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Fundada en 1933
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ORIGINAL ARTICLE

# Detection of *Helicobacter pylori* in children and adolescents using the monoclonal coproantigen immunoassay and its association with gastrointestinal diseases☆

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Received 10 September 2015; accepted 17 May 2016
Available online 13 January 2017

**KEYWORDS**
*Helicobacter pylori*;
Infection in children;
Diagnosis;
Monoclonal coproantigen

**Abstract**
*Background:* Infection by *Helicobacter pylori* (*H. pylori*) affects 50% of the world population. Simple methods for its detection are now available.
*Objectives:* To identify *H. pylori* by using a monoclonal coproantigen technique in paediatric patients, and to determine its association with gastrointestinal diseases.
*Materials and methods:* The study included a total of 110 subjects aged 1 to 18 years. The study variables included: Family history of gastrointestinal disease, age, gender, gastrointestinal symptoms, as well as apparently healthy (asymptomatic) subjects. The monoclonal coproantigen test was performed on stool samples. Two groups, I symptomatic ($n = 29$), and II asymptomatic ($n = 81$) were compared using parametric and non-parametric statistics.
*Results:* Of the 110 patients, 59 (54%) were male. The relationship between a family history of gastritis and a positive for *H. pylori*, was significant for mothers ($p < 0.0005$), fathers ($p < 0.0001$), and paternal grandfathers ($p < 0.0001$). It was significant for gastric cancer in maternal grandparents ($p < 0.0178$) and paternal grandparents ($p < 0.0092$). The monoclonal coproantigen test was positive in 31 (28.2%) of the subjects. All were positive in group I, and only 2 in group II. A significant positive association was observed between *H. pylori* and various

☆ Please cite this article as: Castillo-Montoya V, Ruiz-Bustos E, Valencia-Juillerat ME, Álvarez-Hernández G, Sotelo-Cruz N. Detección de *Helicobacter pylori* en niños y adolescentes mediante coproantígeno monoclonal y su asociación con gastropatías. Cir Cir. 2017;85:27–33.

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signs and symptoms, such as epigastric pain ($p < 0.001$), recurrent peri-umbilical pain ($p < 0.001$), bloating ($p = 0.016$), heartburn ($p = 0.0007$), nausea ($p = 0.0061$), diarrhoea ($p = 0.0389$), and constipation ($p = 0.0019$).
*Conclusions:* *H. pylori* detection, was positive in 28% of both groups, and showed significant relationships with family gastrointestinal diseases and gastrointestinal symptoms.


**PALABRAS CLAVE**
*Helicobacter pylori*;
Infección en niños;
Diagnóstico;
Coproantígeno monoclonal

**Detección de *Helicobacter pylori* en niños y adolescentes mediante coproantígeno monoclonal y su asociación con gastropatías**

**Resumen**
*Antecedentes:* La infección por *Helicobacter pylori (H. pilory)* afecta al 50% de la población mundial. Se dispone actualmente de métodos menos complejos para su detección.
*Objetivos:* Identificar *H. pylori* mediante coproantígeno monoclonal y adicionalmente, su relación con gastropatías familiares.
*Material y métodos:* En 110 pacientes de edades entre 1 y 18 años, consideramos: antecedentes familiares de gastropatía, edad, género, síntomas gastrointestinales; también en sujetos aparentemente sanos. La prueba de coproantígeno monoclonal se realizó en muestras de materia fecal. Se compararon 2 grupos: I) sintomáticos ($n = 29$), y II) asintomáticos ($n = 81$), mediante estadística paramétrica y no paramétrica.
*Resultados:* De la muestra, 59 (54%) fueron pacientes masculinos. La asociación entre antecedentes familiares de gastritis y positividad por *H. pylori* fue significativa, para: madres ($p < 0.0005$), padres ($p < 0.0001$), y abuelos paternos ($p < 0.0001$); para cáncer gástrico fue significativa para abuelos maternos ($p = 0.0178$), y para abuelos paternos ($p = 0.0092$). La prueba de coproantígeno monoclonal fue positiva en 31 (28.2%) de los sujetos, en el grupo I todos resultaron positivos y en el grupo II, solo 2. Se observaron asociaciones significativas entre la positividad a *H. pylori* y diversos signos y síntomas, como: dolor epigástrico ($p < 0.001$), dolor periumbilical recurrente ($p < 0.001$), distensión abdominal ($p = 0.016$), pirosis ($p = 0.0007$), náuseas ($p = 0.0061$), diarrea ($p = 0.0389$), y estreñimiento ($p = 0.0019$).
*Conclusiones:* La prueba de coproantígeno monoclonal resultó positiva para *H. pylori* en el 28% de los sujetos examinados y mostró asociaciones significativas con gastropatías familiares y sintomatología digestiva.


## Background

*Helicobacter pylori* (*H. pylori*) is estimated to affect 50% of the world population[1]; in underdeveloped and developing countries 80% of adults and 50% of children are colonised. In México 30% of one year-old children and even younger ones are known to be colonised. This figure rises with age until it reaches 50% before the age of 10 years old. The prevalence of infection by *H. pylori* is currently unknown in many countries.[1–3]

The degree to which the infection is aggressive and the damage it causes to gastric mucus membranes are determined by a range of factors, including: the virulence of the *H. pylori* strain, its associated cytotoxic gene A (cagA), inflammatory response, bacterial characteristics, host conditions and environmental factors. In paediatric ages, especially in children under the age of 5 years old, clinical patterns vary and some are distinguished more precisely at older ages. These run from asymptomatic states to epigastric pain, abdominal swelling, diarrhoea alternating with periods of constipation, pyrosis or recurring peri-umbilical pain.[2,4–7]

There is no gold standard test for detecting *H. pylori* in children; nevertheless, the 13C Urea Breath Test ($^{13}$C-UBT), has been described as such, given that to date it is the most sensitive and specific. Nevertheless, it is expensive and its use in children under the age of 3 years old is not problem-free. Several methods are currently available for diagnostic support, including invasive ones such as gastric mucus membrane biopsy for histology and culture, the determination of antibodies in serum, polymerase chain reaction and the urease test. The non-invasive tests include the detection of *H. pylori* antigens and antibodies in saliva, urine and faeces (coproantigen) as well as *H. pylori* culture in faecal material. The detection of monoclonal coproantigen for *H. pylori* has recently been said to