

Helicobacter Pylori positivity in Children with Recurrent Abdominal Pain and possible Risk factors

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الخلاصة

هدف الدراسة:

لتقييم علاقة الإصابة بالجرثومة الحلزونية وآلام البطن المتكررة عند الاطفال .

طريقة العمل:

تم فحص ٤٤ طفلا يعانون من الام البطن المتكررة وخاصة في المنطقة الشرسوفية و ٢٦ لا يعانون من نفس الاعراض (كونترول) أعمارهم ما بين ال ٤ سنوات وال ١٢ سنة وخلال فترة ٩ أشهر، تم الفحص بواسطة البحث عن المضادات الخاصة بالجرثومة الحلزونية في مصل الدم والمستضد في الخروج، دونت معلومات عن هؤلاء الاطفال تخص الحالة الاجتماعية والاقتصادية ومعلومات تخص السكن والعمر والجنس والازدحام في السكن.

النتائج:

أوضحت الدراسة ان نسبة الاطفال الذين يعانون من امراض البطن المتكررة والمصابون بالجرثومة الحلزونية (٦٤ %) بينما النسبة في الاطفال الذين لا يعانون من الام البطن هي (٤٦ %) ، وان انتشار هذه الجرثومة يتأثر عكسيا مع الحالة الاقتصادية والاجتماعية بينما تزداد نسبة الإصابة مع العمر .

الاستنتاجات:

أوضحت الدراسة ان هناك احتمال علاقة بين الام البطن المتكررة عند الاطفال والاصابة بالجرثومة الحلزونية وهؤلاء الاطفال يجب ان يعرضون للبحث عن الاصابة بالجرثومة الحلزونية ومن ثم اعطاء العلاج اللازم لاستئصالها

الكلمة المرجعية:

الجرثومة الحلزونية، والام البطن المتكررة

ABSTRACT

OBJECTIVE: To assess the association of H -pylori infection and recurrent abdominal pain in children.

Material and methods: The association of H -pylori infection and recurrent abdominal pain were studied in 44 children, aged 4-12 yrs. Using stool antigen test (HpSA) and serological identification of IgG by ELISA. 26 children without RAP were subject for HP identification also as a control group. Cases with specific causes for abdominal pain were excluded from the study. Information about demographic ,socioeconomic, envirometal living state were obtained to label possible risk factors. High percentage (85%) of HpSA and sero positive children with abdominal pain had complete symptomatic relief after eradication of organism.

Results: High percentage (64%) of children with recurrent abdominal pain show positive result for H-pylori stool antigen test and IgG identification in comparison with asymptomatic children (46%).

Conclusion: There is a possible association of H -pylori infection and recurrent abdominal pain in children and these patients should be considered for H -pylori eradication.

Key words: H-pylori(Hp), recurrent abdominal pain(RAP), Stool antigen test(HpSA), IgG-seropositive .

INTRODUCTION:

Recurrent Abdominal Pain (RAP) in children is defined as at least three episodes of abdominal pain during three month period and severe enough to affect their activities.^{1,2}

prevalence of RAP in school going children ranges between 10-20%.³ It is frequent diagnostic problem faced by general Physicians and Pediatricians. RAP has diverse etiology according to place and local conditions.

Helicobacter pylori (Hp) is a pathogen of human gastric mucosa and is considered to be the major cause of chronic gastritis and duodenal ulcer recurrence^(3,5).

The prevalence of Hp infection increases with age and is related to low socioeconomic status, unfavorable household living conditions such as bed sharing, over crowding beside community factors may also be an important risk factors in transmission and prevalence of H-pylori in childhood, the organism transmitted by oral fecal and oral-oral root⁽⁶⁾.

In developed countries 10% vs. 50% in developing countries of children are infected by the age of 10 years. the organism is considered as class 1 carcinogenic^{6,7}

Childhood appears to be a high-risk period for Hp infection. Abdominal pain with or without vomiting is the most frequent symptom and is usually associated with a mild chronic gastritis but infection may be asymptomatic^{6,8}

Recurrent abdominal pain (RAP) is a common problem in pediatric patients, and a confusing one^(7,9). The relationship between HP infection and RAP is ascertained by improvement of pain with eradication therapy in children with positivity for H.pylori.

Aim Of The Study

To assess the relationship between H. pylori infection and recurrent abdominal pain in pre school and school children.

