HELIcobacter pylori Infection in Children

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Abstract

Risk factors for acquiring Helicobacter pylori infection include residency of developing country, poor socioeconomic conditions, crowded family, and possibly an ethnic or genetic as predispositions. The diagnosis and management Helicobacter pylori has not been satisfied yet, however, there is problem of increasing resistancy antibiotic due to Helicobacter pylori. Objective: We report a 8 year and 6 month old girl who suffered from Helicobacter pylori. The diagnosis was based on history, clinical finding, and laboratory work-up. Suspicion on the presence of Helicobacter pylori was started when the girl had recurrent abdominal pain. Serology IgG Helicobacter pylori was positive and we had done endoscopic examination and biopsy. Therapy this patient was first line eradication Helicobacter pylori which give amoxicillin, clarithromycin and omeprazole for two weeks. There are no symptoms after two weeks therapy

Key word: Helicobacter pylori, children, recurrent abdominal pain
Introduction

The first isolation of *Helicobacter pylori* in 1982 by Marshall and Warren ushered new era in gastric microbiology. The diagnosis and treatment of upper gastroduodenal disease have changed dramatically. Peptic ulcer approaches as an infectious disease nowadays, which needs elimination of etiology.

Although spiral organisms had been observed in the gastric mucus layer many times in the preceding century, the isolation of *Helicobacter pylori*, in conjunction with increased interest of pathogenesis gastroduodenal diseases, as well as the relatively frequent availability of clinical specimens via endoscopic biopsy, has led an important breakthrough of medical care.

Risk factors for acquiring *Helicobacter pylori* infection include residency of developing country, poor socioeconomic conditions, crowded family, and possibly an ethnic or genetic as predispositions. Many patients still attribute symptoms of dyspepsia to an ulcer, and believe that ulcers are caused by diet, stress, and lifestyle factors; however, it is now clear that eradication of *Helicobacter pylori* is central management of the illness.

The diagnosis and management *Helicobacter pylori* has not been satisfied yet, however, there is problem of increasing resistancy antibiotic due to *Helicobacter pylori*.

The aim of this presentation is to remind us about diagnosis and management of *Helicobacter pylori* in children.

Case Report

A 8 year 6 month old boy with main complaint of recurrent abdominal pain 3 days before admission, was admitted to Dr.M. Djamil Hospital on January 24\(^{rd}\) 2009. She had been hospitalized in Sungai Dareh Hospital for 3 days and. She had been consulted surgery department and referred to Dr. M. Djamil Hospital Padang with diagnosis colic abdomen. In emergency room Dr. M. Djamil Hospital, there was no desease at surgery department and she was consulted to pediatric department.

She had recurrent abdominal pain 3 days before admission, exspecially in epigastrium and often woke up at night because of epigastrium pain. She was often recurrent abdominal pain since 3 months ago. Diarrhea 3 days before admission for 2 days 3-6 times/day with amount of ½ glass per-time,soft consistency, without blood, or mucus. She had vomit since 2 days before admission, 1 time a day with amount of 2 glass . The vomit was contained of food and drink, no sprayer. There were no fever, cough or breathlessness. She can drink, except oralit. The appetite was decreased, she ate nooddle a once a day. The last miction was 1 hour ago, amount of normal, no change of colour, she was never history out of stone.

She got exclusive breast milk, the patient get breast milk until 2 years old. Streaming rice at 7 months, smooth rice at 9 months and solid meal since 12 months old. At the moment, the patient get family food 2-3 times/day amount ½-1 plate of rice with piece of meat and fish.

Phisical examination was normal. Her body weight was 23 kg (BW/A 85.2\%, P10-25 CDC 2000), body height was 130 cm (BH/A 100\%, P50 CDC 2000, BW/BH 85.2\%), heigh age 8 years 6 months, with nutritional status was undernourished.

The Hemoglobin content was 14,2 gr %, white blood count 6600/mm\(^3\), differential count
0/0/2/52/40/6. Urine and fecal examination were normal.

We diagnosis with Observation recurrent abdominal pain due to erosive gastritis. Differential diagnose Helicobacter pylory and duodenum ulcer. Nutritional status undernourished. The treatment was Ranitidine 2 x 25 mg. We planned to do IgG and IgM Helicobacter pylori, endoscopy and biopsy.

On the 3rd hospitalization, the condition was good. The physical examination still the same. In laboratory finding IgG Helicobacter pylory: 1.11 (positive), normal < 1.00. The therapy this patient was changed. The therapy for this patient was amoxicillin 350 mgs three times daily, clarithromycin 200 mgs twice daily, omeprazole 20 mgs one time daily for two weeks. We planned for endoscopy after got agreement of the family.

On the 5th hospitalization, The result of endoscopy examination was esofagitis grade A (GERD), corpus ulceratum and moderate antrum gastritis. She was examined biopsy in corpus while endoscopy examination.

Figure 1. Endoscopic examination
- Esofagus: hyperemic, erosion, no varises
- Gaster: hyperemic mucus layer, erosion, ulceratum, hipersecretion liquid
- Duodenum: hyperemic mucus, no ulceratum
On the 7th hospitalization, there is no symptom, the appetite was increased. The physical examination still the same. Follow up nutritional and antropometri status: Her body weight was 23.5 kg (BW/A 87%, P10-25 CDC 2000), body height was 130 cm (BH/A 100%, P50 CDC 2000, BW/BH 87%), with nutritional status was undernourished. The result of biopsi examination was chronic gastritis due to *Helicobacter pylori*.

