

Is SIBO a Cause of Persistent Globus Sensation after Nissen Fundoplication Surgery? A Case Report

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Abstract

Globus sensation is a common clinical condition affecting both gender, more prevalent from 25 to 45 years old. Its pathogenesis remains unclear. The majority causes are related to gastrointestinal issues. However, unusual conditions as autoimmune diseases and alimentary allergies have been reported. In this case, we evaluate SIBO as a possible cause of globus sensation. It is a misdiagnosis condition that can lead to other diseases, like irritable bowel syndrome, nonalcoholic fatty liver disease and celiac disease. In this case, even after a surgical procedure, patient continues to complain about globus sensation, and only relieved of his the symptoms after an appropriate SIBO treatment.

Keywords: Small intestine bacterial overgrowth (SIBO); Gastroesophageal reflux; Upperaerodigestive malignancy

Introduction

Globus sensation (or globus pharyngeus) is the feeling of having a “lump” in the throat, and it frequently improves with eating. Usually this condition is not associated to dysphagia or odynophagia. Studies suggest that Gastro-esophageal Reflux Disease (GERD) may be a major cause of globus sensation. Other causes of globus sensation are: laryngo-pharyngeal reflux, abnormal upper esophageal sphincter function [1], stress or anxiety, thyroid disease [2], pharyngeal inflammatory causes including tonsillitis and chronic sinusitis [3], neck tumors, upper aerodigestive malignancy and cervical heterotopic gastric mucosa. The etiology of globus sensation remains unclear. Many authors believe that globus sensation is innocuous; however dental erosions and chronic sinusitis have been described as complications caused by GERD [4].

Small Intestine Bacterial Overgrowth (SIBO) is a disease caused by an excessive amount of bacteria in the upper alimentary tract. Physiological microbiota is replaced by pathogenic bacteria mainly from large intestine [5]. It has a complex etiology, including anatomical abnormalities (obstruction, fistulas and diverticular disease), surgical interventions, disturbed gastrointestinal motility causing constipation and disturbance of defense mechanisms (achlorhydria) [6]. So, patients using proton pump inhibitors (some of them for mild symptoms), associated to a low fiber diet are at risk to develop SIBO.

Fibers are non-digestible carbohydrate to humans, but an important source to intestinal bacteria, whose transform these fibers into Short Chain Fatty Acids (SCFA). SCFA have important functions in the intestine: stimulation of mucous production, immunoglobulin production, tissue repair, promotion of treg cells, inhibitor of NF-KB

and they are a good source to the beneficial bacteria in the gut, improving the competition among health and harmful microorganisms. When SIBO occurs, all these physiological processes can be impaired.

In the proximal small bowel of healthy individuals, gram-positive aerobic bacteria pre-dominate with rare facultative anaerobes. In contrast, the distal small bowel acts as a transition zone with the microbiota in the small bowel consisting mostly anaerobes and sparse populations of aerobic bacteria. Colon has a dense population of anaerobic bacteria. An incompetent ileocecal valve can permit translocation of bacteria from colon to small intestine, causing SIBO [7].

Although the gold standard exam to detect SIBO is quantitative culture of a jejunal aspirate, it is invasive, costly, requires endoscopy and needs an appropriate laboratory. A lactulose breath hydrogen test consists is a reliable non expensive exam to confirm SIBO diagnosis. Our microbiota produces hydrogen, carbon dioxide, hydrogen sulfide and methane, in gas form. However only hydrogen and methane are produced by fermentation of carbohydrates by gut anaerobes bacteria. The most used carbohydrate in breath hydrogen test is lactulose, because it is a synthetic disaccharide fermented in the colon by anaerobic bacteria. So it is expected that the increase of hydrogen production occurs when lactulose reaches colon; if the hydrogen production by fermentation occurs earlier, it means that there are anaerobic bacteria in the small intestine (SIBO). The lactulose breath hydrogen test consists of the ingestion of 10 g of lactulose with 200 mL of water; breath samples are collected every 15 minutes. Value of hydrogen equal or higher than 20 ppm within 90 minutes is considered SIBO.

Today, SIBO is still a under recognized disease, associated to important clinical manifestations like irritable bowel syndrome,

nonalcoholic fatty liver disease and celiac disease [5]. The symptoms are unspecific, and a carefully clinical exam followed by appropriate tests is essential for an accurate diagnosis. Until now, there is any publication correlating SIBO to globus sensation.

Case Report

A 36-year-old male, nonsmoker, sportsman without comorbidities, complaining about reflux symptoms like globus sensation and burning sensation in the lower chest fails conservative treatment involving diet prescribed by a nutritionist, use of proton-pump inhibitor (esomeprazole) and prokinetic agents (domperidone). He used to drink two cups of coffee every day and one soft drink can three times a week. He denies consumption of mint or large amounts of fatty foods. He didn't consider himself as an anxious person. He denies use of other kind of medicines.

Upper endoscopy showed erosive esophagitis without hiatal hernia; *Helicobacter pylori* infection was not found. A 24 hour esophageal pH monitoring showed 48 acid reflux episodes which 11 were prolonged with a final result of pathological gastroesophageal reflux. Esophageal manometry test was regular.

Patient was submitted by Nissen fundoplication surgery by an experienced surgeon, without any kind of complication. Post-operative recommendation was strict followed by the patient. However the globus sensation persisted. So, patient was advised to schedule an appointment with a neurologist (physician that prescribes diets and medicines).

