



# REVISTA DE GASTROENTEROLOGÍA DE MÉXICO

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## CLINICAL IMAGE IN GASTROENTEROLOGY

### Blundering in high-resolution esophageal manometry in patients with achalasia



### Pifia en manometría esofágica de alta resolución en pacientes con acalasia

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High-resolution esophageal manometry (HREM) is a diagnostic method for evaluating esophageal motility disorders. Even though the complication rate is low (0.4%), a relatively higher risk for not achieving a satisfactory test due to difficulties in catheter insertion (4%) has been observed. Adequate catheter placement requires nasal insertion, passage through the upper and lower esophageal sphincters, and the positioning of the distal sensors in the proximal part of the cardia. To confirm the passage of the catheter through the diaphragm and its entrance into the stomach, the subject is asked to inhale and exhale, in order to identify the cycles of pressure variation in the thoracic and abdominal cavities, as well as the contraction of the crural diaphragm during inhalation. The factors associated with a failed test include a history of nausea/vomiting (OR 13.8,  $p \leq 0.001$ ), dyspepsia (OR 20.3,  $p \leq 0.001$ ), and achalasia (OR 13.2,  $p = 0.012$ ).<sup>1</sup> Figs. 1 and 2 show the pressure and impedance topograms of 2 of our patients that had previously undergone Heller myotomy and Nissen fundoplication. The first patient had type II achalasia and sought medical attention for the recurrence of dysphagia and the second patient had type III achalasia and sought medical attention as part of the postoperative follow-up protocol. The images show the

respiratory cycle and identification of the contraction of the crural diaphragm. Fig. 3 shows the radiologic classification of achalasia.<sup>2</sup> The anticipated identification of patients with a high probability of experiencing a failed test could promote the development of specific strategies targeted at those subgroups of patients, which in turn, could prevent the repetition of unsuccessful tests and improve the efficacy of the diagnostic process.

#### Ethical considerations

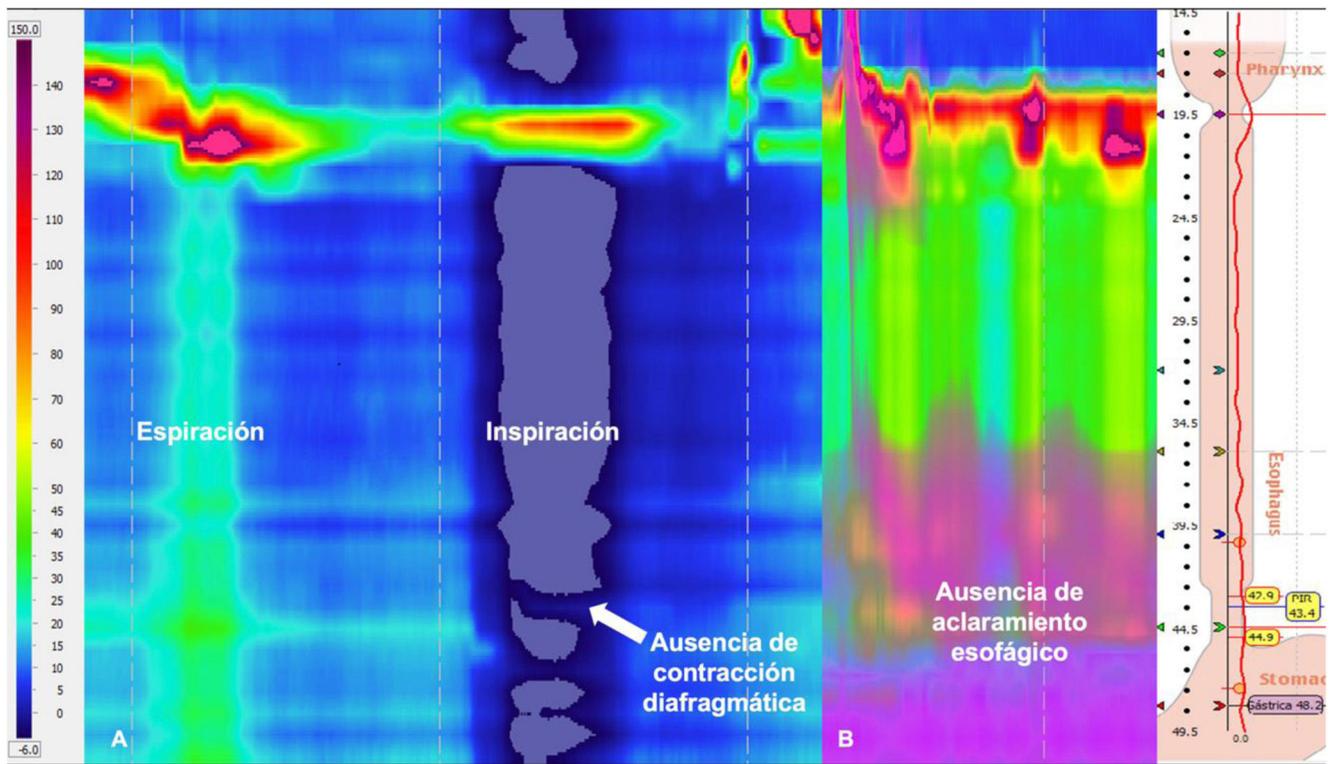
The authors declare that no experiments were carried out on humans for this research. We utilized the protocols of our work center for obtaining patient databases, preserving patient anonymity (and so informed consent was not requested). This study meets the current bioethical research regulations.

