**Does Helicobacter pylori infection increase the risk of adult-onset asthma?**

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## Abstract

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Keywords: allergic diseases, asthma, hygiene, *Helicobacter pylori*, therapy

Sir,

in a recent large (1664 cases, 6656 controls) population-based cohort retrospective study Wang et al. analyzed the possible link between *Helicobacter pylori* (*H. pylori*) infection and adult-onset asthma [1]. Both cases and controls were followed starting from *H. pylori* diagnosis to the date of asthma diagnosis or to the end of follow-up. The incidence proportion of asthma was considerably higher in *H. pylori* infection group than in uninfected subjects (log–rank test; $p < 0.001$) [1].

Late life-onset asthma differs from early life-onset asthma, because it is probably non-atopic and is accompanied by a prompt decrease in lung function [2]. Hence, there is a need to investigate on potential triggers and, in this context, infectious agents evoke a great interest.

In a recent meta-analysis, including a sample of 8852 subjects, the prevalence of *H. pylori* infection in the asthma population was 33.6% (518 of 1542), versus 37.6% (2746 of 7310) in the control population, without statistical difference (relative risk of *H. pylori* infection in the asthma population = 0.87, 95% CI:0.72-1.05, $p = 0.15$, random effects model) [3].

How to explain the opposite results obatined by Wang et al.? The authors analyzed the incidence of asthma, after a follow-up of seven year, in subjects with a new diagnosis of *H. pylori* infection. *H. pylori* infection is acquired in the first years of life and persists lifelong [4]. In clinical pratice, after the diagnosis *H. pylori* infection is treated to achieve its eradication [4]. The authors did not report data about a possible *H. pylori* treatment during the follow-up [1]. Hence, it is possible that someone could underwent to eradication treatment

and this would influence the outcome of the study. Another aspect to consider is that the methods for assessing *H. pylori* infection vary in sensitivity and specificity, which may result in misclassification of exposure to the bacteria: focusing on methodologies employed, some may indicate a previous contact with the microorganism (serological tests) while others an infection under way ($^{13}$C-urea breath test, histology, stool antigen test) [4]. The authors did not report data about the methods used to detect *H. pylori* infection [1].

Finally, both *H. pylori* infection and asthma have been associated with low socioeconomic status during childhood [4, 5]. Hence, in the multivariate analysis it is appropriate to adjust for socioeconomic factors as potential confounding factors. In the work by Wang et al. socioeconomic status has not been considered [1].

In conclusion, further prospective longitudinal studies, with detailed clinical history and diagnostic methods, are needed to prove a link between *H. pylori* infection and the incidence of asthma.

**Compliance with ethical standards**

**Funding** None to declare

**Conflict of Interest** None to declare

**Ethical approval** The study was conducted in accordance with ICHGood Clinical Practice guidelines, the Declaration of Helsinki, and local laws and regulations.

**Informed consent** Informed consent due to the observational study have been obtained in the cited studies

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