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USEFULNESS OF URINE-BASED ELISA FOR DETECTION OF IGG ANTIBODIES TO *HELICOBACTER PYLORI* IN CHILDREN.

Seiichi Kato, Tetsuya Tachikawa, Kyoko Ozawa, Mutsuko Konno, Yasuo Oyake, Yutaka Nakazato, Hitoshi Tajiri, Masumi Okada, Takuji Fujisawa, Kazuie Iinuma, Tohoku Univ Sch of Medicine, Sendai, Japan; Otsuka Pharm Co , Ltd, Tokushima, Japan; Sapporo Kosei Gen Hosp, Sapporo, Japan; Hachinohe Red Cross Hosp, Hachinohe, Japan; Social Insurance Ohmiya Gen Hosp, Ohmiya, Japan; Osaka Univ Med Sch, Suita, Japan; Wakayama Rosai Hosp, Wakayama, Japan; Kurume Univ Sch of Medicine, Kurume, Japan.

Background: Serum enzyme-linked immunosorbent assay (ELISA) kits have been widely used for non-invasive testing to detect *Helicobacter pylori* infection. However, more non-invasive tests are desirable for diagnosis in children or for use in epidemiological studies. Our aim was to investigate usefulness of recently developed urine-based ELISA kit (URINELISA *H. pylori* Antibody) in children. **Methods**: Random voided urine specimens and sera collected from 816 children (0-15 years) were measured using two commercially available serum-based ELISA kits and the urine-based kit for IgG antibodies to *H. pylori*. Based on results with the two serum-based ELISA kits, the sensitivity, specificity and accuracy of the urine-based ELISA were evaluated. With regard to false-positive and false-negative results, urinary IgG concentration was studied in some specimens. **Results**: Both two serum ELISAs were positive in 41 children and were negative in 666, who were enrolled in this study. Overall sensitivity, specificity, and accuracy of urine-based ELISA were 85.4%, 95.5%, and 94.9%, respectively: age group of 1-6 years showed high sensitivity (100%) and specificity (94.7%-99.3%). Urinary IgG concentrations and IgG/creatinine levels were higher in false-positives ($p<0.001$) and were lower in false-negatives ($p<0.01$) than in coincident cases. **Conclusions**: The urine-based ELISA is sufficiently accurate for screening *H. pylori* infection in children and should be suitable for large-scale epidemiological studies concerning the organism. It is possible that false results are related to urinary IgG concentrations.

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PRE- AND POST-TREATMENT DIAGNOSIS OF *H. PYLORI* INFECTION BY THE ^{13}C-UREA BREATH TEST ($^{13C\text{-}UBT}$): VALIDATION OF A NEW ISOTOPE-SELECTIVE INFRARED SPECTROMETER (ISIS).

Andreas Leodolter, Ulrike von Arnim, Claudia Gerards, Stefan Kahl, Peter Malfertheiner, Dept of Gastroenterology, Magdeburg, Germany.

Introduction: ^{13}C-UBT is the most reliable test for non-invasive diagnosis of *H. pylori* in pre- and post-treatment conditions. Compared to the gold standard for determination of the ratio of $^{13}C/^{12}C$, the isotope ratio mass spectrometry (IRMS), the ISIS are easier to handle and less expensive. Several studies have indicated that the accuracy to diagnose a *H. pylori* infection is comparable when ISIS or IRMS where used. Aim of our study was to investigate the accuracy of a new ISIS, which is less expensive compared to other ISIS-systems and not requiring any further computer system for analysis of breath samples, for diagnosis of *H. pylori* in clinical practice. Methods: In 727 patients (17-73y, 423m, 304f, 334 pre- and 393 post-treatment) a ^{13}C-UBT was performed using a validated test protocol (Am J Gastroenterol,1999,:2000-4). 75 mg of ^{13}C-urea dissolved in 200 ml 0.1M citric acid were administered, breath sample were collected basal and after 30 minutes using 10 ml glass tubes (for IRMS) and breath samples bags (for ISIS). Breath samples were analyzed either by IRMS (ABCA-system, PDZ-Europa, Crewe, UK) and by ISIS using the UBiT-200 (Otsuka Pharmaceutical Co. Ltd., Tokyo, Japan). A value of delta-over-baseline higher than 4‰ was considered positive. Results: 241 (33%) patients were *H. pylori* positive based on the results of the ^{13}C-UBT using IRMS. Discordant results between ISIS and IRMS were observed in 13 (1.8%) out of 727 ^{13}C-UBTs (8 false positive, 5 false negative). A highly significant correlation for the single delta-over-baseline values was observed ($y=0.98x+0.03$, $p<0.0001$). Conclusion: The very easy to handle, less expensive UBiT-200 is an excellent ISIS-system with an accuracy which is comparable to those of the IRMS for the diagnosis of *H. pylori* infection.

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SWALLOWED STRING SUPERCEDES STOMACH SCOPING FOR *H. PYLORI* ISOLATION?

Amy L. Samuels, Helen M. Windsor, Grace Y. Ho, Luke D. Goodwin, Barry J. Marshall, Dept of Microbiology, Univ of Western Australia, Nedlands, Australia; Dept of Medicine, Univ of Western Australia, Nedlands, Australia; Gastroenterology Dept, Sir Charles Gairdner Hosp, Nedlands, Australia.

