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USEFULNESS OF PROXIMAL ESOPHAGEAL pH MONITORING

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Monitoring esophageal acid exposure in both the distal and proximal esophagus is considered to be the best way to identify gastroesophageal acid reflux as the cause of atypical and/or extra esophageal symptoms of gastroesophageal reflux disease[1]. The traditional dual-sensor pH catheter used to measure simultaneously proximal and distal reflux has the sensors located 15 cm apart. During the measurement the distal sensor is located 5 cm from the lower esophageal sphincter (LES) and the proximal sensor 20 cm from the LES. In this position the proximal sensor will be located near the upper esophageal sphincter (UES), at the proximal esophagus in 55% of the examinations, in the pharynx in 9% and within the UES in 36%[7]. Other publication reported that with this design (15 cm apart) the proximal sensor will be located in the proximal esophagus in 69% of the examinations, in the pharynx in 7%, and within the UES in 24% [1]. These studies concluded that the proximal pH data are often inaccurate with 15 cm spacing between the dual sensors for esophageal pH monitoring.

The other problem with dual-probe pH monitoring is the lack of clearly defined normal values, which may be the consequence of the different position of the proximal sensor in each individual. Normal values have been described many years ago for the distal sensor and are references for the interpretation of the results[6].

A recent study conducted on 59 normal volunteers reported that the upper limit of normality for the proximal sensor is 0.9% of the total time with pH < 4, number of reflux episodes of 24, no episode with duration above 5 minutes and 5 minutes as the duration of the longest episode[1].

It has been reported that the proximal esophagus of normal subjects has a pH < 4 less than 1% of the total time, with no acid exposure in the proximal esophagus in the supine position[2]. In another study, with the proximal sensor located 20 cm from LES, the pH was under 4 in 0.5% of the total time, 0.8% in the upright position and 0% in the supine position[8].

The Grupo Español para el Studio de la Motilidade Digestiva (GEMD) performed a multicentric study on a large number of healthy volunteers (118), excluding the meal periods and the pseudo-reflux events, defined as a drop in pH to less than 4.0 on the proximal sensor in the absence of reflux in the distal esophagus simultaneously or during the previous 8 seconds, and found (in subjects without abnormal reflux in the distal sensor) 18 as the number of reflux episodes, no episodes with a duration longer than 5 minutes, 4 minutes for the duration of the longest episode, and 0.95% of the time with pH below 4[3].

A study conducted in China reported 0.70% of the time with pH below 4 in the proximal esophagus, no episodes with duration longer than 5 minutes, 3 minutes duration of the longest episode and 12 reflux episodes[5].

With the pH sensor in the pharynx the normal limit was described as 7 reflux episodes, 0.10% of time with pH < 4.0, 1 minute duration of the longest episode, with no episode with duration longer than 5 minutes[11].

The study of the reproducibility of proximal sensor pH parameters concluded that the proximal pH values recorded during 24 hours has excellent specificity (91%), but poorer sensitivity and reproducibility (55%) for identifying abnormal amounts of proximal esophageal acid reflux. The authors stated that a negative test result does not exclude proximal reflux with microaspiration as a cause of atypical and/or extra esophageal reflux symptoms[10].

From these publications we may conclude that the pH of the proximal esophagus of normal subjects is below 4 less than 1% of the time, the duration of the longest drop in pH is less than 5 minutes and the number of 24 hour reflux episodes is about 20, with descriptions of 24, 18, 12 and 7 episodes. The number of reflux episodes should be the most important factor because it increases the possibility of the acid to cross the UES and cause pharyngeal and respiratory symptoms. The time the pH stays below 4 is short in normal subjects.

In the interpretation of the 24 hour pH recording it is important to understand its limitation. First of all it measures only acid reflux, when the pH drops

below 4. Non-acid reflux, or acid reflux with pH between 4 and 5, may be the cause of atypical symptoms. Second, the position of the pH sensor is not the same for all subjects, when the distance between the proximal and distal sensors of the catheter does not take into consideration the distance between the UES and LES[1, 7]. Finally, the examination has poorer sensitivity and reproducibility[10].

In this number of Arquivos de Gastroenterologia two papers use pH monitoring with proximal and distal sensors in their methods. In one paper, which evaluated gastroesophageal acid reflux in patients with interstitial lung disease, 20% of the patients had pH < 4 at the proximal sensor more than 1% of the total time of pH recording[9], and in the other, which evaluated patients with gastroesophageal reflux and vocal disturbances, the proximal acid exposure did not differ between patients with and without dysphonia, with similar values for the number of reflux episodes and percentage of time with pH below 4[4].

The reflux of small amounts of gastric content into the larynx may cause lesions. Other factors are associated in the mechanism of lesion and symptoms, such as sensitivity. The measurement of proximal esophageal acid exposure most of the time is not enough to determine a cause-effect relationship between gastroesophageal reflux and pharyngeal, laryngeal or pulmonary symptoms. Nowadays, the importance of the recording of proximal pH for the diagnosis of atypical and/or extra esophageal symptoms is being questioned, although it may be an important tool in research.

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DESCRITORES – Refluxo gastroesofágico. Monitoramento do pH esofágico.

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