

Helicobacter pylori May Protect Against Asthma

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Early childhood colonization with the major human commensal microbe *Helicobacter pylori* may be protective against asthma, according to a recent study.

According to the “hygiene hypothesis,” the rise in asthma and allergic disorders that occurred during the 20th century relates to a reduction in exposure to environmental antigens and alterations in gut microbiota during development of the immune system.

Changes in human colonization with *H. pylori* represent a “biologically plausible” candidate in the hygiene hypothesis, asserted Dr. Yu Chen of New York University and Dr. Martin J. Blaser of New York University and the Veterans Affairs Medical Center, New York.

The investigators explained that there has been a near universal association of this organism and humans for at least

58,000 years, since the time of the initial human migration out of Africa. Seropositivity is generally acquired during the first few years of life and remains lifelong unless eradicated by antibiotics.



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DR. BLASER

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The prevalence of seropositivity began to decline early in the last century, a trend that was paralleled by an increase in asthma. Today the seroprevalence in native-born children younger than 10 years in the United States stands at less than 10%, according to the investigators (*J. Infect. Dis.* 2008;198:553-60).

In order to investigate whether this decline in *H. pylori* colonization could be linked to the increase in asthma in children, the New York investigators analyzed data from the National Health and Nutrition Examination Survey (NHANES) 1999-2000, which is a representative sample of the U.S. population.

They estimated odds ratios for asthma, wheezing, and other allergic conditions such as allergic rhinitis and eczema, with adjustment for age, body mass index, smoking, education level, race, country of origin, and also for antibiotic and corticosteroid use in the previous month, medical insurance status, and household income.

The sample included 7,412 participants, 3,327 of whom were younger than 20 years. Overall seroprevalence for *H. pylori* was 26%, but prevalence was lower in younger groups, with only 5% of children younger than 10 years being seropositive.

For the entire cohort there was a trend toward an inverse association between seropositivity for *H. pylori* and ever having had asthma and for having had one or more asthma attacks during the past year.

There was a significant inverse association between *H. pylori* seropositivity and having had eczema or dermatitis in the past year, with an odds ratio of 0.73.

Among the 3,327 subjects who were age 19 years or younger at the time of data collection, there was a strong inverse association between *H. pylori* positivity and onset of asthma before 5 years of age, with an odds ratio of 0.58.

Furthermore, among those aged 3-13 years, strong inverse associations were

seen for seropositivity and current asthma, ever having had asthma, and having had allergic rhinitis during the previous year.

A possible explanation for the recent decline in *H. pylori* colonization is the widespread use of antibiotics in children for conditions such as otitis media, according to Dr. Chen and Dr. Blaser.

In fact, they noted, their study population was “strongly impacted” by antibiotics, with 11% of those younger than 10 years having had an antibiotic during the

month before data collection. Eradication rates of *H. pylori* with antibiotic monotherapy range from 10% to 50%.

Among the characteristics that favor *H. pylori* as protective is its “intimate relationship with the gastric mucosa, where it injects bacterial constituents into epithelial cells,” Dr. Chen and Dr. Blaser wrote.

In seropositive subjects, lymphoid cells such as helper and regulatory T cells are found in the gastric lamina propria. These are absent in seronegative persons. ■



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