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Detection of H. Pylori infection on dyspepsia patients with IgA H. Pylori antibody

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Abstract. Helicobacter pylori (H. pylori) has a big role in the relapse and pathogenesis of the upper gastrointestinal disease. Dyspepsia is characterized by uncomfortable feeling at the upper gastrointestinal area. IgA H. pylori antibody was in two-thirds of H. pylori infected patients, but about 7.2% of IgA H. Pylori antibody became the only positive result of the test between the two serology test (IgG and IgA). A cross-sectional study was conducted in 38 patients with dyspepsia. The IgA antibody test for H. pylori in the serum of dyspepsia patient conducted through the ELISA test. The hemoglobin levels, leukocytes, platelets number, and H. pylori infection via IgA antibody test on ulcer and non-ulcer dyspepsia patient had no significant difference. There was a relation between the number of platelets in the infected H. pylori patients compared to the non-infected patients. H. pylori infection in the ulcer and non-ulcer dyspepsia patient with serology method was 18%. H. pylori infection number on ulcer dyspepsia was not higher than the non-ulcer dyspepsia, all ulcer dyspepsia patients who were with H. pylori found with a lesion on the antrum.

1. Introduction

Helicobacter pylori were helix-shaped and flagella shaped by Gram-negative bacteria in the form of helix and flagella. It was in 1875, and it could not be cultured at that time. Dr. Robin Warren found again that bacteria (1979) and with Dr. Barry Marshall, they published the relation between the bacteria with gastritis disease in and because of that, they obtained a Nobel (2005).

Since then, Helicobacter pylori (H. pylori) has a great role in the relapse and pathogenesis of duodenal ulcer, chronic gastritis, peptic ulcer and non-ulcer dyspepsia including gastric adenocarcinoma.

Dyspepsia is characterized by a painful or uncomfortable feeling of upper gastritis which is chronic and relapse, and that disease has become a disturbing burden. Dyspepsia is often asymptomatic, but the complaint about the feeling of burned shows that there is a gastroesophageal reflux (GERD) and therefore it is often to be solved through gastroscopy (endoscopy) to confirm the causes.

The diagnostic test for H. pylori infection was into invasive tests such as the histology test with Giemsa staining, plant tissue isolation method of gastric biopsy and the Rapid Urease Test (RUT).[1-4] Meanwhile the non-invasive tests were urea breath test (UBT), antibody test (serology) and antigenic test on feces sample (HpSA).

The serology test of H. pylori infection is for prevalence study and its antibody detection either for IgG, IgA or IgM using the original antigenic source or a developed recombinant so that it has been so specific toward the serum sample, saliva, and urine.[5] There was Ig A H. pylori antibody in the patient's

serum which can be used to detect the patient which was infected by H. pylori, but its level in theduodenal fluid cannot identify the infection.[6]

The main benefit of this kind of test was that the test was simple, cheap, fast and enjoyable for the patients especially on child patients and it had a good performance although the sensitivity and specification of each reagent were not the same.[3,4]

The H. pylori infection had a role in the onset of the ulcer dyspepsia so that the standard of procedure of identification of the infection by using the non-invasive test. That should be conducted for the eradication of the patients below of 45 years or 50 years who has no a history of upper gastrointestinal bleeding or ever experience a weight loss.

IgA H. pylori antibody was on two-thirds of infected H. pylori patients, but for about 7.2% sometimes the IgA antibody became the only positive result of the test between both serology test (IgG and IgA).[7]

Prevalence of the existence of IgA H. pylori antibody was higher on gastric abnormality's patient than the non-gastric abnormality's patient in the community, meanwhile, on the gastric abnormality's patient, the IgA H. pylori was higher on peptic ulcer, and stomach cancer compares to duodenal ulcer and chronic gastritis.[8]

The IgA H. pylori antibody test has been widely used to diagnose the infection of H. pylori on dyspepsia patient, and ulcer dyspepsia patient has a higher infection level from non-ulcer dyspepsia patient. The IgA H. pylori test has not been for the diagnostic test in Indonesia.

In this research, the IgA H. pylori antibody test was conducted to know the H. pylori infection level with the IgA Helicobacter pylori antibody test on ulcer dyspepsia compared with the test conducted for non-ulcer dyspepsia.

