

## Proximal esophageal pH-monitoring

Studies performed on healthy populations represent a key reference point in establishing normality criteria for the various diagnostic modalities. For many conditions, including gastro-esophageal reflux disease (GERD) and some of its serious complications (Barrett's esophagus), significant differences exist among geographical areas (1). Therefore, having normal levels available in our setting is undoubtedly important.

The use of esophageal pH-metry for the diagnosis of GERD as we know it stems from the reports by Johnson and DeMeester (2). Many papers have reported its usefulness ever since, and have also related acid exposure extent to GERD severity (3-6).

From the 1980s on it is widely accepted that a number of extraesophageal symptoms or disorders, including chronic cough, dysphonia, asthma, globe sensation, and laryngitis, are associated with gastric contents reflux to the proximal esophagus and/or upper airways (7-11). Given the multiple potential causes of respiratory and laryngeal disorders, and the high prevalence of GERD, caution must be exercised in establishing a potential link between both conditions.

Distal esophageal pH-monitoring in these patients shows highly variable results, with diagnostic accuracy oscillating between 18 and 80% according to different series (9,12). In order to identify and characterize this association studies were started to measure intraesophageal pH at two levels (13,14). The few subsequent studies by placing electrodes at various levels failed to establish unanimous criteria regarding the site for proximal electrode insertion. The availability of electrodes fitted with two pH sensors located 5, 10 or 15 cm apart has conditioned –and still conditions– recording sites in some studies. In an attempt to place both electrodes in sites previously established using manometry, or as near as possible to the organ suspected of being responsible for symptoms (15), probes with mobile electrodes (16) or interconnected separate probes have been designed that allow the proximal electrode to be positioned as dictated by the study design (17).

Most studies were performed in patients and control groups with small sample sizes, and allow no normal values to be clearly established for the upper electrode in order to discriminate normal subjects from patients with pathological exposure (with extraesophageal manifestations).

In the present issue of the *Spanish Journal of Gastroenterology* the Grupo Español de Motilidad Digestiva (GEMD) publishes a paper on normal pH-metry values at 2 levels in Spain (18). The study provides information on esophageal acid exposure values in the most extensive normality group thus far, and offers the advantage of being a multicenter study in a Spanish population with Spanish peculiar daily schedules and food, which differ from those of other European, Asian or American countries.

## Editorial

The authors make it possible to know the normal values in the proximal esophagus by reporting overall data and eliminating both meal periods and so-called pseudo reflux events (pH decreases in the upper esophagus in relation to artifacts). The need for meal period elimination is controversial, and thus their showing data with both possibilities is appreciated. This is particularly relevant at present, as ingestion periods are now eliminated when using other techniques such as impedance-pH-monitoring.

On the other hand eliminating pseudoreflux events seems advisable to reduce potential overdiagnosing as much as possible, particularly when the number of events in the upper esophagus is limited enough to prevent verification, at least visually, of a relationship between reflux episodes in the upper and lower esophagus.

The GEMD study has a further peculiarity that adds to accuracy, namely the use of two assembled pH electrodes, which allows for separate placement in the esophagus. Using a single catheter with two sensors a fixed distance apart, with the distal electrode 5 cm away from the lower esophageal sphincter, has the disadvantage that, related to the subject's height, may lead to poor electrode placement regarding the upper esophageal sphincter (UES), thus jeopardizing the validity of results.

Whether performing this study with a pharyngeal electrode would have been more useful remains questionable. Some authors suggest that artifacts resulting from pH electrode degradation are more common in the pharynx, and there are no unanimous criteria regarding the placing of this electrode in either site.

The comparison provided by the authors with results from other studies is influenced by a high variability in electrode location. However, the fact that results at these various levels –upper esophagus, UES, hypopharynx– are somewhat similar remains interesting.

Recently, following the GEMD paper submission for publication in this journal (18), an article on this same subject by DeMeester et al. has been reported in a sizable number of normal individuals (19), with methods and criteria that are in a way similar to those of GEMD. Distal electrode location is as used in conventional pH-metry, and the proximal electrode was located at 2 cm below the UES lower border. Nevertheless, this is influenced by the use of a single electrode with two recording sites and 3 separation distances available (10, 15 and 18 cm) according to values previously obtained with esophageal manometry.

Other coincidences between both studies include: the reporting of normal values with and without meal periods, and their showing reflux episodes that are relatively common and reach the upper esophagus, albeit with a brief duration. However, they do not mention pseudoreflux elimination in the analysis, which may overestimate reflux proximally.

In the GEMD study (18) we miss an overall score similar to the DeMeester score, which may be useful for an overall assessment of pH-metry. In any case this parameter, applying authors' criteria, may be easily obtained from provided data.

In all, we consider the study by GEMD (18) very interesting, and it should prompt other groups to perform similar studies on healthy controls in our setting.

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