Figure 2. The result of biopsi examination: Gastric mucus which half of ducts were hyperplastic, plenty of cell plasm, lymphocyted, eosinofilic. Some place were found *H. pylori*

After two weeks therapy, the patient felt good and never got symptom like before. She came to control and the therapy was stopped.

**Discussion**

*H. pylori* infection in children usually give a symptom of stomatchache. Therefore recurrent abdominal pain in children assumed as clinical symptom that related to *H. pylori* infection.

Recurrent abdominal pain is common sign which brings patient to search medication and analogue with non ulcer dispepsia in adult. Gastritis usually shows abdominal pain complain in children. In some scientist, recurrent abdominal pain is related to *H. pylori* infection. About 30% recurrent abdominal pain in children found *H. pylori* in the antrum while 10% in the corpus. The ulcer in children seldom found but we should think about *H. pylori* infection as one possibility.\(^{(4)}\)

Gastric disturbances consist of two. First, hypersecretion gastric acid (hyperchlorhidria) which can effect gastritis and sequele like duodenal ulcer and gastric ulcer. Second, hyposecretion gastric acid (hipochlorhidria) due to atrophy of gastric mucous. Vomites in this case usually caused by esofagus mucous irritation due to hipersecretion gastric acid.\(^{(4)}\)

Acut or chronic diarrhea happened because of hiposecretion gastric acid. The effect of this case is gastric protection increase, so enteric infection can occur easily. The metaanalysis research showed diarrhea in of *H. pylori* patient caused by antibiotik, which intestine flora change qualitatively and quantitatively.\(^{(5)}\)

Recurrent abdominal pain in children are anolgue as non ulcer dyspepsia in adult. Moostrich concensus suggested that all patient with dyspepsia, tested as soon as possible with non invasif test such as serologic or urea breath test and if the
test was positive, immediately cured without endoscopic diagnostic.

In this case, patient diagnosed as recurrent abdominal pain caused by suspected *H. pylori* infection. Although urea breath test is the most sensitive of non invasive diagnostic test, in this case serologic examination is the choice of diagnostic due to less of facility and human resource for urea breath test.

The research of Gumel E in Turkey get in patient which recurrent abdominal pain, 60% seropositive for *H. pylori* IgG and 25% seropositive by IgA.\(^6\) The definitive diagnose based on *H. pylori* examination of gastric biopsy from gastric mucous specimen of one or more gastric area. The histological examination showed severe gastritis including gastric atrophy and duodenal metaplasia. Research by Mahjoub F in Turkey mentioned that *H. pylori* in biopsy occurred 9.7% in male and 8% female. There is significant association between *H. pylori* with gastric activity (p=0.001).\(^7\)

If serologic test was positive, eradication therapeutic should be given. This step was chosen by consideration of long time symptoms and disturbances normal life. Another cause such as urinary bladder stone, constipation, and psychist can be excluded, and conventional therapeutic with antacyd and H2 antagonist cannot help. Chosen therapeutic regimen is triple therapy with PPI that suggested by expert consensus in America and Europe. There is no repeat serologic test of the patient, because of no recurrent abdominal pain. If we get decreased of antibody titration more than 50%, means that eradication is successful.

Beside *H. pylori* culture was exactly diagnosis, culture can know profile sensitivitas bacteria dan antibiotik. Faber etc at the research in Israel showed 42% resistant by omeprazole + amoxicillin with metronidazole and none of case resistant by omeprazole + amoxicillin with claritromycin.\(^8\) Urea breath test was non invasive test have high sensitivitas and spesivitas. This test is important to know about *H. pylori* infection. Eradication rate, as defined by a negative 13C urea breath test 73.4% by omeprazole, amoxicillin with metronidazole and in 62.6% by omeprazole, amoxicillin with claritromycin.\(^8\)

Many literature reported that eradication therapy just give real effect in *H. pylori* infection with peptic ulcer. Since this time, the patient never have abdominal pain and vomit symptom. For the future, a good hygiene and sanitation is still become attention to prevent eradication.\(^4\)

The patient got eradication *H. pylori* first line therapy eradicate totally *H. pylori*, to neutralize hypersecretion of gastric acid and change to normal condition. Resistancy antimicroba will make the therapy fail.\(^9\) Tripel therapy is combination of antisecretory agent and antimicroba agent for 7-14 days. From metaanalysis by Laheij etc in 1999 of 666 studies, therewere about 53.228 adult sample, eradication therapy with PPI combine 2 of 3 antibiotics (claritromycin, amoxicillin, and metronidazole), has survival rate 79%-83%.\(^10\) Metaanalysis research about eradication therapy *H. pylori* in children by khurana etc in 2007 made conclusion that using metronidazol and amoxicillin for 2-6 weeks, claritromycin 1-2 weeks, amoxicillin and proton pump inhibitor and macrolide for 2 weeks are the best
regiment in developing country.\textsuperscript{(11)} Faber etc at the research in Israrel showed eradication was achieved in 73.4\% by omeprazole + amoxicillin with metronidazole and in 62.6\% by omeprazole + amoxicillin with claritromycin (p=0.078).\textsuperscript{(8)}

Good nutrition is very important for growth and developmental of children, also attack diseases. Optimal intake dietary of is the patient necessary to protect severe problem of nutrition. Undernourished of this patient due to inadequate intake at home.

Prognosis depends on management of the disesase, early detection and adequate therapy are important to prevent complication, ulcus, gastrointestinal bleeding and survival better. If the diagnose was late, and therapy was inadequate, ulcus, gastrointestinal bleeding, and cancer would occur, also relaps and resistancy of the drug are coming easily.\textsuperscript{(12)}

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