INTRODUCTION: Since antibiotic resistant *H. pylori* has emerged as a clinical problem there is a need for reliable non-invasive techniques to collect *H. pylori* for culture. The aim of this study was to develop improved methods for isolation of *H. pylori* from a swallowed gastric string. PATIENTS AND METHODS: 40 patients whose *H. pylori* status had been determined by endoscopic biopsy or C^{14} urea breath test swallowed a capsule containing 90cm of nylon string (Enterotest). After one hour the string was retrieved. The distal 60cm of string was cut in two. Half was placed in brain heart infusion broth (BHIB) and half was briefly washed in saline before placement in BHIB. Two aliquots from each BHIB mixture were plated onto 3 different selective media plates. The BHIB was removed from the string and the broth suspensions were concentrated 30x by centrifugation. Two aliquots of each resuspended pellet were plated onto the 3 selective media - Skirrows agar; and Wilkins-Chalgren agar & Colistin-Nalidixic acid agar both with Dent selective supplement. Plates were incubated for 7 days at 37°C in an atmosphere with 10% CO_2. RESULTS: String test cultures were successful in 32 of 33 patients known to be infected with *H. pylori* (97%, CI=84-99%). 7 patients were determined to be negative for *H. pylori* by UBT and were also negative for the string test. In an anonymous questionnaire, 73% of patients preferred the string test to endoscopy. CONCLUSION: High isolation rates can be achieved using this non invasive method if selective media are used and if the string is washed prior to plating out to minimize the nasopharageal contaminants. Colonies of *H. pylori* isolated using this technique can be used to determine antibiotic sensitivity levels as well as for molecular epidemiological studies where patients might refuse an endoscopy. This non invasive, safe procedure can easily be performed by clinical research staff or in general practice.

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WHAT HAPPENS TO CLOTEST RAPID UREASE TESTS OVER THE WEEKEND?

Barry J. Marshall, Simon O. Chairman, Helen M. Windsor, Grace Y. Ho, Luke D. Goodwin, Gastroenterology Dept, Sir Charles Gairdner Hosp, Nedlands, Australia; Dept of Medicine, Univ of Western Australia, Nedlands, Australia.

INTRODUCTION: Gel-based rapid urease tests such as the CLOtest continue to provide the endoscopist with convenient and accurate diagnosis of *H. pylori*. The sensitivity of the CLOtest rapid urease test is reportedly highest when read at 24 hours. This time point is inconvenient when tests are performed on Friday and must be read again on Saturday. It was our observation that yellow CLOtests rarely changed colour between Saturday and Monday. Therefore there was probably little disadvantage to the Monday reading. AIM: To see if CLOtests changed colour between 24 and 72 hours when left at room temperature (17-22°C) over the weekend. METHODS: A digital photography system ("CLOcam") was implemented using a Kodak 323 webcam with a 640 x 480 pixel resolution, connected to the Internet. The pictures were retrieved remotely from the Internet location "*www.hpylori.com.au*" (Figure). During Friday morning endoscopy sessions, consenting patients had five mucosal biopsies taken for: CLOtest (1), histology (2), and culture (2). The CLOtests were warmed to 30-35°C for 6 hours then kept at room temperature for the next 64 hours. "CLOcam" snapshots were taken at least every hour. Digital images at the 24 hour and 72 hour time points were examined by an independent observer. Histology was examined blind after staining with H&E and Toluidine blue. Culture was performed on specimens which were either histology or CLOtest positive. RESULTS: Over eight weekends, 55 consecutive CLOtests were studied from Friday lists. At 24 hours, 18 CLOtests were red and 37 were yellow. Between 24 and 72 hours one other CLOtest changed from yellow to red. Histology from the "late" CLOtest showed occasional spiral organisms but culture was negative. CONCLUSION: Positive CLOtests at 24 hours always remain red. Occasional tests which change from yellow to red between 24 and 72 hours (1 case in this series) may be true positives from patients with patchy colonization or sparse organisms. In this study 97% of negative CLOtests remained yellow at room temperature for 72 hours, allowing Friday tests to be read on Monday morning.

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EFFICACY OF FECAL HELICOBACTER PYLORI(HP)DETERMINATION IN PATIENTS WITH NONVARICEAL ACUTE UPPER GASTROINTESTINAL BLEEDING(NVAUGIB).

Diego Lopez-Penas, Antonio Naranjo-Rodriguez, Angel Gonzalez-Galilea, Antonio Hervas-Molina, Fernando Lopez-Rubio, Fernando Rodriguez-Lopez, Gonzalo Mino-Fugarolas, U C Aparato Digest H U Reina Sofia, Cordoba, Spain; S Anatomy Patologica H U Reina Sofia, Cordoba, Spain; S Microbiology H U Reina Sofia, Cordoba, Spain.

BACKGROUND.Several methods are available to detect HP infection in clinical practice.It has been suggested that sensitivity of these tests is lower for patients with NVAUGIB.A new test to detect HP antigens in stool samples has been recently developed,using an enzyme immunoassay(HpSA).Its accuracy in bleeding patients with melaena has not been well defined.AIMS.To determine the accuracy of HpSA test in patients with NVAUGIB and to compare HpSA test with standard tests for detection of HP infection.PATIENTS AND METHODS.32 patients with NVAUGIB were included.Endoscopy was performed within 12h after admission.The cause of bleeding was duodenal ulcer 15,gastric ulcer 10,gastric mucosae acute lesions 5 and peptic esofagitis 2.Patients were tested for HP infection by measurement of serum immunoglobulin G and antral and corpus biopsy specimens for rapid urease test and histology with H&E and Giemsa stain;^{13}C-Urea breath test was performed within 2 days after endoscopy and stool samples were collected on the same day to perform HpSA test.A patient was considered infected by HP if three out of the five methods were positive.Sensitivity,specificity,positive predictive value and negative predictive value of the different tests were compared.RESULTS.23 patients