TREATMENT OF HELICOBACTER PYLORI (H. PYLORI) INFECTION IN CHILDREN: A PROSPECTIVE STUDY COMPARING TWO DIFFERENT THERAPEUTIC REGIMENS

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ABSTRACT

During a period of 10 months from May to February 1995, 120 children (72 girls, 48 boys) with an age range of 4-16 years (mean age 10.87, S.D.±2.7) with chronic abdominal pain who had an abnormal endoscopy (gastroduodenal mucosal defect) and positive urease test were treated for H. pylori. Patients were treated randomly with either metronidazole and amoxicillin (double therapy, group A) or metronidazole, amoxicillin and bismuth subsalicylate (triple therapy, group B), each for two weeks. 6-8 weeks after completion of treatment, patients were re-evaluated by endoscopy and urease test. Endoscopy was normal in 75 cases (63%). Of the 45 cases with abnormal endoscopy, 37 patients (82%) were in group A and 8 patients (18%) in group B (p<0.001). The urease test was positive in 44 cases (70%) of group A and 12 cases (20%) of group B (p<0.001). It is concluded that double therapy is relatively ineffective in eradication of H. pylori and triple therapy is less effective in this area compared with reports from industrialized countries. This difference is most probably due to greater drug resistance in this part of the world.

Keywords: Chronic abdominal pain, children, endoscopy, urease test, H. pylori, antibiotic therapy.


INTRODUCTION

Since the identification of H. pylori by Marchal and Warren in 1983, different modalities of treatment for the eradication of this organism have been tried with different rates of success.1-7 Currently the most effective modality is the combination of metronidazole, an oral antibiotic (amoxicillin or tetracycline) and bismuth subsalicylate (triple therapy) with a 90-95% success rate.8-10 Children occasionally do not tolerate such a combination or fail to complete a full course of therapy due to various reasons. Therefore a regimen with fewer components and thus lower side effects is more attractive in children. On the other hand, due to the frequent use of metronidazole and amoxicillin in children of developing areas, the rate of resistance of H. pylori to these medications may be greater.11-12 This prospective study was carried out to establish the efficacy of different treatment regimens in this part of the world.

PATIENTS AND METHODS

During a period of 10 months from May to February 1995, 120 children (72 girls and 48 boys) with an age range of 4-16 years (mean age 10.87, S.D.±2.7) with chronic abdominal pain who had an abnormal endoscopy (gastroduodenal mucosal defect) and positive urease test were treated for H. pylori. Patients were treated randomly with either metronidazole and amoxicillin (double therapy, group A) or metronidazole, amoxicillin and bismuth subsalicylate (triple therapy, group B), each for two weeks. 6-8 weeks after completion of treatment, patients were re-evaluated by endoscopy and urease test. Endoscopy was normal in 75 cases (63%). Of the 45 cases with abnormal endoscopy, 37 patients (82%) were in group A and 8 patients (18%) in group B (p<0.001). The urease test was positive in 44 cases (70%) of group A and 12 cases (20%) of group B (p<0.001). It is concluded that double therapy is relatively ineffective in eradication of H. pylori and triple therapy is less effective in this area compared with reports from industrialized countries. This difference is most probably due to greater drug resistance in this part of the world.

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Treatment of \textit{H. Pylori} in Children

![Graph: Age distribution of patients studied.](image)

**Fig. 1.** Age distribution of patients studied.

The age distribution and initial endoscopic findings of our series are shown in Figs. 1 and 2. Gastritis was the most common mucosal abnormality, and duodenal ulcer was present in 16\% of the patients. In the post-therapy endoscopy, 75 patients (63\%) had normal studies while 45 patients (37\%) remained abnormal. Of those with abnormal endoscopies, 37 cases (82\%) were in group A and 8 cases (18\%) were in group B (\textit{p}<0.001). In group A, 37 cases (60\%) and in group B, 8 cases (14\%) had abnormal endoscopies (\textit{p}<0.001). The urease test was still positive in 56 cases (47\%), 44 (70\%) from group A and 12 cases (20\%) from group B (\textit{p}<0.001). The rate of \textit{H. pylori} eradication was about 30\% by double therapy (group A) and about 80\% by triple therapy (group B).

**RESULTS**

The age distribution and initial endoscopic findings of our series are shown in Figs. 1 and 2. Gastritis was the most common mucosal abnormality, and duodenal ulcer was present in 16\% of the patients. In the post-therapy endoscopy, 75 patients (63\%) had normal studies while 45 patients (37\%) remained abnormal. Of those with abnormal endoscopies, 37 cases (82\%) were in group A and 8 cases (18\%) were in group B (\textit{p}<0.001). In group A, 37 cases (60\%) and in group B, 8 cases (14\%) had abnormal endoscopies (\textit{p}<0.001). The urease test was still positive in 56 cases (47\%), 44 (70\%) from group A and 12 cases (20\%) from group B (\textit{p}<0.001). The rate of \textit{H. pylori} eradication was about 30\% by double therapy (group A) and about 80\% by triple therapy (group B).

**Fig. 2.** Initial endoscopic findings of patients studied.

**DISCUSSION**

The role of \textit{H. pylori} in the pathogenesis of chronic gastritis and peptic ulcer is clearly known and the importance of treatment for eradication of this organism and healing of mucosal ulcer and also prevention of recurrence of duodenal ulcer is also universally agreed upon.\textsuperscript{3,11-12}

Ever since the identification of \textit{H. pylori} in 1983 by Marshall and Warren, numerous studies have been performed on the efficacy of different regimens for the eradication of this organism.\textsuperscript{1,7} The most effective regimen up to now is a combination of oral therapy with metronidazole, amoxicillin or tetracycline, and bismuth subsalicylate (triple therapy) for two weeks' duration with an up to 95\% success rate.\textsuperscript{8,10}

In the present series the success rate of triple therapy for \textit{H. pylori} eradication was about 80\%, which is lower than similar reports from industrialized countries. The lower rate of response in this series could be due to \textit{H. pylori} resistance to the used medication, mainly metronidazole and amoxicillin, probably because of the frequent use of these medications in this area. Resistance of \textit{H. pylori} to metronidazole has also been reported by others.\textsuperscript{11-12} The success rate in the group taking double therapy was about 30\% in our series, which was significantly lower (\textit{p}<0.001) than the group taking triple therapy. The different types of gastroduodenal abnormalities seen in the present cases (Fig. 1) were similar to other reports on children with chronic abdominal pain from other areas.\textsuperscript{13-15} It is concluded that: a) the types of gastroduodenal mucosal abnormalities in children with chronic abdominal pain in this area are similar to other
areas, with gastritis being the most common mucosal defect, b) endoscopy in children is a safe and effective diagnostic tool if performed in experienced hands, c) double therapy is not effective in the eradication of \( H. pylori \), and d) triple therapy is less effective in this area than industrialized countries, most probably secondary to drug resistance caused by the frequent use of metronidazole and amoxicillin in children in this area.

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REFERENCES