Material And Methods

A total of 70 children were enrolled in this study 44 with RAP and 26 without RAP (control group, matching for ages, risk factors) but attended clinic for other complaint, all of them presented in private clinic. After exclusion of other causes of recurrent abdominal pain by thorough patient-history, family-history, physical examination and laboratory work up. Children with recurrent abdominal pain and no cause can be identified were evaluated for *H-pylori* infection by stool antigen test and serological study, which were done for those without RAP also.

The study was conducted over 9 months (3 months for collection of patients and 6 months for follow up) period from January 2010 – Sept 2010, children age 4-14 years, mean age 8.25±3.45 years, 26 male and 18 female vs. 16 male and 10 female for those with RAP and without RAP respectively.

H- pylori infection was diagnosed by stool antigen (HPSA) test and serum IgG anti-H pylori antibodies (ELISA). H- pylori positivity was considered if the two tests were positive.

The stool antigen test was performed using the HPSA test device which is a rapid immunoassay {ACON lab, Inc- HPSA test device} for detection of H-pylori antigen in human feces....and for anti-H pylori antibodies serum samples (2 ml) were stored at – 20 C° and assayed for IgG anti-*H pylori* antibodies using a commercial ELISA (Biohit,

Finland). The kits have been validated in patients undergoing routine gastro-intestinal endoscopy in which antral biopsy specimens had been taken for the detection of *H. pylori* by culture, histopathology and urease test. The *sensitivity and specificity* of both tests was *high relative to endoscopy-based methods*.^{11,12}

Socio-demographic information and information about **Socioeconomic** status , **household density** were obtained

Statistical analyses were conducted using the Statistical Program for the Social Sciences version 17 (SPSS). The proportional test and the Chi-square test of significance was adopted to reveal any significant differences in group comparisons. Informed consent in writing was obtained from the children's parents in all cases. Values were pressed as mean \pm SD. The χ^2 test was used to compare the prevalence of *H. pylori* infection in children with RAP and in the control group . A P- value below 0.05 was consider to be significant.²⁰

Results

From 1500 patients attended privat clinic for differrent complaints One hundred fourty five (145) patients suffering from RAP, the prevelace of RAP (10%), in 44 of them no identified cause can be picked up, those patients , especially with epigastric localization of pain were evaluated by stool antigen test and serologically for *H.pylori* infection.

Of 44 children with RAP, 28 (64%) child were postive for both stool antigen test and IgG while 16(36%) were negative. In the cotrol group, of the 26 children with out RAP,12 (%) were positive for *H.pylori* IgG and stool antigen test and 14 (%) were negative. The 28 (64%) *H-pylori* positivity children with RAP were compared with 12(46%)infected children with out RAP using stool antigen test and IgG antibodies against Hp, P-value >0.05 (0.1533) - (Table 1).

Table 2 display number of risk factors in acquistion of *H-pylori* infection. The older the child(6years and older vs .<6years) , low socioeconomic condition (middle and low vs. high), crowded living enviroment(croweded vs. non crowded) show significant statistical difference in the prevelance of *H-pylori* infection between the two groups $P < 0.05$. And so more raise in suspicion of *H-pylori* as possible cause for RAP.

While for the sex(male vs.female) , residence(urban vs. rural) , type of water supply (tap water vs. non tap water) show non- significant statistical difference in the prevelance of *H-pylori* between the two groups $P > 0.05$.

All patients with RAP and positive for *H-pylori*(using stool antigen test and IgG) were put on *H- pylori* eradication drugs(clarithramycin +metornidazol+ omperazole) for 10 days. Abut 85% of patients had complet symptomatic relief when followed over period of 6 months

Table 1. Comparism of IgG antibodies to H-pylori in children with and without recurrent abdominal pain

Group		Stool antigen test and IgG sero positive	
		NO.	%
RAP+	Hp+	28	64
RAP+	Hp-	16	36
RAP-	Hp+	12	46
RAP-	Hp-	14	54

Abbreviation . RAP; recurrent abdominal pain , Hp; Helicobacter pylori ,
p=0.153

Table 2. Distribution of cases with RAP and poitive(stool antigen test and IgG)for H-pylori, according to different variables

