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# H. pylori Infection in Children: Population-Based Age-Specific Prevalence and Risk Factors in a Developing Country

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## P03 Epidemiology and Transmission

### Abstract no.: P03.01 Evolution of *H. pylori* Infection Rate in Belgium

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**Background:** Prevalence of *Helicobacter pylori* infection is declining in the industrialised countries. In this retrospective observational study we analyzed the epidemiology of *H. pylori* infection in Belgium during the last 20 years.

**Study:** Data of *H. pylori* infection according to the culture results from patients attending several adult and pediatric endoscopy units were analyzed.

The yearly prevalence was calculated. For the purpose of comparison, patient's age, gender, and ethnic background (particularly Northern and Western Europe and North Africa) were considered.

**Results:** From January 1988 to December 2007, a total of 52,566 gastric biopsies were cultured in the Microbiology Department of Brugmann University Hospital serving several centers.

Specimens were taken in the course of 32,037 endoscopies performed in 22,612 patients aged 1 to 99 years. The annual proportion of infected patients decreased gradually from 43.4% in 1988 to 29% in 2007. Significant differences were observed between ethnic groups. The prevalence observed among Northern and Western European patients decreased from 36.2% in 1988 to 15.2% in 2007, compared to a decrease from 71.7% to 40% in North Africans. Surprisingly, this trend of decline in the prevalence of *H. pylori* infection was not observed in North African children under the age of 9 years. Infection rate was lower in adult females compared to males.

**Conclusion:** This study highlights the variability of the prevalence of *H. pylori* infection among persons living in the same geographic area and probably reflects not only ethnic but also sociocultural and standard of living differences.

### Abstract no.: P03.02 *H. pylori* Infection in Children: Population-Based Age-Specific Prevalence and Risk Factors in a Developing Country

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The prevalence, age of disease acquisition, and risk factors for *Helicobacter pylori* infection were determined in a cross-sectional study among children.

**Methods:** *H. pylori* infection was assessed with ELISA in children aged 1 to 15 years in a community-screening program in Karachi,

Pakistan. Parents responded to a questionnaire on number of individuals in house, rooms, water source, type of latrines, and housing. Parents' socioeconomic status (SES) was assessed by Hollingstead Index (HI) based on occupation, level of education, and income.

**Results:** A total of 1976 serum samples were tested. *H. pylori* seropositivity in 1 to 5 years were 194 (36.6%), 6 to 10 years 316 (47.2%) [odds ratio (OR) 1.5 95% confidence interval (CI) 1.2–1.95] and 11 to 15 years 414 (53.5%) (OR 2.0 95% CI: 1.6–2.5). It increased with crowding index of 2–4 to 45.9% (OR 1.23 95% CI 0.92–1.63) and to 51.2% with crowding index > 4 (OR 1.52 95% CI 1.12–2.06) compared to 40.8% with low crowding index. In middle SES, seropositivity was 331 (50.5%) (OR 1.7 95% CI 1.3–2.4) while in lower SES 500 (47%) (OR 1.5 95% CI 1.1–2.0). Multivariate analysis showed *H. pylori* seropositivity in 6 to 10 and 11 to 15 years was high (OR 1.5 95% CI 1.2–1.9 and OR 1.9 95% CI 1.56–2.47, respectively) and in lower to middle SES (OR 1.6 95% CI 1.2–2.1 and OR 1.5 95% CI 1.10–2.0, respectively) also in children with uneducated fathers (OR 1.5 95% CI 1.27–1.97).

**Conclusion:** *H. pylori* seropositivity is significant. It increases with age, low to middle socioeconomic, and fathers' educational status.

### Abstract no.: P03.03 *Helicobacter pylori* Infection and Risk of Biliary Tract Cancer Death in a Nested Case–Control Study in Japan

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**Aim:** To investigate the association between *Helicobacter pylori* infection and risk of biliary tract cancer death, a nested case–control study was conducted.