More tests were requested by the neurologist: complete blood allergy test, prick test, neck magnetic resonance image and ultrasonography, nasolaryngoscopy video, a new upper endoscopy and lactulose breath hydrogen test. All exams were without alterations, except the lactulose breath hydrogen test, indicating SIBO (Figure 1).

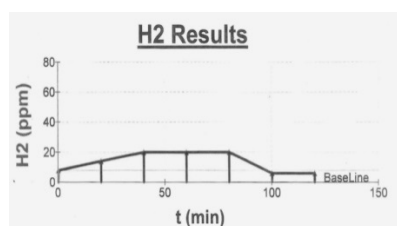


Figure 1: Increasing H⁺ production within 90 minutes after lactulose ingestion.

The treatment proposed by the neurologist consisted in two steps: first a complete cleansing of the small and large intestine, followed by a bacteria recolonization by probiotics with a low FODMAPs diet. During 3 days, the patient was allowed to consume raw vegetables, fruits containing high concentration of digestive enzymes and very small amount of protein. He was advised to consume 3 liters of water per day. At the third day, 30 g of magnesium sulfate was consumed, to increase the cleansing speed. Since the first day, patient used also ciprofloxacin 500 mg, one pill every 12 hours, during seven days. The low FODMAPs diet started at day 4. We had to wait ten days to introduce the probiotics, because of the action of ciprofloxacin. The probiotics consisted in: *Lactobacillus gasseri* 4 billions cfu, *Lactobacillus acidophilus* 2 billion cfu, *Lactobacillus plantarum* 2 billion cfu, *Lactobacillus rhamnosus* 4 billions cfu, *Lactobacillus*

paracasei 2 billions cfu, *Bifidobacterium bifidum* 2 billions cfu, *Bifidobacterium lactis* 2 billions cfu and *Bifidobacterium longum* 2 billions cfu, taken at night with water.

Discussion

We already know different conditions, as cited before, that can lead to globus sensation, but until now, there is no publications correlating it to SIBO. In some patients, just one risk factor is necessary to cause this condition. In others it may be multifactorial, including anatomic abnormality as hiatal hernia, associated to inappropriate life style. However, there are people suffering from severe GERD (suggested to be the major etiology of this symptom), associated to bad alimentary habits with no globus sensation complain. It is not uncommon that an underlying etiology remains unidentified even after a full workup has been performed. So, there is a complex situation.

It has been reported that several psychological problems or social stress have often been considered to cause or trigger globus sensation [8]. High levels of anxiety and depression are associated to higher incidence of globus sensation. In this case, any kind of stress situation has occurred before and after the surgical procedure, as the patient informed.

Other cause of globus sensation reported is autoimmune disease. Immune cells attack many different organs and tissues. Frequently Sjögren's syndrome, systemic sclerosis, rheumatoid arthritis and vasculitides affect head and neck region. However we must evaluate if this situation is cause by the immune condition or due the medicines. This condition was also evaluated.

Another forgotten cause is alimentary allergy. It is a complex condition with diverse manifestation including mild symptoms as itching soft palate to a severe condition as a swollen airway. In this specific case, we are searching for delayed hypersensitivity reaction (type IV), a condition that appears from 06 to 72 hours after the allergic ingestion, that could result in a throat complain that could be interpreted by the patient as a discomfort similar to globus sensation. All allergic tests were negative.

This group hypothesized some different mechanisms to this condition. The first one would be the higher productions of gases in the proximal intestine by anaerobic bacteria, resulting in discomfort at the throat. The second one is that some different gases may be produced because there are plenty of colon anaerobic bacteria in the proximal intestine, producing specially methane. This condition could irritate the throat.

Globus is a frequently encountered but poorly understood disorder. Further studies involving not only SIBO, but others causes should be done to evaluate more accurately the physiopathology.

Conflicts of Interest

Conflict of interest disclosed was none.

References

- Järvenpää P, Arkkila P, Aaltonen LM (2018) Globus pharyngeus: A review of etiology, diagnostics and treatment. Eur Arch Otorhinolaryngol 275:1945-1953.
- Nam IC, Choi H, Kim ES, Mo EY, Park YH, et al. (2015) Characteristics of thyroid nodules causing globus symptoms. Eur Arch Otorhinolaryngol 272:1181-1188.

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3. Lee BE, Kim GH (2012) Globus pharyngeus: A review of its etiology, diagnostics and treatment. *World J Gastroenterol* 18: 2462-2471.
 4. Jailwala JA, Shaker R (2000) Oral and pharyngeal complications of gastroesophageal reflux disease: globus, dental erosions, and chronic sinusitis. *J Clin Gastroenterol* 30:S35-38.
 5. Miazga A, Osiński M, Cichy W, Żaba R (2015) Current views on the etipathogenesis, clinical manifestation, diagnostic, treatments and correlation with other nosological entities of SIBO. *Adv Med Sci* 60:118-24.
 6. Adike A, DiBaise JK (2018) Small intestine bacterial overgrowth: nutrition implications, diagnosis, and management. *Gastroenterol Clin North Am* 47:193-208.
 7. Miller LS, Vegesna AK, Sampath AM, Prabhu S, Kotapati SK, et al. (2012) Ileocecal valve dysfunction in small intestinal bacterial overgrowth: A pilot study. *World J Gastroenterol* 18: 6801-6808.
 8. Masterson LM, Srouji IA, Musonda P, Scott DGI (2011) Autoimmune disease as a risk factor for globus pharyngeus: a cross-sectional epidemiological study. *Clin Otolaryngol* 36:24-29.