kilograms and mean hemoglobin level was 12.3 ± 1.0 g/dl. There were 77 (52%) children who belonged to rural areas whereas 103 (69.6%) were having poor socioeconomic status. Table-I is showing characteristics of children enrolled.

Characteristics	Number (%)	
Gender	Male	83 (56.1%)
	Female	65 (43.9%)
Age	4 – 8 Years	103 (69.6%)
	9 – 12 Years	45 (30.4%)
Residential Status	Rural	77 (52.0%)
	Urban	71 (48.0%)
Socioeconomic Status	Poor	103 (69.6%)
	Middle Income	45 (30.4%)
Source of Drinking Water	Government Supply	38 (25.7%)
	Hand Pump	110 (74.3%)
Duration of Illness	Up to 6 months	110 (74.3%)
	More than 6 months	38 (25.7%)
Number of Pain Episodes	< 5	39 (26.4%)
	> 5	109 (73.6%)

Table-I. Characteristics of Children. (n=148)

Frequency of *H. pylori* was noted to be positive in 78 (52.7%) children with RAP (Figure-1).

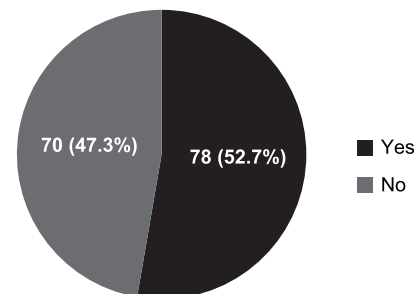


Figure-1. Frequency of *H. Pylori* Infection among children with RAP. (n=148)

Table-II is showing comparison of characteristics and study variables among children having RAP with and without *H. pylori* infection. Male gender ($p=0.001$), younger age ($p=0.012$) and poor socioeconomic status ($p=0.001$) were noted to have significant association with the frequency of *H. pylori* among children with RAP.

Characteristics		H. Pylori		P-Value
		Yes (n=78)	No (n=70)	
Gender	Male	57 (73.1%)	26 (37.1%)	0.001
	Female	21 (26.9%)	44 (72.9%)	
Age	4 – 8 Years	47 (60.3%)	56 (80.0%)	0.012
	9 – 12 Years	31 (39.7%)	14 (20.0%)	
Residential Status	Rural	45 (57.7%)	32 (45.7%)	0.187
	Urban	33 (42.3%)	38 (54.3%)	
Socioeconomic Status	Poor	72 (92.3%)	31 (44.3%)	0.001
	Middle Income	06 (7.7%)	39 (55.7%)	
Source of Drinking Water	Govt. Supply	18 (23.1%)	20 (28.6%)	0.458
	Hand Pump	60 (66.9%)	50 (71.4%)	
Duration of Illness	Up to 6 months	60 (76.9%)	50 (71.4%)	0.458
	More than 6 months	18 (23.1%)	20 (28.6%)	
Number of Pain Episodes	< 5	20 (25.6%)	19 (27.1%)	0.854
	> 5	58 (74.4%)	51 (72.9%)	

Table-II. Comparison of characteristics and study variables among children having RAP with and without H. Pylori Infection.

DISCUSSION

Children from developing countries are relatively more affected with H. pylori as prevalence ranges between 15 to 70% in the developing world.⁹⁻¹¹ In this study, among children with RAP, frequency of H. pylori was noted to be 52.7%. Our results are close to what was found by Rasool F from Lahore where they found the frequency of H. pylori among children with RAP to be 47%.¹² Data from Saudi Arabia revealed frequency of RAP among children with RAP to be as high as 73%.¹³ Data from Turkey described prevalence of H. pylori among children with RAP to be 49% which is close to what we found. Since the 1st identification of H. pylori, its relationship with RAP has not been well described.¹⁴ Conflicting results have been reported by researchers examining the relationship of RAP and H. pylori. A meta-analysis analyzing 45 studies with children having H. pylori and it was found that weak or no evidence was found between existence of H. pylori and RAP.¹⁵ A position statement by “North American Society of Pediatric Gastroenterology, Hepatology and Nutrition” stated no clear evidence of routine testing for H. pylori among children with RAP.¹⁶ Variation in frequency of H. pylori infection in RAP among children could be credited to difference in diagnostic criteria, age, race and regional differences.^{17,18}

We found that majority of the children with RAP

were male (56.1%). A study from Peshawar reported 61% of the children with RAP to be male which is quite close to what we noted. Data from Turkey also shared that boys formed majority of RAP cases (53%).¹⁴ A study from Iran showed a slight dominance of female gender among children with RAP.¹⁹ Mean age in our cases was 7.6 ± 1.9 years (with minimum age was 5 years while maximum age was 12 years). A local study by Younas et al revealed mean age of the children with RAP to be 86 ± 47 months which is close to what we found.²⁰ Data from Iran also found similarity to our study in mean age of the children with RAP.¹⁹

Our study had some limitations as well. As this was a single center study, multicenter studies with large sample size are needed to further enlighten burden of H. pylori among children with RAP. We were unable to note treatment and outcome of these children.

CONCLUSION






Among children with RAP, frequency of H. pylori was very high. The H. pylori infection was associated with male gender, younger age and low socioeconomic status. Patient visiting pediatric clinics with RAP should be examined carefully for possible H. pylori infection.

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AUTHORSHIP AND CONTRIBUTION DECLARATION

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2	Riaz Ahmed	Methodology, Literature Review.	
3	Sajid Hussain	Study concept, Proof reading.	
4	Muhammad Khalil Surani	Data collection, Drafting.	
5	Asif Karim	Literature review, Data interpretation.	
6	Mubina Ifat	Data collection.	