**Subjects and Methods:** Our nested case–control study was conducted within the JACC study, a large cohort study that included 127,477 participants who were 40–89 years of age at baseline (1988 to 1990) throughout Japan. Subjects were 88 cases who subsequently died from biliary tract cancer (ICD10: C23 and C24) during an 13-year follow up and 263 controls who were randomly selected from all noncases. The controls were matched to cases by area, gender, and age. Serum samples were collected at baseline. We measured *H. pylori* IgG antibody using HM-CAP and E-plate with antigen from Japanese by ELIZA, where cut-off value was 2.7 EV and 10 U/mL, respectively. The odds ratios (ORs) for biliary tract cancer death were calculated using logistic regression model with adjustment for gender, age, smoking habits, and drinking habits.

**Results:** *H. pylori* seroprevalence among the case and control subjects was 85.2% and 80.2%, respectively. The ORs for biliary tract cancer death was 1.31 (95% confidence interval: 0.73–2.36) in the *H. pylori*-positive subjects after adjustment for gender and

age. When adjusted with gender, age, smoking habits, and drinking habits, the OR was 1.44 (0.76–2.75).

**Conclusions:** We found no significant association between *H. pylori* infection and risk of biliary tract cancer death.

**Abstract no.: P03.04**  
**Profile of HIV–*H. pylori* Coinfected Patients in the Highly Active Antiretroviral Therapy Era**

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**Aim:** Highly active antiretroviral therapy (HAART) is the current standard of care for HIV-infected patients. Some of these are infected with *Helicobacter pylori*. Few prospective trials have compared patient characteristics according to *H. pylori* status. This study was designed to correlate demographics and upper gastrointestinal endoscopic (UGIE) findings with *H. pylori* status.

**Methods:** We prospectively included every HIV-infected patient under HAART who underwent UGIE for the first time from January 2004 to December 2008. Data were collected on: demographics (age, gender, body mass index (BMI), tobacco habit, alcohol intake, HIV risk behaviors); comorbidities (viral hepatitis B or C, any organ dysfunction, and opportunistic diseases); medication including antibiotics, anti-H2 receptor or proton pump inhibitor and NSAID; CD4 cell count, viral load; and symptoms, endoscopic and histologic (*H. pylori* determined by Giemsa staining) diagnosis. Two groups of patients were compared according to *H. pylori* status (presence versus absence).

**Results:** Two hundred and twenty-seven patients were under HAART regimen; among which 141 were tested for *H. pylori* status. Those with *H. pylori* infection had a significantly higher BMI ( $p = .02$ ) and, CD4 cell count ( $p = .00$ ), more duodenal ulcers ( $p = .01$ ), significantly lower rates of comorbidities ( $p = .03$ ), viral load ( $p = .00$ ), and use of antibiotics ( $p = .00$ ). There was no statistically significant difference in all others demographic, medication, and endoscopic diagnosis between the two groups.

**Conclusion:** In the HAART era, HIV–*H. pylori* coinfection is associated with duodenal ulcer, and higher CD4 counts, higher BMI, and fewer comorbidities or use of antibiotics.

**Abstract no.: P03.05**  
**Factors Influencing the Efficacy of First-Line Treatment of *H. pylori* Infection in Algerian Patients**

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**Aim:** To determine the factors influencing the efficacy of *Helicobacter pylori* infection treatment in Algerian adult patients.

**Methods:** In this prospective study, 272 consecutive adult *H. pylori*-positive dyspeptic patients (mean age: 33.07 years; males:

85; nonulcer dyspepsia: 208; DU: 64) have been treated by four different first-line regimens: OAM, OAC, and RbmCT for 7 days and OAM with a high dose of metronidazole (1.5 g) for 10 days. All patients were controlled 8–12 weeks after treatment. The eradication of *H. pylori* infection was attested by the negativity of four tests: urea breath test, rapid urease test (Pronto Dry), histology, and culture. Age, sex, gastroduodenal disease (duodenal ulcer, gastritis), observance of treatment, therapeutic regimen, sensitivity for antibiotics, smoking habit, and type of bacterial virulence were evaluated.

**Results:** The global rate of eradication for the four regimens was 74%. In multivariate analysis, risk factors of the failure of *H. pylori* infection treatment were inobservance of treatment ( $p = .01$ ) and resistance to clarithromycin ( $p = .04$ ) and metronidazole ( $p = .05$ ).

**Conclusions:** In this study, inobservance of treatment and resistance to antibiotics, in particular to clarithromycin, were the two factors associated with the failure of *H. pylori* infection treatment.

