Letters to the Editors

Letter: *Helicobacter pylori* infection and eosinophilic oesophagitis - causal or casual inverse association?

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Sirs, von Arnim *et al.* report a prospective study with age- and gender-matched controls hinting at the potential protective role of *Helicobacter pylori* infection in the development of eosinophilic oesophagitis (EoE) in adult patients.[1] This negative association has been seldom assessed, with consistent findings in a retrospective analysis of a large US pathology database[2] and a retrospective series in children.[3]

Similarly, recent meta-analyses have described an inverse relationship for *H. pylori* and asthma and, less consistently, with other allergic disorders.[4, 5] The rationale behind this association is that *H. pylori* infection polarises the immune system towards a Th1 response, whereas the progressive declining of *H. pylori* prevalence in developed countries might allow a Th2 response, leading to increased atopic conditions.[6]

A noteworthy robust study recently published found no significant protective association of *H. pylori* status at age 6 with asthma or related conditions.[7] In fact, CagA-negative *H. pylori* infection was associated with an increased prevalence of asthma in European children, but not in non-European children.[7] The authors, some of whom had previously advocated this inverse association, provocatively suggested that, beyond *H. pylori* infection decrease, the endemic rise of asthma and other allergies may be causally related to complex and evolving compositional changes in our indigenous gastrointestinal microbiota due to a modern lifestyle. This would include not only smoking, alcohol consumption and diet but also some early life risk factors lately related to EoE, such as caesarean delivery, avoidance of breastfeeding and repeated antibiotic consumption.[8]

Therefore, the inverse association between *H. pylori* and EoE may merely represent an epiphenomenon as part of a more general change in human microecology.[6] In addition, only early colonisation by *H. pylori* can protect against further allergies, but it remains unknown in the majority of adult studies (using serology as a diagnostic test) whether *H. pylori* acquisition occurred before allergen sensitisation. Further large prospective studies controlling for confounding factors (including host-, bacteria- and environmental-related factors), and the temporal relationship between *H. pylori* acquisition and the onset of atopic disorders, may shed light on whether they exhibit a causal or casual inverse association, besides elucidating whether this association is similar in paediatric and adult patients.

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REFERENCES

1. von Arnim U, Wex T, Link A, *et al. Helicobacter pylori* infection is associated with a reduced risk of developing eosinophilic oesophagitis. *Aliment Pharmacol Ther* 2016; **43**: 825–30.
2. Dellon ES, Peery AF, Shaheen NJ, *et al.* Inverse association of esophageal eosinophilia with *Helicobacter pylori* based on analysis of a US pathology database. *Gastroenterology* 2011; **141**: 1586–92.
3. Elitsur Y, Alrazzak BA, Preston D, Demetieva Y. Does *Helicobacter pylori* protect against eosinophilic esophagitis in children? *Helicobacter* 2014; **19**: 367–71.
4. Lionetti E, Leonardi S, Lanzafame A, *et al. Helicobacter pylori* infection and atopic diseases: is there a relationship? A systematic review and meta-analysis. *World J Gastroenterol* 2014; **20**: 17635–47.
5. Taye B, Enquselassie F, Tsegaye A, Medhin G, Davey G, Venn A. Is *Helicobacter pylori* infection inversely associated with atopy? A systematic review and meta-analysis. *Clin Exp Allergy* 2015; **45**: 882–90.
6. Blaser MJ, Chen Y, Reibman J. Does *Helicobacter pylori* protect against asthma and allergy? *Gut* 2008; **57**: 561–7.
7. den Hollander WJ, Sonnenschein-van der Voort AM, Holster IL, *et al. Helicobacter pylori* in children with asthmatic conditions at school age, and their mothers. *Aliment Pharmacol Ther* 2016; **43**: 933–43.
8. Jensen ET, Dellon ES. Environmental and infectious factors in eosinophilic esophagitis. *Best Pract Res Clin Gastroenterol* 2015; **29**: 721–9.