Real-Time PCR assay for detection of *Helicobacter pylori* infection of biopsy specimens isolated from Universiti Kebangsaan Malaysia Medical Centre (UKMMC)

Hasyanee Binmaeil[a], Alfizah Hanafiah[a,c], Raja Affendi Raja Ali[b]

[a] *Department of Medical Microbiology and Immunology, Faculty of Medicine, Universiti Kebangsaan Malaysia, Jalan Ya'accob Latiff, Bandar Tun Razak, 56000 Cheras, Kuala Lumpur, Malaysia*

[b] *Department of Medicine, Faculty of Medicine, Universiti Kebangsaan Malaysia, Jalan Ya'accob Latiff, Bandar Tun Razak, 56000 Cheras, Kuala Lumpur, Malaysia*

[c] *Correspondence to: Assoc. Prof. Dr. Alfizah Hanafiah, Email: alfizah@ppukm.ukm.edu.my*

Abstract

The aim of this study was to evaluate the accuracy of this new real-time PCR (qPCR) test for detection of *H. pylori* infection in biopsy specimens in comparison to conventional tests: histology, RUT and culture. Patients who attending Endoscopy Unit, UKMMC with dyspepsia and undergoing oesophagogastroduodenoscopy between April 2014 to August 2015 were recruited. Stomach biopsies were collected for histology, Rapid urease test (RUT), culture and qPCR analysis. A total of 288 biopsy samples, of which 34 biopsy samples were considered positive for *H. pylori* infection by conventional methods (concordant positive results on 2 or more tests). The remaining 254 biopsies (88.19%) were considered negative for *H. pylori*. In contrast, the new real-time PCR (qPCR) test detected 64 *H. pylori* infection in biopsies of patients, which is significantly higher than conventional test (P<0.0001). *H. pylori* infection rate determined by conventional methods varied from 0.35% to 3.13% among different age groups in 288 patients with dyspepsia. *H. pylori* infection rate determined by qPCR method is higher and varied from 0.69% to 5.21% among different age groups. *H. pylori* infection rate is the highest at 51-60 and 71-80 years old as determined using qPCR and conventional methods, respectively. Results of the present study indicate that qPCR is more sensitive than conventional methods to detect *H. pylori* infection in patients with dyspepsia. In summary, we have developed a rapid and sensitive q-PCR method for detection of *H. pylori* directly from biopsy specimens. This technique offers a significant improvement over other available conventional methods for detecting *H. pylori* in clinical and research samples.

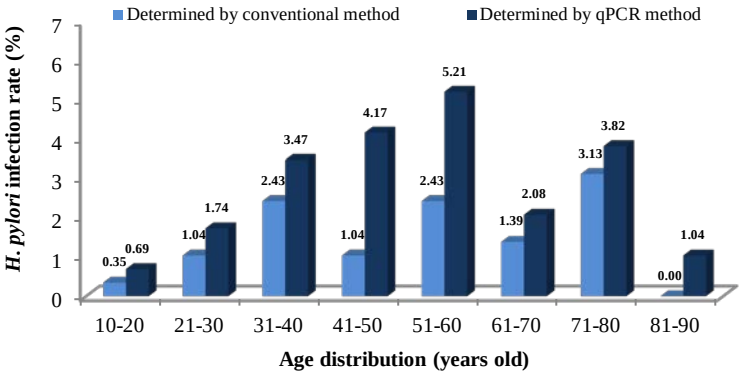


Figure 1 Age distribution of *H. pylori* infection rates determined by qPCR and conventional method (positive results concordant on 2 or more tests) in 288 patients with dyspepsia (The results show a statistically significant difference between qPCR and conventional method using χ^2 test; $P < 0.0001$).

Recent Publications

1. Lo, C.C., Lai, K.H., Peng, N.J., Lo, G.H., Tseng, H.H., Lin, C.K., Shie, C.B., Wu, C.M., Chen, Y.S., Huang, W.K., Chen, A., Hsu, P.I. (2005) Polymerase chain reaction: a sensitive method for detecting *Helicobacter pylori* infection in bleeding peptic ulcers. World J. Gastroenterol. 11: 3909–3914.
2. Osaki, T., Mabe, K., Hanawa, T., Kamiya, S. (2008) Urease-positive bacteria in the stomach induce a false-positive reaction in a urea breath test for diagnosis of *Helicobacter pylori* infection. J. Med. Microbiol. 57, 814–819.
3. Schabereiter-Gurtner, C., Hirschl, A.M., Dragosics, B., Hufnagl, P., Puz, S., Kovách, Z.,Rotter, M., Makristathis, A. (2004) Novel real-time PCR assay for detection of *Helicobacter pylori* infection and simultaneous clarithromycin susceptibility testing of stool and biopsy specimens. J. Clin. Microbiol. 42, 4512–4518.
4. S.K. Shukla , K.N. Prasad , A. Tripathi , U.C. Ghoshal , N. Krishnani , H. Nuzhat (2011) Quantitation of *Helicobacter pylori* ureC gene and its comparison with different diagnostic techniques and gastric histopathology. Journal of Microbiological Methods 86:231-237.
5. Zhiying Ou, Liya Xiong, Ding-You Li, Lanlan Geng, Lixia Li, Peiyu Chen, Min Yang, Yongmei Zeng, Zhenwen Zhou, Huimin Xia and Sitang Gong (2013) Evaluation of a new fluorescence quantitativePCR test for diagnosing *H. pylori* infection in children. BMC Gastroenterology 13:7.



Biography

Hasyanee Binmaeil. was born in Thailand in 1987. She is Ph.D student in Dept. of Medical Microbiology and Immunology, Faculty of Medicine at Universiti Kebangsaan Malaysia. Her research interests is on *Helicobacter pylori* study which focus on the development of the molecular techniques for detection of *H. pylori* directly in stomach of patients with dyspepsia. She have presented a poster at Postgraduate Conference and published an article in Journal of *Global Veterinaria* (2014).

Email: coolballtennis@hotmail.com