**Abstract no.: P03.06**  
**Demographics of *H. pylori* Infection in a Canadian Arctic Hamlet**

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In the predominantly Aboriginal Hamlet of Aklavik, Northwest Territories (population ≈ 600), residents identified *Helicobacter pylori* infection and its link to gastric cancer as a priority concern and advocated for research focused on solutions. The resulting Aklavik *H. pylori* Project is the start of a broad collaboration aimed at investigating *H. pylori* infection in northern Canadian populations where gastric cancer rates are elevated and *H. pylori* infection is difficult to treat. Project goals are to describe sociodemographic patterns of *H. pylori* infection and the associated disease burden, identify effective treatments, inform local healthcare policy, and address community concerns. This report describes *H. pylori* prevalence in demographic subgroups. In January 2008 all Aklavik residents were invited to have a urea breath test (UBT) at the local health center. Of 368 residents who enrolled in the project, 313 were tested by UBT and 58% were positive. *H. pylori* prevalence was 61% in males ( $n = 140$ ) and 56% in females ( $n = 173$ ). In age groups 0–14, 15–24, 25–39, 40–59, and 60–79, prevalence was 53%, 70%, 69%, 51%, and 54% ( $n = 59, 53, 61, 105, 35$ ), respectively. By ethnicity, prevalence was 65% in Inuvialuit (Inuit) ( $n = 157$ ), 56% in Gwich'in Dene First Nation ( $n = 80$ ), 67% in mixed/other aboriginal ( $n = 12$ ), and 25% in nonaboriginals ( $n = 36$ ) (missing ethnicity = 28). UBT screening showed that *H. pylori* prevalence in this Canadian Arctic Hamlet is high across aboriginal subgroups from an early age. This project will seek effective strategies for addressing community concerns about health risks from *H. pylori* infection in northern Canada.

**Abstract no.: P03.07**  
**Prevalence of *H. pylori* Infection and Upper Gastrointestinal Findings in Patients Undergoing Bariatric Surgery**

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**Background:** *Helicobacter pylori* infection is present in 30–67% of patients scheduled for bariatric surgery. The role of upper gastrointestinal endoscopy (UGIE) before bariatric surgery is controversial.

**Aim:** To evaluate the prevalence of *H. pylori* infection and UGI findings in asymptomatic morbidly obese patients planning to undergo bariatric surgery.

**Patients/Method:** Between January 2007 and September 2008, all patients undergoing bariatric surgery underwent a routine UGIE with antral/fundus biopsies and *H. pylori* testing. The demographic, clinical, and endoscopic data were compared between *H. pylori*-positive and *H. pylori*-negative patients. *H. pylori* eradication was mandatory prior to surgery.

**Results:** Of the 284 patients that underwent bariatric surgery, 20.77% were male. One hundred and eight patients (38%) were *H. pylori* positive. The cohort average age was 42.18 years: 44 years versus 39 in *H. pylori* positive and *H. pylori* negative, respectively ( $p = .006$ ). Two hundred and forty-four patients were Caucasian (85.92%) and 40 (14.08%) were non-Caucasian. *H. pylori* was more prevalent in non-Caucasian. The average body mass index (41 kg/m<sup>2</sup>) was similar in the two groups. For all patients, the most frequent endoscopic findings were hiatal hernia, esophagitis, and gastritis. All others were less frequent with Barrett esophagus in four patients, gastroduodenal ulcers in 31 patients, gastric polyps in eight patients, and silastic ring migration in six patients.

**Conclusion:** The prevalence of *H. pylori* in our patients is similar to the general population. This study showed a high incidence of endoscopic findings in asymptomatic obese patients. Systematic UGIE and *H. pylori* testing should be performed in all patients scheduled to undergo bariatric surgery.

**Abstract no.: P03.08**  
**Trend in the Eradication Rates of *H. pylori* Infection in the Last 11 Years**

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**Background/Aims:** The standard triple therapy used as the first-line treatment for *Helicobacter pylori* that combines a proton pump inhibitor (PPI), amoxicillin, and clarithromycin had an initial eradication rate of 90%. However, many recent studies have not found this level of effectiveness. This study evaluated the trend in the eradication rates of *H. pylori* infection over the last 11 years.

