MORPHOMETRIC STUDIES OF OXYNTIC MUCOSA IN ZOLLINGER-ELLISON PATIENTS. H.F. Helander, K. Rutgersson, K.G. Helander, J.D. Gardner, R.T. Jensen, P.N. Maton. AB Hässle, Mölndal, Sweden and NIH, Bethesda, MD, USA.

Gastrin exerts trophic effects on the oxyntic mucosa. Therefore, in Zollinger-Ellison (ZE) patients, the hypergastrinemia might produce morphological changes. To elucidate this we studied the oxyntic mucosa by quantitative microscopy.

Methods: Oxyntic mucosa biopsies were taken on 79 occasions from 45 ZE patients treated with omeprazole (up to 39 months) or histamine H2 antagonists. One-micron plastic sections were analyzed by morphometry. Data from 25 duodenal ulcer (DU) patients[1] and 10 healthy controls[2] are included for comparison. Fasting serum gastrin levels were determined on 47 biopsy occasions in the ZE patients.

Results:

(mean±sem)	Mucosal thickness (mm)	Lamina propria (% of mucosal volume)	Parietal cells (% of mucosal volume)	Endocrine cells (% of mucosal volume)
ZE	0.73±0.01	36±1	16.9±0.8	0.59±0.06*
DU	0.85±0.04	40±2	11.8±1.1	0.26±0.03
Controls	0.78±0.02	30±2	15.7±0.7	0.33±0.05

*) significantly higher than in DU or controls ($p<0.05$)

There was no significant correlation between endocrine cell density and fasting serum gastrin levels, age, or duration of ZE disease. No significant morphological differences could be related to the type of antisecretory treatment. In 9 biopsies from ZE patients chain-forming hyperplasias of endocrine cells were seen. No other differences were observed between ZE patients and controls.

Conclusions: The endocrine cell density in the ZE patients was about twice as high as in the controls. In 11% of the biopsies from ZE patients there were chain-forming hyperplasias.

References: 1. Helander et al. Virchows Arch.A 417,305,1990.
2. Helander et al., Anat.Rec. 216,373,1986.

● **The site of acid pump activation in the parietal cell**

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The mammalian parietal cell undergoes a morphological transformation upon stimulation whereby the H,K ATPase that is located in intracytoplasmic vesicles (tubulovesicles) is translocated to the surface of the secretory canaliculus. Whereas it is known that acid secretion occurs into the canalicular lumen, it is not known whether cytoplasmic pump can be activated by secretagogues or whether association with canaliculus is a prerequisite for HCl formation. Omeprazole is converted to a covalent -SH reagent in acid spaces of the parietal cell and labels 2 cysteines (#823 and 893) on the luminal surface of the α subunit of the H,K ATPase when the ATPase is forming HCl. With electron microscopic autoradiography it is possible to allocate omeprazole labelling to a cytoplasmic or canalicular compartment and to compare omeprazole labelling in resting or stimulated gastric glands, using aminopyrine accumulation as an index of changes in HCl secretion in this model. In unstimulated cells, there was a progressive accumulation of omeprazole with no change in basal aminopyrine accumulation. In the first 5 minutes the increase was mostly in the canalicular space, but at 10,30 and 60 minutes after omeprazole exposure counts also appeared in the cytoplasm, showing that the pump was being recycled in the "resting state", with an approximate $t_{1/2}$ of 2 hours. In the stimulated condition there was a large increase in omeprazole labelling and aminopyrine accumulation demonstrating activation of pumps. The initial increase evident within 5 minutes was in the canaliculus but from 10 to 60 minutes the cytoplasmic compartment increased along with the canalicular compartment. Hence, activation of the pump occurs at the canalicular membrane and stimulation results in rapid recycling of the activated pump.(NIH,VA support).

● **HELICOBACTER PYLORI (HP) : A RISK AND SEVERITY FACTOR IN NSAIDs INDUCED GASTROPATHY.** D Heresbach (1), JL Raoul (1), PY Donnio (2), L Siproudhis (1), J Minet (2), MP Ramée (3), Y Pawlotsky (4), JF Bretagne (1), M Gosselin (1). Departement of Hepato-gastroenterology (1), Bacteriology (2), Anatomopathology (3) and Rhumatology (4). CHU Pontchaillou.- Rennes FRANCE.

