

## Reply to “Iron Overload and Hepatitis C Virus Infection”

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On behalf of the authors of the article titled, “Relationship between Hepatitis C Virus Infection and Iron Overload,” we appreciate Prof. Ponzetto and Prof. Figura for their comments on our review. As mentioned in the letter, *Helicobacter pylori* may present in patients with liver cirrhosis and hepatocellular carcinoma, and worsen the prognosis,<sup>[1,2]</sup> therefore we agree with them that testing for presence of *H. pylori* should be conducted in all patients with chronic hepatitis, no matter how the hepatitis is caused.

In our review, the relationship between hepatitis C virus infection and iron overload was focused, while iron overload may also happen in patients with other chronic infection, *H. pylori* infection might be included. The presence of *H. pylori* in the gastric mucosa is associated with chronic active gastritis, which may lead to the development of peptic ulcer, gastric carcinoma and even gastric lymphoma.<sup>[3]</sup>

Iron is an essential micronutrient for virtually all organisms, including *H. pylori*, which has a repertoire of high affinity iron-uptake system. The iron homeostasis in *H. pylori* is regulated by Ferric Uptake Regulator protein. In *H. pylori*, some iron-uptake systems are constitutively expressed and iron uptake is not down-regulated in iron-replete conditions.<sup>[4]</sup> These results suggest it is potentially possible that iron overload would happen, related to *H. pylori* infection, in theory. So far, few cases of iron overload in patients with *H. pylori* infection have been reported, while the link between *H. pylori* infection and the development of host

iron deficiency is clearly illustrated.<sup>[5]</sup> Therefore, to confirm the relationship between body total iron load and *H. pylori* infection, more studies are needed.

### REFERENCES

1. Wang L, Zollinger T, Zhang J. Association between *Helicobacter pylori* infection and liver cancer mortality in 67 rural Chinese counties. *Cancer Causes Control* 2013;24:1331-7. doi: 10.1007/s10552-013-0211-3.
2. Leone N, Pellicano R, Brunello F, Cutufo MA, Berrutti M, Fagoonee S, et al. *Helicobacter pylori* seroprevalence in patients with cirrhosis of the liver and hepatocellular carcinoma. *Cancer Detect Prev* 2003;27:494-7. doi: 10.1016/j.cdp.2003.07.004.
3. Atherton JC, Blaser MJ. Coadaptation of *Helicobacter pylori* and humans: Ancient history, modern implications. *J Clin Invest* 2009;119:2475-87. doi: 10.1172/JCI38605.
4. Pich OQ, Merrell DS. The ferric uptake regulator of *Helicobacter pylori*: A critical player in the battle for iron and colonization of the stomach. *Future Microbiol* 2013;8:725-38. doi: 10.2217/fmb.13.43.
5. Flores SE, Aitchison A, Day AS, Keenan JI. *Helicobacter pylori* infection perturbs iron homeostasis in gastric epithelial cells. *PLoS One* 2017;12:e0184026. doi: 10.1371/journal.pone.0184026.

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