**Methods:** This was a retrospective study of patients diagnosed with *H. pylori* infection between 1997 and 2007 and treated with

triple therapy (PPI, amoxicillin, and clarithromycin). The patients answered questions about compliance and side-effects within 2 weeks of completing their treatment. In addition, we assessed whether the *H. pylori* had been eradicated at least 4 weeks after the treatment using a <sup>13</sup>C-urea breath test, rapid urease test, or histopathologic examination.

**Results:** The eradication rate with first-line triple therapy decreased over the study period. There was no change in the eradication rate with second-line quadruple therapy (PPI, bismuth, metronidazole, and tetracycline). There were no differences in the eradication rate and recrudescence between 1- and 2-week regimens.

**Conclusions:** The effectiveness of the recommended first-line triple therapy for *H. pylori* eradication has decreased significantly in the last decade. Therefore, the first-line therapy based on the combination of PPI, amoxicillin, and clarithromycin may need to be changed in the near future.

**Abstract no.: P03.09**  
**The Prevalence and Structure of Peptic Ulcer Disease in Population of Tyva Republic**

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**Aim.** To study the prevalence of peptic ulcer disease in Mongoloids and Europoids of Tyva.

**Methods.** Materials of endoscopic department of Tyva Republican Hospital for the 2005–2006 were analyzed. For this period gastroduodenoscopy was performed on 1861 adult Europoids (988 men, 873 women) and 5829 adult Tyvins (2802 men, 3027 women). IgG *Helicobacter pylori* and IgG Cag A *H. pylori* were determined by ELISA method in 424 Europoids and 316 Tyvins.

**Results.** The prevalence of peptic ulcer disease in Europoids was 13.7%, in Mongoloids – 6.6% ( $p < .001$ ). The prevalence of duodenal ulcer in Europoids was 8.5% (10.9% in men; 5.7% in women); gastric ulcer – 5.2% (6.2% in men; 4.2% in women). The prevalence of duodenal ulcer in Tyvins was 3.5% (5.2% in men; 1.9% in women); gastric ulcer – 3.1% (4.3% in men; 2.0% in women). The prevalence of *H. pylori* was 92.4% in Mongoloids and 87.1% in Europoids. The frequency of Cag A *H. pylori* in Tyvins was 60.0%, in Europoids – 61.2%.

**Conclusion.** The differences of peptic ulcer prevalence in Mongoloids and Europoids of Tyva were registered, which were not associated with *H. pylori* prevalence.

**Abstract no.: P03.10**  
**Infection with *H. pylori* – Prevalence in Young Asymptomatic Volunteers**

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**Background and Objective:** Recent data are lacking on the prevalence of *Helicobacter pylori* in young individuals in Germany.

It has been suggested that the age-adjusted prevalence of *H. pylori* decreased over the last decades in the younger generations. This study aimed to define the prevalence of *H. pylori* in young asymptomatic volunteers in mid-Germany.

**Subjects and Methods:** One hundred and thirty-seven healthy volunteers (age 18–40 years) were screened for *H. pylori* infection. *H. pylori* status was evaluated by <sup>13</sup>C-urea breath test, stool antigen test, and *H. pylori* serology (IgG).

**Results:** Among the 137 persons tested (71 females, 66 males; mean age 27.14 ± 5.65), 15 % were *H. pylori*-positive (20 of 137) by using either the breath or the stool antigen test. Sixteen of the 20 infected subjects had a positive result in both test methods. Three were only positive in the stool test, while one was positive only in the breath test. Considering a positive result in the *H. pylori* serology, the prevalence of a present or past infection increased to 26%. In the group aged 30–40 years the prevalence of *H. pylori* was higher (37%) compared to younger individuals (18–29 years) with 22%. In female participants the prevalence was 30% in comparison to 21% in male subjects.

**Conclusion:** Among young asymptomatic volunteers, there is still a remarkable prevalence of *H. pylori* infection, with the infection being more prevalent in female than male subjects. Interestingly, there is a difference in this young population between the prevalence of the current infection status (stool, breath test) and the serologic status. The known association between age and *H. pylori* infection was confirmed.

