May 2012

High Clarithromycin Resistance and a Low Rate of Recurrence and Reinfection of Helicobacter pylori Infection in Pakistan

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Su1711

Reliable Efficacy of 14-Day High Dose PPI Triple Therapy for *Helicobacter pylori* Eradication in Non -Ulcer Dyspeptic Patients in Thailand

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Background and aim:The eradication rate of standard triple therapy for *H. pylori* has decreased worldwide including Thailand. Newer regimen is required to achieve better outcome. The study was designed to determine the eradication rate of 7-day and 14-day high dose PPI triple therapy for *H. pylori* infection in Thai patients with non-ulcer dyspepsia. METHODS: Between September 2010-November 2011, patients who underwent gastroscopic examination at the Thammasat University Hospital, for dyspeptic symptoms were recruited. Two biopsy samples from gastric antrum were obtained, one for rapid urease test and another for culture. Patients were randomized to receive 7 days or 14 days high dose PPI triple therapy which consisted of lansoprazole 60 mg twice daily, amoxicillin 1 g twice daily, and clarithromycin 500 mg twice daily. UBT was performed 6 weeks after therapy to assess eradication. RESULTS:A total of100 patients were enrolled in this study including 35 males and 65 females with mean age of 53 years. All patients completed both regimens therapy without significant side effects. The culture was successful in 20 patients and demonstrated 40% of metronidazole resistant and 4 % of clarithromycin resistant strains. The efficacy of 14-day high dose PPI triple therapy was 100 % (50/50 patients) and was significantly higher than 7-day high dose PPI triple therapy (44/50 patients) (100% vs 88%; P-value <0.05). Minor side effects were reported including bitter taste and nausea (10%) and palpitation after taking clarithromycin (4%) CONCLUSIONS: The 14-day high dose PPI triple therapy provide a high eradication rate than 7-day high dose PPI triple regimen. This 14-day high dose PPI triple regimen is well tolerated, highly effective with only minor side effects and should be used as first line *H. pylori* eradication in Thailand.

Su1712

Superiority of Bismuth-Based Quadruple Therapy vs. Standard Triple Therapy for Empiric Primary Treatment of *Helicobacter pylori* Infection: Systematic Review and Meta-Analysis of Efficacy and Tolerability

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Background: In areas of clarithromycin resistance >15% clarithromycin-based standard triple therapy is no longer a good first choice regimen for *Helicobacter pylori* (*H. pylori*) eradication. Randomized controlled trials (RCTs) comparing proton pump inhibitor (PPI), bismuth, tetracycline, and metronidazole (quadruple therapy) vs. PPI, clarithromycin, and amoxicillin (triple therapy) suggest that quadruple therapy may replace triple therapy for first-line treatment. Aim: We performed a systematic review and meta-analysis to compare the efficacy and tolerability of these two regimens as first-line treatment of *H. pylori* infection. Methods: A search of MEDLINE, EMBASE, and Cochrane Library for English language literature was carried out. Randomized controlled trials (RCTs) comparing bismuth-based quadruple therapy to clarithromycin-based triple therapy were selected for meta-analysis. Data extraction was performed by two independent reviewers, using standardized data forms. Statistical analysis was conducted with RevMan 5.1 software. Forest plots, Funnel plots and subgroup analyses were carried out. Results: The search strategy identified a total of 39 references. Nine papers were included in the analysis. Dosing regimens of triple therapy were quite consistent among trials (clarithromycin 1000 mg/d, amoxicillin 2000 mg/d), but varied considerably for quadruple therapy (bismuth 240-1680 mg/d, metronidazole 400-1500 mg/d, tetracycline 1500-2000 mg/d). Bismuth-based quadruple therapy achieved eradication in 81.1 % of patients, whereas clarithromycin-based triple therapy achieved an eradication rate of 69.9 % (odds ratio (OR) =1.86, 95% confidence interval (CI): 1.18-2.92, p=0.008). There was no evidence for significant publication bias. Different duration of treatment regimens (7, 10 or 14 days for each regimen in different combinations) account for the high heterogeneity among the studies (I2=76%). Heterogeneity was 0% when only the subgroup of trials evaluating standardized quadruple therapy (bismuth 1680 mg/d, metronidazole 1500 mg/d, tetracycline 1500 mg/d, PPI 20 mg/bid for 10 days) vs. standard triple therapy for 7 days was considered. In the sensitivity analysis, standardized quadruple therapy achieved eradication in 91.1% of patients, whereas standard triple therapy achieved an eradication rate of 67.1% (OR=5.03, 95% CI: 3.17-7.98, p=0.00001). There were no statistically significant differences in side effects yielded by quadruple vs. triple therapy (OR = 0.92, 95 % CI: 0.76 -1.12). Conclusions: Bismuth-based quadruple therapy yielded higher eradication rates as primary therapy for *H. pylori* infection compared to clarithromycin-based triple therapy. Standardized quadruple therapy achieved eradication rates >90% and should therefore be considered for first-line treatment of *H. pylori* infection.

