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Engin GÜNEL[1]
Duygu FINDIK[2]
Fatma ÇAĞLAYAN[1]
Zerrin TOPGAÇ[3]

Helicobacter Pylori Seropositivity in Children with Recurrent Abdominal Pain

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Department of [1]Pediatric Surgery, [2]Microbiology, [3]Pediatrics, Faculty of Medicine, Selçuk University, Konya-Turkey

Abstract: Recurrent abdominal pain (RAP) is a significant problem in pediatric patients, and there has been much recent interest in the role that *Helicobacter pylori* (Hp) might play in this disorder. The aim of the study was to determine the prevalance of Hp infection in children with RAP, and to determine whether there was an association between Hp and RAP. The study was conducted on 50 children with RAP and 20 asymptomatic children admitted for inguinal surgery as a control group. Serum samples from the 70 children were tested for anti-Hp Ig G and anti-Hp Ig A by ELISA. Of the 50 children with RAP, 32 were seropositive (64%) for Hp Ig G, and 14 were seropositive (28%) for Hp Ig A. In the control group, a of the 20 children without RAP were seropositive (45%) for Hp Ig G, and 4 were seropositive (20%) for Hp Ig A. The high prevalence of Hp seropositivity (64% by Ig G) in this study was in variance with other reported pediatric data from the developing world. The prevalence of Hp infection in patients with RAP was not significantly different from that in asymptomatic children (p=0.14). Thus, no association between Hp infection and RAP was found.

Key Words: *Helicobacter pylori*, recurrent abdominal pain, children.

Introduction

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 (1, 2). The prevalence of Hp infection increases with age and is related to low socioeconomic status in childhood (3). Childhood appears to be a high-risk period for Hp infection. Abdominal pain is the most frequent symptom and is usually associated with a mild chronic gastritis (1). Recurrent abdominal pain (RAP) is a common problem in pediatric patients, and a confusing one (4-7).

Patients and Methods

The prevalence of Ig G and Ig A antibodies to *Helicobacter pylori* was determined by enzyme-linked immunosorbent assay (ELISA) in fifty children with recurrent abdominal pain (RAP) (mean age: 10.25±3.45 years) admitted for inguinal surgery were used as a control group. A history of RAP was sought in the 50 test children. RAP syndrome was defined as at least three episodes of abdominal pain over a period of three months, with pain of an intensity affecting the behaviour of the child. This definition is similiar to that used by Apley (4, 8). The initial evaluations of this entity included a thorough history and physical examination, and some basic blood tests. If the symptoms persisted, more intensive investigations were conducted, involving further laboratory tests, radiological examinations, and sometimes endoscopy to search for evidence of entities such as peptic disease, inflammatory bowel disease, and enzyme deficiencies.

Serum samples (2ml) from 70 children including both symptomatic patients and asymptomatic children were stored at -20°C, and ELISA Ig G and Ig A kits (Sentinel CH, Milano) were used according to the manufacturer's instructions. Cooled serum samples were tested at a dilution of 1/101. Each of the incubations was carried out at a temperature of 37°C. Plates were read at 450nm with a Ceres 900 microplate reader. Calibrator 2

Table 1. Comparison of Ig G and Ig A antibodies to *Helicobacter pylori* in children with and without recurrent abdominal pain

Group	Ig G		Ig A	
	n	%	n	%
RAP+, Hp+	32	64	14	28
RAP+, Hp-	18	36	36	72
RAP-, Hp+	9	45	4	20
RAP-, Hp-	11	55	16	80

Abbreviations: RAP; recurrent abdominal pain, Hp; *helicobacter* pylori,

(Pediatric calibrator), included in the kit, was used to determine seropositivity Ig G and Ig A according to the cutoff values stated by the manufacturer.

Informed consent in writing was obtained from the children's parents in all cases. Values were expressed as mean±SD. The χ^2 test was used to compare the prevalence of *Helicobacter pylori* infection in children with RAP and in the control group. A p value below 0.05 was considered to be significant.

Results

Of the 50 children with RAP, 32 were seropositive (64%) for *H. pylori* Ig G and 18 were seronegative (36%), and 14 were seropositive (28%) for *H. pylori* Ig A and 36 were seronegative (72%) (Table 1). In the control group, of the 20 children without RAP, 9 were seropositive (45%) for Hp Ig G and 11 were seronegative (55%), and 4 were seropositive (20%) for Hp Ig A and 16 were seronegative (80%). The thirty-two seropositive children with RAP (64%) were compared with the 9 seropositive children without RAP (45%) using with Ig G antibodies against Hp ($p>0.05$). Moreover, the 14 seropositive children with RAP (28%) were compared with 4 seropositive children without RAP (20%) using Ig A antibodies against Hp ($p>0.05$).

Discussion

The role that *H. pylori* plays in a variety of pediatric disorders is a subject of controversy (9). There are no specific symptoms associated with Hp infection (10, 11), and the majority of patients indeed may be asymptomatic (5). RAP is also a common problem in pediatric practice, and in most studies an organic cause is seldom found (4, 7). RAP is common among chool children, the prevalence being as high as 15% (7). In a study of 1000 school children, an organic cause for the symptoms was found in less than 10% (4). On the other hand, it was shown that the prevalence of anti-Helicobacter antibodies in children with RAP was similiar to that in asymptomatic children (12).

The humoral immune response to Hp infection is reflected in the immunglobulin levels in serum, while the combination of culture and histological examination of gastric biopsy specimens is considered the standard for he diagnosis of Hp. Endoscopic examination of children presents some difficulties, and often general anesthesia is required to perform the procedure (13). An alternative method of serological detection of the Hp Ig G antibody has been developed and it seems to be valuable in the assessment of children presenting RAP and other gastrointestinal symptoms (14-16). Hp-specific Ig G and Ig A antibodies give helpful information on the epidemiology of the infection and represent a useful adjunct to diagnosis and management of chronic gastritis in children (17).

In the present study, Ig G antibody tests revealed a 64% prevalence of Hp infection in our population of children with RAP. Ig A antibodies to Hp were found in 28% of children with RAP, and none of the children produced an Ig A response in the absence of an Ig G response. Although serodiagnostic tests permit the rapid, noninvasive, sensitive and specific detection of Hp, detection of Ig A antibodies is not sufficiently sensitive for the diagnosis of Hp infection in children ($p=0.49$). We suggest that this prevalence rate is the highest ever reported in the developing world. On the other hand, the prevalence of Hp infection in the control group was also very high (45%). In our opinion, the elevated prevalence of Hp infection is related to the low childhood socioeconomic status of this study group, increasing with age (the mean age was 10.25±3.45 years in our setting).

The prevalence of Hp infection in patients with RAP was not significantly different from that of asymptomatic children ($p=0.14$). Thus, no association between Hp infection and RAP was found. We suggest that Hp infection is not the only cause of RAP in children.

Correspondence author:
Engin GÜNEL
Babalık Mah. Vatan Cad.
Kartal Sitesi No:12/5
42040 Konya-Turkey

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