Variables	No.Tested	No.of Postitive (HpSA+ IgG) &%	P-value
Sex			
Male	26	15(58%)	0.228
female	18	13(72 %)	
Age			
<6yrs	29	15(52%)	0.035
6yrs and older	15	13(82%)	
Residence			
Rural	25	15(60%)	0.366
urban	19	13(68%)	
Water suply			
Tap water	18	11(61%)	0.228
Others(rivers&wells)	26	16 (62%)	
Socio economic class			
High	6	1(17%)	0.002
Midle	18	13(72%)	
Low	20	15(75%)	
Crowding index			
Crowded >2 p/ room	29	20(69%)	0.032
Not crowded	15	8(53%)	

DISCUSSION

Recurrent abdominal pain is a common problem in pediatric practice, especially in preschool children and adolescent¹⁻⁴. The incidence of organic and non-organic causes of RAP are variable in different studies⁴⁻⁷. Different studies estimated the prevalence being as high as 10 -15%^{7,8}. In children H. pylori infection can present with abdominal pain but may be asymptomatic^{1,5}. Our study in agreement with other studies for prevalence(10%) and for causes of RAP, in most cases the causes can be identified-organic causes^{7,8} but differ from other studies which mention the non organic causes for RAP were the commonest one^{1,9}.

The humeral immune response to H-pylori infection is reflected in the immunoglobulin levels in serum, while the combination of culture and histological examination of gastric biopsy specimens is considered the standard for confirmation the diagnosis of H-pylori⁵⁻¹⁰. Endoscopic examination of children presents some difficulties, and often general anesthesia is required to perform the procedure **so the families unaccept the idea and regarded it as an invassive procedures**⁷. Hp-specific (IgG) antibodies, stool antigen test are alternative non invasive method of detection of the Hp infection has been developed and it seems to be valuable in the assessment of children presenting RAP and other gastrointestinal symptoms^{1,10-14}.

In the present study, (IgG) antibody and stool antigen test revealed a(64%) prevalence of Hp infection in our children with RAP. On the other hand, the prevalence of Hp infection in the control group was also high (46%). In comparing between the two groups statistically no significant difference(table1) thus the association between Hp infection and RAP was not high. On other hand the high prevalence of H-pylori infection in children with and without RAP(64%,46%) respectively in our study it might be explained on base of the age (the mean age was 8.25 ± 3.45 years in our setting) since the prevalence of infection is directly increase with the age in addition most of our studied children from low and middle social class in both groups so probable source of this infection could be due to lack of safe water, poor hygiene and poor dietary habits^{1,10,15-16}.

The prevalence of H-pylori infection in patients with RAP was not significantly different from that of asymptomatic children ($P > 0.05$). Thus, association between H-pylori infection and RAP was not significant, this finding is in agreement with some finding and differ with other studies, in review the studies we find the role of H-pylori infection in the etiology of child hood RAP is controversial. Many researchers have shown an association between H-pylori infection and RAP^{8,17} while several others contradict this finding^{15,18,19}.

In review the variables affect the prevalence of RAP related to H-pylori in children. The study reveal that the age, socio economic condition, living situation (*6years and above vs. <6years, low and middle vs. high socio economic condition, crowded living vs. non crowded*) increase prevalence of RAP related to H-pylori in children, this difference statistically significant ($P < 0.05$) as in table 2, this finding explained on the base of these variable affect prevalence of H-pylori in population as whole and especially in children^{10,7,20,21}.

While for sex, nature of water supply, residence(*female vs. male, tap water vs. non tap water, urban vs. rural*) the difference in the prevalence of RAP related to H-pylori is statistically non significant ($P > 0.05$) even there is agreement that these factors affect the prevalence of H-pylori as the factors mention above except for sex its effect is cotravesial^{1,4,8,10}.

These results could be due to the possibility that there is no difference in quality of water supplied to houses from that obtained from other sources or it could be due to the possibility that the water is not the source of infection.

For residence even living in rural area reflect the sum of many risk factors affecting acquisition of H-pylori, no difference between rural and urban this could be due to the almost similar environmental factor to which Iraqi families are exposed to. In addition such non significant results might point to the fact that such studies need to be conducted on large scale.

Conclusion

H-pylori play role in RAP in children, especially in those with epigastric pain and with risk factors for infection.

Recommendation

Children with RAP centered in upper abdomen, no evidence of alarm symptoms and carry risk factors for acquisition of H-pylori infection should be tested for H-pylori.

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