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### Abstract no.: P03.11 Prevalence of vacA Genotypes of *H. pylori* in Pakistani Population

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*Helicobacter pylori* is a recognized cause of gastroduodenal diseases worldwide. Virulence of the organism is correlated with two virulence genes including cagA and vacA. Allelic variation is observed in signal sequence and middle region of vacA gene which is found to be different in different geographic areas. In Pakistan, studies about prevalence and genomic diversity of *H. pylori* are largely missing. This study was designed to know prevalence of *H. pylori* and its vacA genotypes in metropolitan city of Karachi, Pakistan. A total of 375 gastric biopsies of the patients with various gastroduodenal symptoms were included in the study. Genomic DNA were purified and characterized for 16S rRNA, ureA, and vacA genotyping using polymerase chain reaction. Of 375 patients, 44.5% were found to be infected with *H. pylori* using rRNA-specific primers. Thirty-nine percent were positive using ureA-specific primers. The vacA s1a-m1 genotype was most prevalent and observed in 50% cases followed by s1a-m2 in 21% and s2-m1 in 14.5% cases. Genotypes s1b-m1 and s1b-m2 were observed in 3% cases each. No s2-m2 genotype was observed. Our observations regarding s1-m1 and s1-m2 genotypes are in consensus with previous studies conducted in

Asian countries; however; prevalence of genotype s2-m1 is higher (14%) in Pakistani population. To the best of our knowledge, this is first comprehensive study about prevalence of *H. pylori* in Pakistan with considerable number of samples which also provide molecular dissection of vacA gene.

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### Abstract no.: P03.12 Omeprazole Permeabilizes Yeast to Release Intracellular *H. pylori*

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**Introduction:** Omeperazole is a proton pump inhibitor which exerts its inhibitory effect on ATPase of eukaryotic cells. Accordingly, omeprazole exhibits antifungal activity against yeasts. In this study we treated yeasts with acid-activated omeprazole and examined the release of bacterium-like bodies (BLBs) outside the yeasts.

**Methods:** One oral yeast, *Candida* spp., was selected for the study. Polymerase chain reaction was performed by designed primers to amplify *H. pylori* 16S rDNA and *jhp0947* genes from the total DNA extracted from yeast. Yeast suspension was prepared with the turbidity of 0.5 McFarland in BHI broth. A concentrated stock solution of omeprazole was prepared in DMSO then acidified to pH 2 with 0.1 mol/L HCl. Ten microlitres of omeprazole was added to 990 µL of yeast suspension then incubated at 35 °C for 24 hours. Wet mount was prepared and examined by light microscopy.

**Results:** Electrophoresis demonstrated the amplified 16S rDNA (519 bp) and *jhp0947* (611 bp) genes from yeast DNA. The size of the products was homologous to the ones amplified from control *H. pylori*. Microscopic observations demonstrated the presence of BLBs inside and outside of yeasts. Attempts to culture the BLBs were not successful.

**Discussion:** Previous microscopic observations of gastric yeasts have revealed the presence of intracellular BLBs inside the yeast vacuole. Attempts to release or culture bacteria from yeasts have not been successful until now. Here treatment of yeasts with omeprazole led to release of BLBs which were not culturable. Amplification of *H. pylori*-specific genes from yeast propose that BLBs might have bacterial nature and could be *H. pylori*.

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### Abstract no.: P03.13 Detection of *H. pylori* in the Vacuole of Yeast by Live/Dead Bacterial Viability Kit

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**Introduction:** Yeasts have vacuole for storage of phosphate and amino acids. Bacteria could establish in this vacuole to be

protected against environmental stresses, while being able to reach important nutrients. In this study intracellular existence of *Helicobacter pylori* inside the yeast vacuole was examined by polymerase chain reaction (PCR) and live/dead kit.

**Materials and Methods:** One oral yeast *Candida* was subcultured > 10 times on yeast glucose chloramphenicol agar for the elimination of possible bacterial contamination. PCR was performed to amplify *H. pylori* 16S rDNA and *jhp0947* genes from the total DNA of yeast. Live/Dead BacLight Bacterial Viability Kit was used for the assessment of living status of intracellular *H. pylori* inside the vacuole. Spiral and coccoid forms of *H. pylori* were also recruited as controls.

**Results:** *H. pylori*-specific genes, 16S rDNA and *jhp0947*, were amplified from the total DNA of yeast. The size of amplified fragments was homologous to the ones amplified from control *H. pylori*. Fluorescent microscopic observations of stained wet mount of yeast revealed fast moving green fluorescent bacterium-like bodies inside the vacuole. Most of the coccoid and spiral forms of *H. pylori* appeared green.