2. Method

The research was conducted by analytical observational with the cross sectional method. The research was in Department of Clinical Pathology Faculty of Medicine Universitas Sumatera Utara / Adam Malik Hospital Medan in collaboration with Division of Gastroenterology Department of Internal Faculty of Medicine of Universitas Sumatera Utara. The subjects which involved in this research were all dyspepsia patients who took treatment in the outpatient and had hospitalization, also had endoscopic performing at Adam Malik Hospital Medan. The numbers of the sample were 20 patients per group or per 3 months of research time. For knowing IgA antibody from Helicobacter pylori infection in serum in dyspepsia patients who were with ELISA method: Enzyme-Linked Immunosorbent Assay (indec). Interpretation result of is non reactive: <15 ID U / ml, Equivocal: 15 - 20 ID U / ml and reactive: > 20 ID U / ml (Indec).

3. Results

The research was conducted by a cross sectional method for three months by testing IgA H. pylori antibody with several other parameters. The subject of this research based on the complaint of dyspepsia which indicated endoscopic performing and inclusive criteria were 38 patients who would have a test of endoscopic in installation diagnostic integrated (IDI) Adam Malik hospital. The diagnosis of ulcer and non-ulcer dyspepsia is from the results of the endoscopic test. The subjects are two groups based on the results of the endoscopy test.

Table 1. Characteristics of research subjects in both groups.

Characteristic	Ulcer patient	Non ulcer patient	P
Male	10 (55.6%)	10 (50%)	p= 0.732
Female	8 (44.4%)	10 (50%)	
Age (Year)	53.3 (SD 12.7)	53.0 (SD 7.3)	p= 0.912

Table 1 showed that between the male and female ulcer dyspepsia patients and non ulcer dyspepsia, there was no significant different value with p> 0.05 although the male dyspepsia patients (55.6%) were

higher than female dyspepsia patient (44.4%). The mean age of dyspepsia ulcer patients was 53.3 (SD 12.7) years, and the age of dyspepsia non ulcer patients was 53.0 (SD 7.3) years. There was no significant difference value with p> 0.05.

Table 2. The results from hemoglobin, leukocyte and platelet test.

Parameter	Ulcer patient	Non ulcer patient	P
Hemoglobin	13.7 (SD 1.1)	13.5 (SD 1.4)	p=0.573
Leukocytes	7911.1 (SD 1838.1)	7865.0 (SD 2008.5)	p=0.942
Platelets	307,555.6 (SD 107,240.9)	268,200.0 (SD 85380.6)	p=0.217

From table 2, we can see that hemoglobin, some leukocytes and platelets in the dyspepsia patient there was no significant value between both the groups with p> 0.05.

Table 3. The result of serology test antibody on IgA H. pylori in two groups.

Results	Ulcer patient	Non ulcer patient	Total	P
Reactive	4(22.2%)	4(20.0%)	8	p=1.00[a]
Non reactive e	14 (77.8%)	16 (80.0%)	30	

[a]Fisher exact test

From table 3, there is an infection of H. pylori in dyspepsia ulcer patient and dyspepsia non-ulcer. There was no significant different value with p> 0.05. Due to the expected value under five until using Fisher exact test. The result of equivocal can be in the dyspepsia ulcer patient, and the result can be in the reactive result

Table 4. The relation of IgA H. pylori serology positive with hemoglobin, leukocyte, and platelet.

Parameter	IgA positive (8)	IgA non reactive (30)	P
Hemoglobin	13.1 (SD 1.0)	13.8 (SD 1.3)	p= 0.201[a]
Leukocyte	8200.9 (SD 1900.3)	7700.8 (SD 1900.2)	p=0.510[a]
Platelet	358,625 (SD 12.1730)	267,000 (SD 81.526)	p=0.022[b]

[a]T independent test
[b]Mann Whitney test

From table 4 there was no relation level of hemoglobin and number of leukocyte between dyspepsia patient with H. pylori infection and also without H. pylori infection with p> 0.05. Where the levels of hemoglobin result in anormal distribution that used independent T-test. There was relation number of platelets between patient dyspepsia with H. pylori infection compared without H. pylori infection with p <0.05. Where the number of platelets results in abnormal distribution then used Mann Whitney test.

Table 5. The relation of IgA H. pylori serology positive with gastric mucosal hyperemia (inflammatory process).

Result	Hyperemia	Non Hyperemia
IgA reactive	1 (12.5%)	7 (87.5%)

Table 5, it can be seen that dyspepsia patients with positive H. pylori only 12.5% has been found hyperemia as the sign of inflammation in the gastric mucosa.

4. Discussions

In this research, the total of dyspepsia patient was 38 persons with the endoscopic test result obtained 18 persons with ulcer and 20 persons without anulcer. Both of the groups had the characteristic which no significant difference with sex value p>0.05. (table 1).
Both of the groups must gethemoglobintest, number of leukocytes and number of platelets. There was no significant different value to the three-parameter with p>0.05.(table 2).