Su1713

Analytical Equivalence Study of NDIRS Versus IRMS in Breath Test Analysis

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Background. Several techniques exist regarding the diagnosis of *Helicobacter pylori* infection. Nowadays, urea breath tests (13C-UBT) are the preferred non-invasive test for detecting *H. pylori* before and after treatment. Initially, the 13C-UBT measurements are performed using isotope ratio mass spectrometer (IRMS). However, the newer developed nondispersive isotope-selective infrared spectrophotometer (NDIRS) device has the advantage of lower operating costs and being easier in use. However it is uncertain whether the NDIRS method is as accurate as the IRMS method, especially with the commercially available 13C-urea kits for HP-testing. The objective of this study was to evaluate the NDIRS as a suitable and reliable replacement for analysis of 13C-urea breath test samples using the commercially available 13C-UBT-kit, compared with the accepted IRMS analysis method. Methods. A multi-center, open-label study was performed in two large hospitals, according to GCP guidelines. Patients referred for 13C-UBT were given 100mg of 13C-urea. Baseline and 30 minute breath samples were obtained in two mediums; one was analyzed with NDIRS, the other with IRMS. No other test was performed to confirm the *H. pylori* status. Results. 43 patients were entered into the study. IRMS tested 13 patients as positive and 30 patients as negative for *H. pylori*. NDIRS found 14 patients positive and 39 negative. Compared to IRMS, NDIRS showed a positive predictive value of 100%, a negative predicitive value of 96.7% (95% CI 0.83-1.00), a sensitivity of 92.9% (95% CI 0.66-1.00) and specificity of 100%. The total agreement rate was 98% (42 out of 43), with a correlation coefficient (r) of 0.9796. The only disconcordant outcome probably resulted from faulty breath sampling in the IRMS medium, causing a false negative IRMS result. Conclusions. In this study, NDIRS and IRMS appear equally accurate in detecting Helicobacter infection. Therefore it seems that the NDIRS is justified as an alternative method for analysing 13C-urea breath test samples. Given the greater ease of use and lower costs, NDIRS could even be preferred over IRMS for analysis of 13C-urea breath test samples. The commercial available 13C-urea test kit appears to be suitable for HP-test with NDIRS.

		IRMS		
		Positive	Negative	Total
NDIRS	Positive	13	1	14
	Negative	0	29	29
	Total	13	30	43

NDIRS test results compared with IRMS test results. Assuming IRMS as gold standard, NDIRS has a positive predictive value of 100%, a negative predicitive value of 96.7% (95% CI 0.83-1.00), a sensitivity of 92.9% (95% CI 0.66-1.00) and specificity of 100%.

Su1714

High Dose Amoxicillin-Based First Line Regimen Compared to Sequential Therapy in the Eradication of *H. pylori* Infection

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BACKGROUND: *Helicobacter pylori* eradication rates with standard first-line triple therapy have declined to unacceptable levels. Ten days sequential therapy has been shown to increase eradication rate and is now considered to be one of the best options as-first line treatment. To date, amoxicillin-resistant *H. pylori* strains have rarely been detected. Whether increasing the dosage of amoxicillin in a standard 7 days eradicating regimen may enhance the efficacy is not known. AIM: To compare the efficacy of a 7 days high-dose amoxicillin based first-line regimen with sequential therapy. METHODS: 300 sex and age matched patients were randomized into 3 different therapeutic schemes: (1) standard LCA, lansoprazole 15 mg bid, clarithromycin 500 mg bid and amoxicillin 1000 mg bid for 7 days; (2) high dose LCA (HD-LCA), lansoprazole 15 mg bid, clarithromycin 500 mg bid and amoxicillin 1000 mg tid for 7 days; (3) sequential LACT, lansoprazole 15 mg bid plus amoxicillin 1000 mg bid for 5 days, followed by lansoprazole 15 mg bid, clarithromycin 500 mg bid and tinidazole 500 mg bid for 5 days. Eradication was confirmed by 13C-urea breath test. Compliance and occurrence of adverse effects were assessed by a validated questionnaire. RESULTS: Eradication rates were: LCA (55% PP, 53% ITT), HD-LCA (75% PP, 72% ITT), LACT (73% PP; 72% ITT). Eradication rates were higher in HD-LCA group compared to LCA ($p<0.01$), while no significant differences were observed in HD-LCA group compared to LACT (p= ns). Compliance and occurrence of adverse effects was similar among groups. CONCLUSIONS: High dose amoxicillin based eradicating treatment is superior to standard triple therapy and equivalent to sequential therapy; compared to the latter, the shorter duration may represent an advantage

Su1715

Substitution of Tetracycline by Amoxicillin in Second-Line *Helicobacter pylori* Treatment Conveys Comparable Success Rates

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Introduction: According to Maastricht III consensus, bismuth (Bis) based quadruple (QUAD) therapy is the preferred second choice treatment for *Helicobacter pylori* (Hp) eradication, if not previously used. Additionally, it is advisable to avoid antibiotics that were included in the initial therapeutic scheme. The regular Bis-containing quadruple therapy comprises a proton pump inhibitor (PPI), tetracycline (TETRA) and metronidazole (M). However, TETRA is not always available, side effects are often not well tolerated and doxycycline's efficacy is questionable. The aim of our study was to compare the efficiency of amoxicillin (AMO) when administered instead of TETRA in patients who failed to eradicate *Helicobacter pylori* (Hp) on a previous treatment containing AMO. Patients and methods: We retrospectively reviewed the records of 98 consecutive patients who failed 10-days standard triple therapy with PPI + clarithromycin + AMO. All patients received a 14- days QUAD regimen with PPI bid + Colloidal Bismuth Subcitrate (CBS) 300mg tid + Metronidazole (M) 500mg tid and either TETRA 500mg tid (group A) or AMO 1gr bid (group B). Response to treatment was evaluated with urea breath test (UBT) that was performed no sooner than a month after completion of eradication therapy. Results: 89 patients were eligible for analysis (45 in group A and 44 in group B). Demographics were comparable among the 2 groups. The results of the intention to treat (ITT) and the per protocol (PP) analysis are shown in the table. No statistically significant differences were revealed.Conclusions: 1) Substitution of Tetracycline by Amoxicillin in a bismuth- containing quadruple, second-line scheme does not affect eradication rate. 2) This is true for first line regimens that include AMO 3) In case of Tetracycline shortage or intolerance, Amoxicillin may be a good alternative with at least comparable results.