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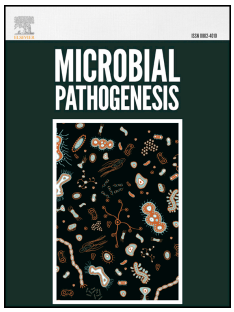

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Downregulated regulatory T cell function is associated with increased Peptic Ulcer in *Helicobacter pylori*-infection

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Abstract

Background: *Helicobacter pylori* (*H. pylori*) chronically colonizes gastric/duodenal mucosa and induces gastroduodenal disease such as gastritis and peptic ulcer and induces vigorous innate and specific immune responses; however, the infection is not removed, a state of chronic active gastritis persists for life if untreated. The objective of this study was to determine the number of regulatory T cells (Tregs) in gastric mucosa of patients with gastritis and peptic ulcer and determined the relationship between main virulence factor of *H. pylori* and Tregs.

Methods and materials: A total of 89 patients with gastritis, 63 patients with peptic ulcer and 40 healthy, *H. pylori*-negative subjects were enrolled in this study. Expression of CD4 and Foxp3 was determined by immunohistochemistry. Antrum biopsy was obtained for detection of *H. pylori*, bacterial virulence factors and histopathological assessments. TGF-β1, IL-10 and FOXP3 expressions were determined by real-time polymerase chain reaction (qPCR).

Results*:* The numbers of $CD4^+$ and $Foxp3^+$ T cells as well as the expression of IL-10, TGF-β1, FOXP3, INF-γ and IL-17A in infected patients were significantly higher than the ones in uninfected patients. Also, the number of $CD4^+$ T cells was independent on the vacuolating cytotoxin A (vacA) and outer inflammatory protein A (oipA), but it was positively correlated with cytotoxin-associated gene A (cagA). Instead, the number of $Foxp3^+$ T cells was dependent on the vacA and oipA, but it was independent on cagA. The number of $Foxp3^+$ T cells and the expression of IL-10, TGF-β1 and FOXP3 in infected patients with gastritis were significantly higher than the ones in infected patients with peptic ulcer. Moreover, the number of $CD4^+$ T cells and the expression of IL-17A and INF-γ was the lowest in the gastritis patients, however, increased progressively in the peptic ulcer patients. Additionally, the numbers of $CD4^+$ and $Foxp3^+$ T cells as well as the expression of IL-10, TGF-β1, FOXP3 and INF-γ were positively correlated with the degree of *H. pylori* density and chronic inflammation.

Conclusion: Tregs are positively associated with vacA alleles and oipA status of *H. pylori* and histological grade but negatively associated with peptic ulcer disease.

Keywords: *Helicobacter pylori*; Gastritis; Peptic ulcer disease; Virulence factor