4 INVESTIGATION OF ESOPHAGEAL BALLOON DISTENSION TEST FOR UNEXPLAINED (NCCP) CHEST PAIN
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Purpose: Although balloon distension test has been used for identifying esophageal visceral hypersensitivity, there is limited data and in small number of patients and its clinical utility is not fully known. Our aim was to prospectively assess symptoms, biomechanical and sensory properties in patients with unexplained chest pain and the yield of this test.

Methods: Graded balloon distensions were performed using impedance planimetry in 139 (m/f=41/98, x age=46 yr) patients with noncardiac, nonreflux chest pain and 23 (m/f= 10/13, x age=43 yr) healthy controls. The frequency, intensity and duration of chest pain was scored on a scale of 1–3.

Results: The thresholds for first perception (mean ± CI; 14 ± 2 vs 30 ± 5, p<0.01), discomfort (34 ± 2.4 vs 54 ± 4, p<0.01) and pain (41 ± 3 vs 62 ± 2, p<0.01) were lower in patients than controls. Typical chest pain was reproduced in 105/139 (76%) patients. The cross sectional area was larger (p<0.02) and the wall strain was lower (p<0.02) in patients, but the reactivity of the esophageal wall was similar to controls (table). Chest pain frequency was scored as 2.5 ±0.3, intensity as 2.2±0.2 and duration as 2.2±0.2.

Conclusions: Our patients with unexplained, frequent and moderately intense chest pain demonstrated a hypersensitive esophagus with a larger CSA and decreased wall strain or deformability. This confirms that esophageal hypersensitivity plays a major role in their pathogenesis. The balloon distension test reproduced chest pain in 76% of patients and hence maybe the most useful test in the diagnostic evaluation of this problem.

5 WHY DO PATIENTS DEVELOP POST-FUNDOPICATION SYMPTOMS?: A PERSPECTIVE FROM A CONSULTATIVE GASTROENTEROLOGIST (CG)
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Purpose: We have previously showed that post-primally more than one intra-gastric acid layer (pH<4) is consistently present in the stomach for at least one hour post-primially. This study was done while the subject was always in a semi-recumbent position. The aim of this study was to re-evaluate pH patterns in the proximal and distal stomach post-primially in different body positions.

Methods: 10 healthy volunteers (4 males; mean age 34yrs) studied. LES localized by esophageal manometry. pH probe positioned with electrode 15cm below LES proximal border then withdrawn 1cm every 30 sec to position 5cm above LES. 1st pull-through after 6hr fasting, in upright position. Then meal given (12 oz chocolate milk; egg McMuffin) and pull-through repeated 4 consecutive times (approximately 15, 30, 45 and 60 min). Each of the post-primial pull-throughs was performed in one of 4 positions: upright, supine, right decubitus and left decubitus. The order of these positions varied randomly with each subject.

Results: The pH step-up, defined as change in pH from gastric to esophageal (<4 to >4), was identified in each pull-through. No significant difference found between location of step-up in the fasting and post-primial pull-throughs, whether comparing the fasting with each different body position or with each pull-through according to its order (Friedman test).

Gastric pH stable during fasting (median: 2.2). In post-primial pull-throughs, gastric buffering from the meal was not uniform. At each position, we calculated median pH at each 1 cm. An area of lower pH was always found within 2cm distal to the step-up. Distal to the area of higher gastric pH (median pH at 5), a second acid layer was found. This pattern persisted through the 4 post-primial pull-throughs, irrespective of body position, for an average of 1hr post-primially. In some subjects, this layering of the gastric content tended to diminish towards the end of one hour after the meal, with the pH getting more acid.

In one subject, radiographs were taken prior to each pull-through and confirmed that the pH probe didn’t curve backwards in any position.

Conclusions: The pH step-up was persistent in the fasting period and for one hour post-primially. Gastric buffering from a meal creates a non-uniform environment with at least 2 acid layers. This pattern persists, irrespective of body position, but tends to become more homogeneous about one hour after the meal. The lack of homogeneity of stomach content post-primially helps explain acid gastro-esophageal reflux after a meal.