**Discussion:** Results of this study propose the possibility of endosymbiotic life of *H. pylori* inside yeast. *Candida* yeast and *H. pylori* are both colonizers of human digestive tract. Thus their intimate relationship might have an evolutionary rationale. Since yeast is remarkably compatible with environmental changes, establishment of bacteria inside its vacuole could be very crucial for the protection of bacteria in nature. Advantage of this relationship for yeast has to be elucidated.

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### Abstract no.: P03.14

#### ***Helicobacter* Infection in Cats of the North of Portugal Preliminary Results**

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**Introduction:** Gastric helicobacter-like organisms (GHLOs) were described in humans, domestic, and wild animals; 32 species have been identified and mixed infections can occur. Human represents the main reservoir of *H. pylori*, with a prevalence of around 50% in developed countries and up to 90% in Third World countries. Portugal, with 83%, has the highest rates in Europe. In 2008, 18.4% of cats brought to ICBAS-UP Animal Hospital presented gastrointestinal disorders as main complaint. In order to determine the presence of GHLOs in cats of northern Portugal, endoscopic examination was performed in nine animals and biopsies were collected.

**Material and Methods:** Gastric endoscopy was performed in nine cats, seven with gastrointestinal signs. Biopsies of cardia, stomach body, and antrum were collected, routinely processed for histopathology, and stained with hematoxylin and eosin, modified Giemsa stain, and immunohistochemistry.

**Results:** All cases revealed the presence of GHLOs, most without associated inflammatory reaction. Sensitivity increases from hematoxylin and eosin to histochemistry being higher in immunohistochemistry. Strains identification and isolation are underway.

**Conclusion:** A clear association between infection by GHLOs, gastritis, and gastric malignancies is already documented. The fact that some infected cats show no clinical signs, means that this condition is underdiagnosed. Northern Portugal has a higher incidence of *H. pylori* in humans and the detection of this bacteria in cats, in the same niche, may indicate that these animals

represent a silent reservoir. The public health repercussions of this fact emphasize the need to determine the prevalence of different GHLOs in this area.

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### Abstract no.: P03.15

#### ***H. pylori* Colonization of the Adenotonsillar Tissue: A Literature Review**

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Recently, several studies have evaluated the presence of *Helicobacter pylori* in the adenotonsillar tissue. The present study aimed at critically reviewing the evidence so far obtained in those studies. For that, a PubMed search with keywords related to adenoid and tonsillar tissues and *H. pylori* was performed. Studies were analyzed regarding the total number of patients and number of positive results with each methodology.

Several techniques have been used, isolated, or in combination, to test for the presence of *H. pylori*. Positive results were found in nine of the 11 papers that have used the rapid urease test (158 of 477 patients). Positivity was obtained in one of three studies that have used histology (four of 104 patients), whereas immunohistochemistry with antibodies to *H. pylori* gave positive results in two of five papers analyzed (130 of 342 patients). Polymerase chain reaction was used in eight studies, and in five of them positivity for *H. pylori* was reported (61 of 303 patients). Only four studies evaluated the presence of *H. pylori* by culture and only in one of them positive results were obtained for gram-negative, catalase, oxidase, and urease-positive bacteria (61 of 303 patients).

In conclusion, the review of these publications demonstrated contradictory results. The reasons underlying these observations may be related to differences in sensitivity and specificity of methods. Techniques currently used for detecting gastric *H. pylori* colonization are probably not adequate to evaluate infection of the adenotonsillar tissue.

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### Abstract no.: P03.16

#### ***H. pylori* Infection in the Countries of the Caribbean**

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**Objective:** Our aim was to determine the seroprevalence of *Helicobacter pylori* infection in a group of 300 consecutive adult subjects population submitted to upper digestive tract endoscopy clinics in three countries, Venezuela, Cuba, and Dominican Republic.

**Subjects and Methods:** Serology (IgG) were performed on 300 patients using Microwell ELISA from Diagnostic Automation Inc. (USA) and Pyloriset E IA-IIIG de Orion Diagnostic (Finland). Patients had the following endoscopic diagnosis: duodenal ulcer 31 of 300 (10%); gastric ulcer: 27 of 300 (9%); and nonulcer dyspepsia, including chronic gastritis: 242 of 300 (81%). The mean age was 46 years with 127 of 300 (42%) men and 173 of 300 (58%) women.