A multitude of factors are responsible for the pathogenisis of NSAIDs induced gastropathy. Gastritis by HP and NSAIDs induced gastropathy have several characteristics in common, (frequent localisation in the antrum, increase in frequency with age, n antral polymorphonuclear infiltrate). HP might therefore be a factor in the pathogenisis of NSAIDs induced gastropathy. **The goal** of this prospective study was to determine the prevalence of antral colonisation by HP in function of the presence and intensity of NSAIDs induced gastropathy. **Patients and Methods:** 111 patients (60 women, 51 men; 57.2 ± 1.7 years old) without a history of ulcers and with no recent medication by sucralfate or antibiotics were included; 66 patients taking NSAIDs were divided into three goups: Gr I (n = 28) with no lesions detected by endoscopy, Gr II (n = 26) with non-bleeding gastroduodenal lesions, or Gr III (n = 12) with externalized bleeding. The control group was composed of 45 patients who were not taking NSAIDs and who presented neither upper digestive symptoms nor lesions detected by endoscopy. Three antral biopsies were performed on all the patients (greater curvature; < 3 cm before the pylorus). The presence of HP was defined by the positivation of at least 2 of the following 4 tests: Giemsa (histology) and Gram staining, urease activity, and growth in culture. The gastritis activity was defined by the presence of polynuclear WBC.

Results: The sensitivity and the specificty of the diagnostic tests were respectively: histology, 71% and 92%; urease, 89% et 98%; Gram staining, 93% et 94% and growth in culture, 68% et 100%. There was no difference concerning age, sex, or presence of HP (26% vs 24%) between the NSAIDs group and the control group. Among the patients taking NSAIDs, the antral colonisation by HP was significantly ($p < 0.02$) more frequent in those who presented lesions (Gr II + Gr III = 37%) in comparison to those who did not have any lesions (Gr I = 11%). The pourcentage of positive HP tests increased significantly ($p < 0.03$) with the increase in severity of lesions (Gr I: 11% ; Gr II: 31% ; Gr III: 50%). The frequence of active antral gastritis increased as well with the severity of the lesions (Gr I: 21%; Gr II: 35%; Gr III: 67%; $p < 0.05$). The presence of HP was independant of: the localisation (duodenal or gastric) of the lesions and the motivation behind the prescription of NSAID: (inflammatory rheumatism or degenerative disease).

Conclusion: 1) The prevalence of HP in a population taking NSAIDs is low (26%) and equivalent to that of the control population (24%); 2) the prevalence is higher in patients with NSAIDs induced gastropathy and increases with the severity of the disease. These results show that HP can be considered as a risk factor of NSAID induced gastropathy.

● HELICOBACTER PYLORI (HP) INFECTION AFTER SURGERY FOR PEPTIC ULCER DISEASE. D.P. Hetzel, S.H. Caldwell, B.J. Marshall, S. Hoffman, S. Woodson, H.F. Frierson, C. Antonescu, R.W. McCallum. Divs. of Gastroenterology, U. of Virginia, Charlottesville, VA and Salem Veterans Administration Hospital, Salem, VA.

HP can be found in about 80% of patients with peptic ulcer disease (PUD) (70% of gastric ulcer and 90% duodenal ulcer). Little is known about HP infection in patients experiencing dyspeptic symptoms following ulcer surgery. **PURPOSE**: This study was undertaken to determine the prevalence and clinical significance of HP infection in patients who underwent surgery for PUD. **METHODS**: We examined 20 symptomatic patients post-surgery (resective in 6) for benign PUD for the presence of HP using the ^{14}C-urea breath test (BT) and also 10 asymptomatic post-ulcer surgery patients (resective in all). All patients completed symptom and history questionnaires and were interviewed. **RESULTS**: HP was identified in 63% (19/30) overall. 13 of 20 (65%) symptomatic patients compared to 6 of 10 (60%) asymptomatic patients were HP positive (p=NS). Duration since surgery was longer in the asymptomatic group (mean: 215 mo v. 45 mo) and this group was also older (mean age 61 11 yrs v. 44 11) ($p<.01$). There was no difference in symptom frequency among the symptomatic HP+ and HP- patients, but more in the HP+ group required medications (69% v. 43%, p=NS) and 2 HP+ patients had proven ulcer relapse. 3 HP+ symptomatic patients have had HP eradicated with improvement in their symptoms. **CONCLUSIONS**: 1) HP infection is common after ulcer surgery, being present in 2/3 of patients. 2) HP prevalence is similar in symptomatic and asymptomatic groups. 3) Effective acid reduction, as achieved with surgery, can relieve ulcer symptoms even in the presence of HP infection. 4) Increased age is associated with decreased symptoms in operated patients. 5) HP therapy should be considered in symptomatic HP+ post-ulcer surgery patients.