

What's new in 2015? Diagnostic tools for upper GI function

Pepsin detection in saliva (Peptest®) was proposed as a non-invasive method to diagnose GERD. This test consists of the collection of 3 saliva samples. It was recently tested in a large cohort of patients and controls. Using the cut off values of 16 ng/ml, a positive test had a sensitivity of 79% and a specificity of 65% for the diagnosis of reflux related symptoms. Increasing the cut off value to 210 ng/ml gave the best specificity (98%) for GERD diagnosis. The authors concluded that Peptest® may assist office based diagnosis and lessen the need for invasive tests.

Hayat JO, Gabieta-Somnez S, Yazaki E, et al. Pepsin in saliva for the diagnosis of gastro-oesophageal reflux disease. *Gut*. 2015; 64: 373-80

<http://www.ncbi.nlm.nih.gov/pubmed/24812000>

Measuring mucosal impedance might be interesting to diagnose GERD. Indeed the impairment of mucosal integrity observed in GERD might result in a decrease of esophageal impedance. An impedance probe introduced in the working channel of an endoscope might allow the measurement of mucosal impedance during an upper GI endoscopy. This device was in a large cohort of patients, including patients with erosive esophagitis, abnormal pH monitoring, controls, achalasia and eosinophilic esophagitis. The authors observed a specific pattern in GERD patients: mucosal impedance closer to the SCJ was low and values increased axially along the esophagus. The specificity for GERD diagnosis was 95% and the negative predictive value 96%.

Ates F, Yuksel ES, Higginbotham T, et al. Mucosal Impedance Discriminates GERD From Non-GERD Conditions. *Gastroenterology*. 2015; 148: 334-43.

<http://www.ncbi.nlm.nih.gov/pubmed/25448923>

Mucosal impedance might also be evaluated during the 24-h pH-impedance monitoring. Nocturnal baseline impedance can be measured in the most distal channel above the EGJ during the overnight period at 3 time points. Patients with functional heartburn who responded to PPI therapy had lower baseline impedance values than those who did not respond. Further nocturnal baseline impedance increased the sensitivity for the diagnosis of non erosive reflux disease compared to the classical parameters analyzed in pH-impedance.

de Bortoli N, Martinucci I, Savarino E, et al. Association between baseline impedance values and response proton pump inhibitors in patients with heartburn. *Clin Gastroenterol Hepatol*. 2015; 13: 1082-8 e1.

<http://www.ncbi.nlm.nih.gov/pubmed/25499991>

Frazzoni M, Savarino E, de Bortoli N, et al. Analyses of the Post-reflux Swallow-induced Peristaltic Wave Index and Nocturnal Baseline Impedance Parameters Increase the Diagnostic Yield of Impedance-pH Monitoring of Patients With Reflux Disease. *Clin Gastroenterol Hepatol*. 2015 (in press)

<http://www.ncbi.nlm.nih.gov/pubmed/26122764>

The combination of impedance and high resolution manometry might be useful for the diagnosis of esophageal motility disorders. A new parameter, the bolus flow time (BFT) was defined. BFT combined pressure and impedance measurement at the level of the EGJ. BFT was significantly lower in patients with achalasia compared to controls and was correlated with dysphagia contrary to IRP.

So bolus flow time might be complementary to integrated relaxation pressure especially in case of borderline line IRP and to establish correlation with symptoms.

Lin Z, Carlson DA, Dykstra K, et al. High-resolution impedance manometry measurement of bolus flow time in achalasia and its correlation with dysphagia. *Neurogastroenterol Motil.* 2015; 27: 1232-8.

<http://www.ncbi.nlm.nih.gov/pubmed/26088614>

The impedance planimetry named EndoFLIP® was initially developed to assess EGJ and esophageal distensibility. During esophageal distension by EndoFLIP® balloon, secondary peristalsis can be observed. The contractions are responsible for a decreased diameter of the balloon within the esophagus. Using a customized Matlab program, the changes of balloon diameter might be represented as FLIP topography. FLIP topography was firstly performed in controls. All controls exhibited contractility during distension. These contractions were repetitive and antegrade in 8 out of 10 controls. In patients with achalasia, FLIP topography detected contractions not evidenced with manometry. Further retrograde contractions were observed in 49% of patients with achalasia but never in controls.

Carlson DA, Lin Z, Rogers MC, Lin CY, Kahrilas PJ, Pandolfino JE. Utilizing functional lumen imaging probe topography to evaluate esophageal contractility during volumetric distention: a pilot study. *Neurogastroenterol Motil.* 2015; 27: 981-9.

<http://www.ncbi.nlm.nih.gov/pubmed/25898916>

Carlson DA, Lin Z, Kahrilas PJ, et al. The Functional Lumen Imaging Probe Detects Esophageal Contractility not Observed with Manometry in Patients with Achalasia. *Gastroenterology.* 2015 (in press)

<http://www.ncbi.nlm.nih.gov/pubmed/26278501>