**Results:** Among the 300 serums tested, 100% were positive in Venezuela, Cuba, and Dominican Republic. The seroprevalence

of *H. pylori* infection in the symptomatic population of La Havana-Cuba, Caracas-Venezuela, and Santo Domingo-República Dominicana.

**Conclusions:** There is a great paucity of information about *H. pylori* infection in the countries of the Caribbean basin. These results indicate the importance of further studies to identify factors influencing the high prevalence of the infection with *H. pylori* in the region.

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**Abstract no.: P03.17**  
**Identification of Eastern Asian cagA 3' Region Using a Single PCR Technique**

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CagA of *Helicobacter pylori* is a virulence factor and part of the cag PAI. It encodes a protein which is 120–140 kDa and immuno-

dominant antigen. There are two main CagA polymorphisms in the 3' region of *H. pylori* genome. One is specific of *H. pylori* strains of Eastern Asian origin and the other one is of Western origin. Differences in polymorphisms are documented by DNA and amino acid sequence analysis. The goal of the present study was to identify strains of East Asian origin by polymerase chain reaction (PCR) technique.

**Method:** A total of 120 *H. pylori* strains were studied. There were 60 isolated from patients of Western origin and 60 were obtained from patients of East Asian origin. We performed two Eastern-specific PCR that amplified a band in the cagA region before and after the D motif.

**Results:** We found that both sets of primers had a high specificity since only 5% of none Eastern *H. pylori* showed some PCR bands. In contrast, the sensitivity was better for the PCR amplifying the cagA gene region before the D motif (83%) than the PCR amplifying the region of the cagA gene that included a region after the D motif (63%). Sequence analysis failed to show differences in nucleotide sequences that explain the discordant results.

**Conclusion:** We have designed a PCR that is highly specific and sensitive to identify *H. pylori* that contains cagA gene harboring the specific Eastern D EPIYA motif.

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## P04 Inflammation, Host response, Immunity, Animal Models, and Vaccines

**Abstract no.: P04.01**  
**The *H. pylori*-Induced Reduction of Secretory Leukocyte Protease Inhibitor Protein Levels is Regulated by Post-translational Mechanisms in a CagA-Independent Manner**

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**Background:** Recently, a downregulation of mucosal secretory leukocyte protease inhibitor (SLPI) expression by *H. pylori* was reported. Here, the regulatory mechanisms of SLPI expression were studied in gastric tumor cells infected with *H. pylori* and isogenic mutants.

**Methods:** Gastric tumor cells (AGS and MKN-28) were infected with *H. pylori* CagA+ strain and isogenic mutants lacking either functional CagA or T4SS. Furthermore, the effects of cycloheximide, chloramphenicol (as inhibitors for protein translation), and the direct cell–bacteria contact were studied in context to the *H. pylori*-induced reduction of SLPI. SLPI gene expression was studied by ELISA and quantitative RT-PCR.

**Results:** Gastric cell lines infected by wild-type *H. pylori* showed a reduction by 30–80% of SLPI protein levels, but a 5-fold induction of corresponding transcript expression ( $p < .001$ ). The reduction of the SLPI protein amount was independent of direct cell–bacteria interaction, and does not depend on *de novo* protein biosynthesis

in bacteria. Data from clinical specimens and in vitro studies using *H. pylori* mutants lacking either CagA or VirB7 revealed that the reduction of the SLPI is independent of CagA and the presence of a functional T4SS. Coincubation studies with cycloheximide demonstrated that *H. pylori* specifically induces post-translational processes leading to the reduction of SLPI. Initial studies targeting cathepsins and metalloproteases as SLPI-degrading proteases failed to demonstrate an involvement of these enzymes.

**Conclusion:** The *H. pylori*-induced reduction of epithelial SLPI protein is mainly regulated by post-translational processes, and does not depend on bacterial virulence factor CagA and the presence of T4SS.

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**Abstract no.: P04.02**  
**In vitro Study of Dendritic Cell Maturation Induced by *H. pylori* Strains: Evaluation of the Inflammatory Response and Immunologic Consequences**

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In the context of gastric MALT lymphoma, our aim was to investigate ex vivo the role of dendritic cells (DC) in response to