EDITORIAL

Comparison of Polymerase Chain Reaction and Histopathology for the Detection of *Helicobacter pylori* in Gastric Biopsies

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Helicobacter pylori (*H. pylori*) are associated with many gastric diseases, notably chronic gastritis, peptic ulcer, primary gastric lymphoma and gastric adenocarcinoma. Evidence is accumulating that eradication of the bacteria decreases peptic ulcer and gastric cancer. The methods of detection include both non-invasive (serology, urease breath test and stool test) and invasive tests (endoscopy with biopsies allowing culture, histological staining, urease test or polymerase chain reaction (PCR)).[1,2] Until now, several *H. pylori* genes that are related to the risk of disease have been identified. PCR can selectively amplify a copy number of target gen more than 10^6 fold. PCR therefore has great potential for improving the ability to diagnosis to infectious diseases cause by fastidious or slow growing microorganism.[3]

Gastroscopy with multiple biopsies is essential to assess the extent and severity of gastric precancerous lesions, and histological staining followed by microscopic examination of gastric biopsies remains one of the most widely used method of detection of the bacterium worldwide. Until now in Indonesian hospitals, histopathology that was historically the first method used for *H. pylori* detection still widely used as the main diagnostic tool in patients with upper gastrointestinal symptoms. The sensitivity and specificity of histopathology for detection of *H. pylori* depends not only on the number and site of the biopsies, but also on the staining technique and the experience of the pathologist.

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Study from Mataram published in this issue, showed that of 156 paraffin blocks of gastric biopsies, only 17 (10.9%) blocks were positive for *H. pylori* by histological examination. All of the 17 samples showed positive results on PCR method. From all that blocks, positive results were found in 73 (45.9%) patients by ure C PCR method. The PCR method has increased the positivity rates of *H. pylori* more than four times compared to histological method. This study shows that in the diagnosis of *H. pylori* infection by using Ure C PCR is superior to histological diagnostic; especially, in patients without good preparation before endoscopy. PCR using *ure C* (*glmM*) gene fragment as primers has been proven to be the most specific and sensitive method compared to PCR using other primers such as *ure A* and *ure B*. This result was different from Venezuela study. They found that histopathology have an excellent ability to detect the bacteria compared to PCR of vac A gene, especially when 5 biopsies were used. The importance of the biopsy site is once again underlined by their data, with a lower detection rate for the corpus than for the antrum. Most interestingly, the performance of PCR compared to histopathology was best in the presence of severe gastric lesions. Indeed, in patients with intestinal metaplasia or dysplasia, PCR on a single biopsy detected the bacteria significantly more often than histopathology on a single biopsy, and just as often as histopathology on 5 biopsies.[4]

Finally, histopathology is still an accurate tool for *H. pylori* detection in most subjects, compared to the PCR method. Mataram study shows that in the diagnosis of *H. pylori* infection by using PCR of Ure C gene is superior to histological diagnostic; especially, in patients without good preparation before

endoscopy. In the future, PCR may be used routinely for detecting *H. pylori* in endoscopic biopsy sample since it can routinely detect all form of *H. pylori* including the coccoid form. Mataram study show us that the accuracy of histological method is less effective compared to PCR method due to high false negative result in patients without appropriate preparation prior to endoscopy.

New studies are needed to determine if PCR could also be useful in other situations where histopathology may have reached its limits, such as patients in whom the infection has been temporarily suppressed by proton pump inhibitors or antibiotic treatment.

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