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

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

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32 Abstract

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

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

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

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

114 How to explain the opposite results obtained by Wang et al.? The authors analyzed the
115 incidence of asthma, after a follow-up of seven year, in subjects with a new diagnosis of *H.*
116 *pylori* infection. *H. pylori* infection is acquired in the first years of life and persists lifelong
117 [4]. In clinical practice, after the diagnosis *H. pylori* infection is treated to achieve its
118 eradication [4]. The authors did not report data about a possible *H. pylori* treatment during
119 the follow-up [1]. Hence, it is possible that someone could underwent to eradication treatment

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

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

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

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135 **Compliance with ethical standards**

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137 **Funding** None to declare

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139 **Conflict of Interest** None to declare

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141 **Ethical approval** The study was conducted in accordance with ICH Good Clinical Practice

142 guidelines, the Declaration of Helsinki, and local laws and regulations.

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

145 cited studies

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