#### Financial disclosure

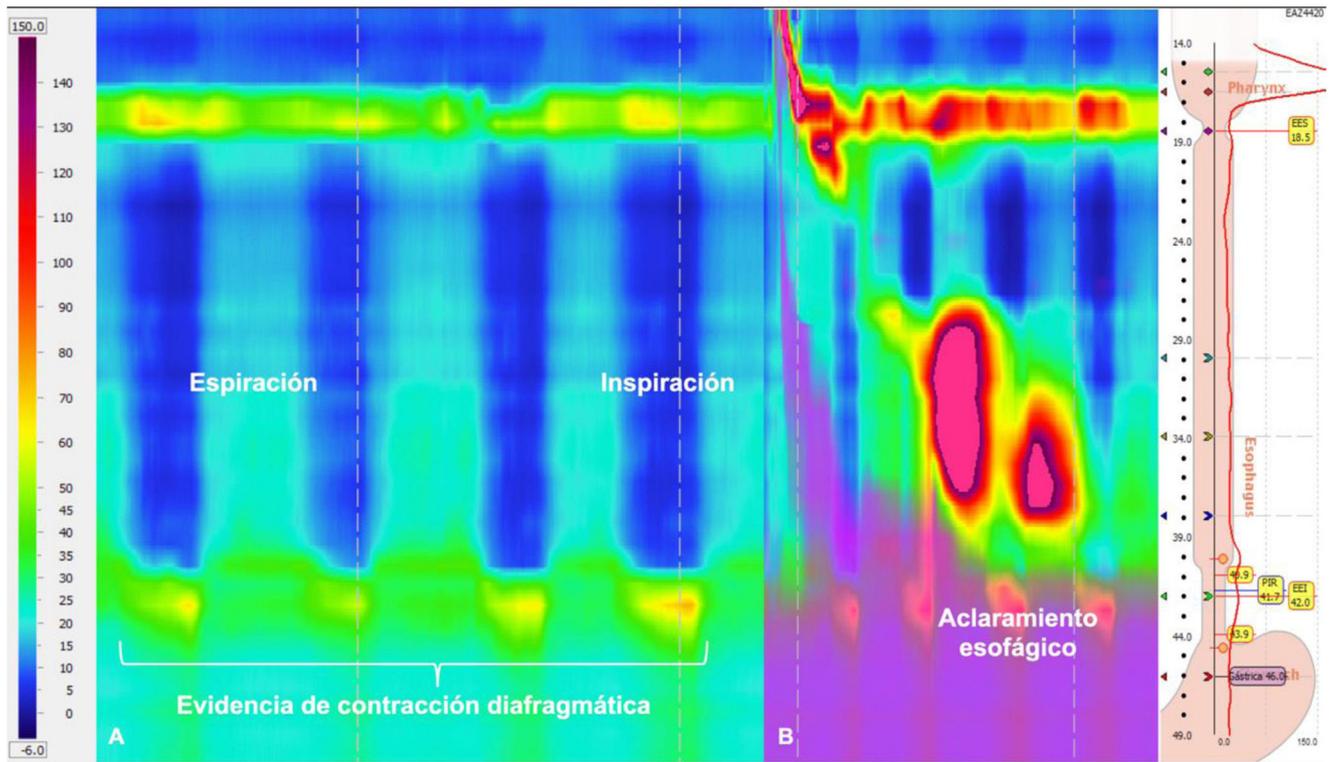
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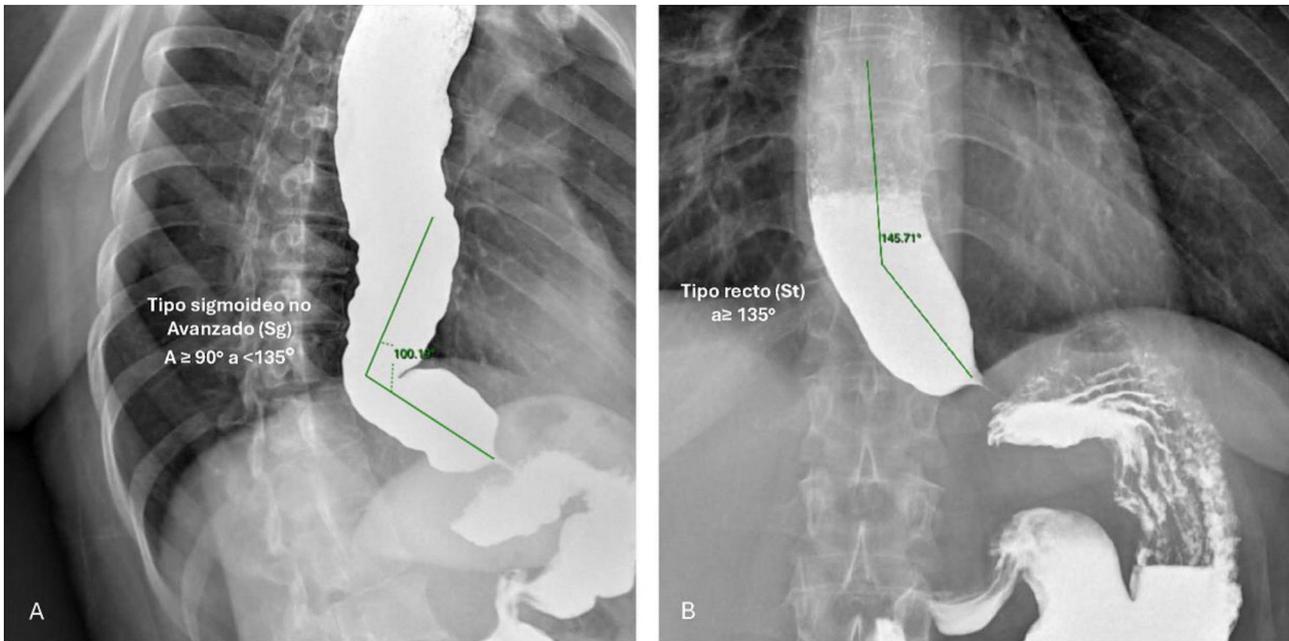
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**Figure 1** HREM with impedance of the patient with type II achalasia that underwent Heller myotomy and Nissen fundoplication, in the reapproach for esophageal dysphagia. Panel A shows the pressure topogram upon performing the exhalation and inhalation maneuvers to locate the reference points, without being able to see the lower esophageal sphincter or diaphragmatic crura. Panel B shows the absence of esophageal clearance.



**Figure 2** HREM with impedance testing of the asymptomatic patient with type III achalasia that underwent Heller myotomy and Nissen fundoplication. Panel A shows the pressure topogram upon performing the exhalation and inhalation maneuvers to locate the reference points (lower esophageal sphincter/diaphragmatic crura) necessary for ensuring intubation of the esophagogastric junction. They were successfully identified in this patient. Panel B shows the esophageal clearance.



**Figure 3** Esophagograms corresponding to the patients in Fig. 1 (panel A) and Fig. 2 (panel B), which according to the radiologic classification of achalasia, are consistent with a non-advanced sigmoid esophagus ( $\alpha \geq 90^\circ$  to  $<135^\circ$ ) and a straight esophagus ( $\alpha \geq 135^\circ$ )<sup>2</sup>: the esophageal tortuosity (A) was associated with failed cannulation, whereas the right angle (B) enabled adequate cannulation.

### Conflict of interest

The authors declare that there is no conflict of interest.

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