The detection of H. pylori serologically was a test which could be easy to conduct, fast result, and did not need a special skill or expensive equipment. Whether or not, the infection could be through the test of IgG antibody or IgA H. pylori. It was reported that antibody examination compared to the result of culture examination which were test gold standard that showed the sensitivity and well specify (IgG 92% and 84% meanwhile IgA 80% and 89%).[9]

While Yoshihisa et al. compared the serologic result with invasive test obtained the sensitivity and specify result was IgG 94.7% and 88% meanwhile IgA result was 93.9% and 72.6%. Both of them had the low specify compared with invasive technic.[10]

The infection of H pylori on dyspepsia ulcer and non-ulcer patients with IgA pylori antibody was eighteen (18) %. The result of endoscopic test to the existence of ulcer was mucosa that had ulceration diffusely, and peptic was called spot.[11]

In this research dyspepsia patient with or without ulcer, the number of infection H. Pylori was not significantly different with value p >0.05 (table 3).One of the dyspepsia ulcer patient results of IgA equivocal to the mucosa in the antrum had hyperemia so that grouped in the reactivity. Kreuning J et al. performed the research about the correlation between the test as well as serology IgG and IgA through the change of peptic. There was relation result inflammation IgA H. pylori antibody on the mucosa. Even though, it was not related to the level of infiltration in the peptic mucosa.[12]

M Saruc et al reported that the functional of dyspepsia patient was two groups based on the symptoms: the symptom of ulkus (ulcer-like) and the symptom of motility (motility disorder-like) with the same method. The fact is the patient with ulcer symptom also compared with motility disorder symptom 79.1% and 53%.[13]

The result of serology antibody IgA H. pyloritest in the dyspepsia ulcer patient and the non-ulcer patient was not as high as the expectation. The decreasing of sensitivity caused the things and specified with serology test method on the population with the prevalence of infection H. pylori that were low.[1,4]

The result of positive serology had not shown the infection. But for the patients who have not yet obtained eradication treatment considered to get aninfection. Because there was no one report, the patient with infection had recovery spontaneously.[14] The treatment did not rely on the ulcer or non-ulcer so the serology treatment would decrease the activity of endoscopic on the dyspepsia patients.

In this research dyspepsia patients with positive IgA, H. pylori compared to the levels negative of hemoglobin and the number of leukocytes was not significantly different value p>0.05. Meanwhile, there was significant different value p<0.05 (table 5) in the number of platelets.

The number of platelets in the dyspepsia patient with positive IgA H. Pylori was significantly higher than IgA H. pylori negative. But the increase was still within normal limit.

In this research all dyspepsia ulcer patients who had infection H. pylori, the endoscopic test result was obtained lesion in the part of antrum from peptic. Murdani A et al detected that there wereH. pylori with histology test and all RUT was positive on the part of theantrum. Only 5.8% the positive things on the part of antrum and corpus.[11,12] Meanwhile J Krueng et al reported that there was arelation between the high of serology test result with H. pylori colonization. Whether as well as the part of antrum or on the corpus of peptic.[14]

In this research dyspepsia type patients with IgA H. pylori positive were nonexistent in the duodenum. Timo UK et al reported rates of H. pylori infection with serologic IgA H. pylori higher in gastric ulcers compared with duodenal ulcer patients and chronic gastritis patients.[12] Christer G et al foundthe different results. All patients on (100%) ulcer duodenum were infected with H. pylori, and the serologic test can detect 95%.[11] A study found that the lower rate of infection H. pylori 86.2% and 71.9% in peptic ulcer with the same method.[9,13]

In this research dyspepsia patient with positive IgA H. pylori compared with levels of negative hemoglobin and the total leukocytes, there was no significant different value $p>0.05$. Meanwhile, in the total of platelets, there was significant different value $p<0.05$ (table5).

In this research, dyspepsia patients with H. pylori were found one sign of hyperemia in the peptic mucosa of the antrum while the rest showed that no sign of inflammation due to the endoscopic test was not as sensitive as histology and need skill also experience.

Detection of H. Pylori infection through antibody IgA test had well performed for dyspepsia ulcer and non-ulcer (functional) patients. Some researchers reported that the level of IgA antibody which was high on superficial gastritis and during recurrence after eradication therapy.

5. Conclusions

From the results of this research on "Detection of H. pylori infection on dyspepsia patients with IgA H. pylori antibody" this can be concluded as follow:

1. The infection of H pylori on the ulcer and non-ulcer dyspepsia patient with serology method was 18%
2. The hypothesis was rejected because in this study the rate of H. pylori infection in patient ulcer dyspepsia was not higher than non-ulcer dyspepsia
3. All ulcer dyspepsia patients with H. pylori-infected were found in lesions on the antrum.

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