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In defense of four decades of esophageal function tests. Reply to reaction to articles on high resolution manometry, the length of the lower esophageal sphincter and the diagnosis of gastroesophageal reflux disease

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Dear Editor,

Esophageal function tests are in current clinical use since the 1970ies. The management of gastroesophageal reflux disease and other esophageal motility disorders is highly dependent on these tests. We thank Dr. Levin for his interest in two of our studies[1,2]. We were thrilled with his disapproval of current methods to evaluate esophageal physiology. We read with curiosity his criticisms in the expectation of being educated on better alternatives to current methods but unfortunately they were not provided and, unfortunately again, his publications are available only in Russian language and local journals. In response to his questions:

First, individuals that volunteered to both studies were indeed selected by the absence of symptoms. This was justified by two reasons: (1) we considered not necessary or ethical to submit these individuals to upper endoscopy and (2) the mathematics for the determination of cut-off values consider the chance to accidentally include sick individuals. We did not adopt as threshold the minimum and maximum values found in the tests but the 5th and 95th percentile. In few words, 10% of the population was excluded based on the outliers. Moreover, the same methodology was applied in the landmark studies that defined normal values worldwide accepted, such as the Richter et al.[3] study that defined values for conventional manometry, the Northwestern studies that defined the Chicago classification[4] and the Johnson and DeMeester study that defined normality for pH-monitoring[5]. In regards to histological analysis, the routine biopsy of the esophagus in negative endoscopy is not recommended by any consensus including the Montreal[6], Lyon[7] and Porto[8].

Second, we are unfamiliar with any extraluminal technique to measure esophageal motility. We hope Dr. Levin can educate us in future studies.

Third, we did find, together with other authors, the '*absurd*' result that thoracic pressure is inferior to abdominal pressure. This transdiaphragmatic pressure gradient is well-known since the primordial days of esophageal physiology[9]. The statement that '*If this study is correct, then during the opening of the LES, the bolus should move in a retrograde direction – from the stomach into the esophagus*' is absolutely correct, unless a valve is interposed between the thorax and the abdomen (what happens in the basal state) or peristalsis pushes bolus down (what happens during swallows). The failure of peristalsis or the valvar mechanism or increase in the pressure gradient is actually the pathophysiology of gastroesophageal reflux disease[10].

Dr. Levin is once more correct when he says that '*it is necessary to start a broad discussion in order to choose rational methods of scientific research and diagnostics of diseases of the esophagus and the gastroesophageal junction*' but for this a profound knowledge of what is already known about esophageal diseases is mandatory.

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