



# Esophageal aging: are presbyesophagus and Bernstein test back?

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Comment on: Mei L, Dua A, Kern M, *et al.* Older Age Reduces Upper Esophageal Sphincter and Esophageal Body Responses to Simulated Slow and Ultraslow Reflux Events and Post-Reflux Residue. *Gastroenterology* 2018. [Epub ahead of print].

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Mei *et al.* from the Milwaukee gastroenterology group headed by Dr. Shaker, present in *Gastroenterology* an elegant study to show the effect of aging in the upper esophageal sphincter (UES) (1). In this paper, 11 healthy volunteers with a mean age of 28 years were compared to 11 healthy volunteers with a mean age of 74 years. The authors tested UES reflexes by infusing HCl at different rates in both groups with simultaneous impedance-manometry. UES high pressure zone contractile integral (UES-CI) and secondary peristalsis were the variables measured. Their results showed that slow infusion of either HCl or saline in either group increases UES-CI. This finding shows a protection from aspiration irrespective of age and refluxate composition that is an intuitive finding. During ultra-slow infusion (0.05 mL/sec for 60 sec) only young individuals increased UES-CI and responded with more secondary peristalsis. Those findings show a discrete change in esophageal sensitivity with aging. The authors finally concluded “this deterioration could have negative effects on airway protection for people in this age group”.

Interest on the consequences of aging on esophageal motility is an old topic (2,3) that faded away. In as much as the term presbyesophagus was created in the 1960s (4) but did not lived long. The feeling that the geriatric population had specific motor disorders vanished with time. Motor disorders are certainly more frequent in the old. It does not mean; however, that esophageal motility inexorably degrades with time. Similarly, one does not call an old pancreas a “presbypancreas” just because diabetes is more prevalent in the old. So, what is new in Mei and colleagues study?

They certainly benefit from new technology that is

current available. High resolution manometry (HRM) renewed the interest in the pharyngo-upper-esophageal area. Unlike the rest of the digestive tract, the striated musculature of the pharynx, EUS and proximal esophagus has amplitude waves up to 200 mmHg, velocities up to 25 cm/s and duration as short as 0.3 s (5). This means that the recording system should have a high frequency of capturing the changes in pressure, as is present in solid-state transducers. Conventional manometry systems with reduced number of sensors (generally 6 to 8) and excessive distance between them (up to 5 cm) make the motor evaluation of these proximal segments imprecise. In addition, the response rate of water-perfused systems to pressure variations is, generally, insufficiently 300–400 mmHg/s (6). Moreover, movement artifacts with deglutition impair the analysis of the UES during its incursion (7). HRM expanded the utility of manometry now in use by other professionals apart from gastroenterologists and digestive surgeons. HRM was recognized by the American Speech-Language-Hearing Association (ASHA) as an adequate tool for the evaluation of swallowing (8) and represents one of the emerging procedures in speech-language and otolaryngology practice. The evaluation of this specific area led to the creation of new parameters (9). The Chicago classification currently standardizes HRM parameters but the UES was not contemplated in its last edition (10). Mei *et al.* used UES-CI to study UES response. This parameter was recently introduced (11). It is an adaptation of the distal contractile integral used to measure esophageal body contraction vigor using the same software tool relocated to the UES. Its value is yet to be proved.

Multichannel intraluminal impedance—another more

recent tool—certified that the infused liquid reached the UES. This is certainly another example of good use of technology by this group. Unfortunately, they did not describe if secondary peristalsis was able to clear the infused liquid.

Interestingly again, another old concept was revived: the Bernstein test. For the young readers, the Bernstein or acid perfusion test was described in 1958 (12) and consisted in infusing either HCl or saline solution in the esophagus through a nasoesophagic tube to evaluate if symptoms are elicited by acid stimulation. It lost its popularity with the widespread use of ambulatory pH monitoring with temporal correlation between symptoms and episode of acid reflux, a “natural” Bernstein test.

This study certainly has some limitations. First, modern literature is focusing on the effects on the esophagus or adjacent organs not only of acid but also of other noxious substances such as bile salts and pepsin. The authors tested acid stimulation only. Second, esophageal sensitivity may be affected by several other variables other than age, such as obesity and esophagitis, which were not controlled and included at the study (13,14). We do not believe that the presbyesophagus is back, but in any case, the paper by Mei *et al.* deserves to be read.

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