

## Abdominal distension can be corrected by muscular control techniques

- VHIR researchers have proved that abdominal bloat is caused by a voluntary muscular maneuver, although unnoticed by the patient: the thorax swells, diaphragm contracts and the anterior abdominal wall relaxes
- The Discovery will allow doctors to design treatments using muscular activity control techniques to re-educate their patients.
- 40% of the consultations in gastroenterology are related to abdominal distension

**Barcelona, December 23rd, 2014.** Researchers from the Physiology and Pathophysiology of the Digestive Tract group at Vall d'Hebron Institut de Recerca (VHIR), led by Dr. Fernando Azpiroz, have proved that abdominal distension can be prevented by correcting thoracic and abdominal muscular activity, as the cause is a voluntary muscular response, induced by small changes in the intestinal contents. The study, published in *Gastroenterology*, is the last phase of a 15 year research that has proved that neither gas, nor the abdominal content are responsible of the abdominal bloat.

VHIR's researchers carried out a prospective study with 45 patients with functional bowel diseases and abdominal distension episodes, which sometimes were asymptomatic when visiting the hospital. **“By performing an abdomino-thoracic computed tomography, to see the shape of the abdomen, and an electromyography, to verify muscular activity, we saw that patients with distention have larger thorax filling, with a wall elevation, and anterior abdominal wall protrusion”**, explained Dr. Azpiroz.

After realizing it was a muscular problem, the researchers instructed the patients (1-3 lessons) on how to revert the situation, relaxing the diaphragm and intercostal muscles, and also contracting the anterior abdominal wall. As a result, patients corrected abdominal distention by reducing the diaphragm's and intercostal muscles' activity.

Both for diagnosis and for teaching purposes, VHIR's researchers have been using **“a very sophisticated system, precise and expensive, that allows us to control all the variables and show the patients their muscle's reactions”**, says Dr. Azpiroz. This means that now it's important to validate the system in a controlled trial, and that there is still a lot of work to do in order to simplify the procedure before it can be transferred to clinical practice.

Anyhow, the experimental treatment has proved that abdominal distension is under voluntary control and can be reverted. The finding also reveals why patients with abdominal distention usually feel they lack air. What really happens is that they have difficulty to breathe because their thorax is full of air, as it happens with asthmatic and lung emphysema patients, and not oppressed by the abdominal contents as traditionally thought.

Abdominal distension is one of the main symptoms of functional gut diseases, such as irritable bowel syndrome, abdominal bloating or functional dyspepsia, and is the reason of nearly 40% of the gastroenterology consultations. VHIR's researchers observed this muscular change over 5 years ago, after noticing that in patients with distension both gas volume in the bowel and viscera in the abdominal cavity show a slight increase that, by itself, do not justify distension.

### **Bibliographic references**

Barba, Elizabeth, Emanuel Burri, Anna Accarino, Daniel Cisternas, Sergi Quiroga, Eva Monclus, Isabel Navazo, Juan-R. Malagelada, and Fernando Azpiroz. Abdomino-Thoracic Mechanisms of Functional Abdominal Distension And Correction by Biofeedback. *Gastroenterology*. December 11, 2014. doi:10.1053/j.gastro.2014.12.006.

### **VHIR**

VHIR was created in 1994, as a part of the University Hospital Vall d'Hebron, from the Catalan Health Institute, and is a CERCA center of the Economy and Knowledge Generalitat Department, and a research university institute appointed to University Autònoma de Barcelona.