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Role of *Helicobacter pylori* infection in processes of local immune homeostasis in child's gastrointestinal mucosa: Study in the far east of Russia

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Introduction: Previously, the author investigated *H. pylori* infection of the adult patients with gastrointestinal diseases in Vladivostok, far Eastern Russia. In this study, the role of *Helicobacter pylori* infection in lactase deficiency pathogenesis in children was further investigated. In the pediatric fields, secondary and transient lactase deficiency was seen during clinical practice of different gastrointestinal diseases. Especially, conditions of gastric mucosa and epithelium in different pathogenetic variants of lactase deficiency in infants and children under 3 years have not been well studied. In this study, the roles of *H. pylori* infection and immune responses of gastric mucosa and epithelium in, pathogenetic aspects of lactase deficiency in children under 3 years were investigated.

Methods: Sixty-three pediatric patients (age: 5 months to 3 years) with different loss of weight in Regional Clinical Center of Maternity, Vladivostok, Russia, were also included during 2008-2011. All patients were diagnosed as lactase deficiency. Morphological changes of gastrointestinal mucosa were examined by endoscopy and dark field microscopy. *H. pylori* in biopsy specimens was detected by immunostaining CD4-, CD8-, CD 68-, CD163-, or CD204-positive immune cells in the specimens were detected by immunostaining.

Results: In the previous study, 89.9% of patients (age, 15 to 80 years) were H. pylori-positive, regarding the virulence genotype of H. pylori, 79.4% were cagA-positive. As for EPIYA motif of cagA, ABC type was the most prevalent and accounted for 73.2%; ABCC type for 14.6%; AB or ABCCC type for 4.9%, and novel AAABC type for 2.4%. No ABD type was detected. In this study, 95% of children under 3 years with secondary lactase deficiency were H. pylori-positive. Changes of immune cell; numbers and condition in cellular and humoral immunity according to clinical manifestations of this disease were established. Increase of proliferative activity of immune cells in epithelial layers and the cells without contact to epithelial wall in mucosa were found. Immunostaining showed the increase of immune cells positive for CD4, CDS, CD 68, CD163, and CD204 in gastrointestinal epithelium in H. pylori-positive lactase deficiency patients.

Discussion: In the previous study, cagA-positive *H. pylori* mainly belonged to Western type (EPYIA-ABC type) although Vladivostok is geographically located in East Asia. Present study is the first investigation of lactase deficiency with *H. pylori* infection in children under 3 years in Vladivostok, Russia. Data suggest mechanisms of pathogenicity of lactase deficiency under *H. pylori* infection. The data are also useful for development of immune response algorithm during medication of those patients and for monitoring of morphological condition of gastrointestinal mucosa in children during various pathologic processes associated with malabsorption and lactase deficiency. Further investigation is required to reveal the exact mechanisms of lactase deficiency under *H. pylori* infection.

Biography

Ivan Reva graduated Vladivostok State Medical University (Russia) in 2000 year. In 2003 had graduated qualification course on basic and urgent surgery on General Surgery Department of VSMU. In 2004 defend scientific degree in surgical sector. In 2009 had graduated PhD course on the Department of Bacteriology of Niigata University Graduate School of Medicine. From 2009 until 2012 invited expert at the Department of Bacteriology of Niigata University Graduate School of Medicine. From 2012 vice-director of the International Medical Education and Research Center (Niigata, Japan) and Senior Research Scientist of the Far Eastern Federal University (Vladivostok, Russia).

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