EDITORIAL

Molecular methods for detection of *Helicobacter pylori* infection: could they be the gold standard?

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Helicobacter pylori colonizes the gastric mucosa of more than half of the world's human population. This bacterium plays a significant role in the pathogenesis of several diseases of the digestive system, such as chronic gastritis, peptic ulcer disease and gastric adenocarcinoma.

Since the discovery of *H. pylori* by Marshall and Warren, in 1983, numerous methods for detecting the presence of the bacterium in the gastric mucosa have been developed[1]. Traditionally, diagnostic methods may be classified as invasive, which require endoscopy to obtain biopsies of gastric tissues, and noninvasive. The invasive methods include histology, urease test, culture and molecular methods; while the noninvasive methods include serology, urea breath testing, stool antigen testing and molecular methods.

Although there are several available diagnostic methods for detecting *H. pylori*, each one of them has its own usefulness and limitations. The choice of diagnostic test to determine *H. pylori* infection status depends on the sensitivity, specificity, reproducibility, clinical condition, cost, and rapidity of the results. There is need for a reference method to be used as gold standard to find patients truly infected[2].

Nowadays, studies show that the polymerase chain reaction (PCR) may be slightly superior to other diagnostic methods for detection of *H. pylori* from different clinical samples, such as gastric biopsy, gastric juice, stool, saliva and dental plaque; and to verify the bacterium eradication after treatment[3-5]. The need for a limited amount of bacteria enables PCR to recognize infection when other tests are negative due to low bacterial density. The conserved genes used for detection of *H. pylori* are *urease* A (*ureA*), *urease* C (*ureC*), 16S rRNA, 23S rRNA and *hsp60*.

Recently, Fadilah *et al*. (2016)[6] recommended adding multiplex PCR method in routine diagnosis of *H. pylori* infection. They showed that this method increases the detection of *H. pylori* in samples with non-culturable *H. pylori* organisms and mild inflammation where it is undetectable by other methods. Furthermore, in this issue of Jornal Brasileiro de Patologia e Medicina Laboratorial (JBPML), Nevoa *et al*. (2017)[7] evaluated the use of PCR in *H. pylori* detection and compared it with the rapid urease test. The authors found that the rate in the detection of *H. pylori* by the molecular method was significantly higher when compared to the rapid urease test.

Enjoy this study!

REFERENCES

1. Warren JR, Marshall, B. Unidentified curved bacilli on gastric epithelium in active chronic gastritis. Lancet. 1983; 1: 1273-5.

2. Lopes AI, Vale FF, Oleastro M. Helicobacter pylori infection – recent developments in diagnosis. World J Gastroenterol. 2014; 20: 9299-9313.

3. Singh V, Mishra S, Rao GR, et al. Evaluation of nested PCR in detection of Helicobacter pylori targeting a highly conserved gene: HSP60. Helicobacter. 2008; 13: 30-4.

4. Ramis IB, Moraes EP, Fernandes MS, et al. Evaluation of diagnostic methods for the detection of Helicobacter pylori in gastric biopsy specimens of dyspeptic patients. Braz J Microbiol. 2012; 43: 903-8.

5. Saez J, Belda S, Santibáñez M, et al. Real-time PCR for diagnosing Helicobacter pylori infection in patients with upper gastrointestinal bleeding: comparison with other classical diagnostic methods. J Clin Microbiol. 2012; 50: 3233-7.

6. Fadilah N, Hanafiah A, Razlan H, et al. Multiplex PCR for detection of Helicobacter pylori infection in gastric biopsies with lower inflammatory score. Br J Biomed Sci. 2016; 73: 180-7.

7. Nevoa JC, Rodrigues RL, Menezes GL, et al. Molecular technique for detection and identification of Helicobacter pylori in clinical specimens: a comparison with the classical diagnostic method. J Bras Patol Med Lab. 2017; 53(1): 13-9.