Dilated distal esophagus (cardia)

Basics

The dilated distal esophagus (the cardia) is the reflux damaged dilated lower portion of the esophagus. It is covered by a columnar lined mucosa (innermost layer of the esophagus), which resembles gastric and intestinal mucosa. The cardia interposes between the normal esophagus (lined by squamous epithelium) and the upper portion of the stomach (lined by oxyntic mucosa). Therefore it comprises the squamo oxyntic gap. The dilated distal esophagus develops at the cost of the anti reflux mechanism in the lower portion of the esophagus (at the cost of the lower esophageal sphincter; LES). Since it looks like stomach during the gastroscopy it has for many years been taken for stomach, the gastric cardia. It is important to understand, that the cardia represents reflux damaged, dilated lower portion of the esophagus and does NOT belong to the stomach. The cardia represents the dilated portion of the squamo oxyntic gap. The cardia is that portion of the lower esophagus, which lacks sphincter function. As with the squamo oxyntic gap the term was coined by the US American pathologist Para Chandrasoma (Los Angeles).

Causes

Gastric over-distension (large meals, carbonated beverages) over-stretches the lower portion of the esophagus. Due to the repeated over-stretch the lower portion of the esophagus loosens its elasticity and stays permanently open (like the opening of a trumpet, vuvuzela). As a consequence the lower portion of the esophagus is permanently attacked by the reflux. This in turn causes inflammation of this lower portion of the esophagus. As a consequence of the reflux induced inflammation the normal squamous mucosa (inner layer) of the esophagus is replaced by a gastric type columnar epithelium, this is columnar lined esophagus (CLE). At this point the esophagus gets permanently dilated and covered by a columnar mucosa. Over time the dilated distal esophagus extends upwards at the cost of the anti reflux mechanism (lower esophageal sphincter; LES): the longer the cardia the shorter the functioning sphincter.
Schematic drawing of the development of the dilated distal esophagus (cardia, trumpet). Gastric distention overstretches the lower portion of the esophagus. (A, B) Thus it dilates and gets a trumpet like appearance. Over time the dilated distal esophagus extends across the level of the diaphragm. Hiatal hernia occurs (C).

**Symptoms**

The dilated distal esophagus (cardia) associates with the symptoms of reflux including heartburn, acid regurgitation, swallowing difficulties (dysphagia), wheezing, coughing and asthma.

**Diagnosis and tests**

The diagnosis of the dilated distal esophagus (cardia) includes gastroscopy with multi level biopsies from the endoscopic junction between the esophagus and the stomach. Correlation between the biopsy site and the histopathology assesses the tissue composition (Barrett’s esophagus?) and the length of the dilated distal esophagus (cardia). During esophageal manometry the shortening of the lower esophageal sphincter (high-pressure zone within the lower portion of the esophagus) indicates the presence of the dilated distal esophagus (the shorter the sphincter, the longer the dilated distal esophagus, i.e. the cardia). The dilated distal esophagus (cardia) associates with abnormal reflux assessed during esophageal reflux monitoring.

**Treatment**

Treatment of the dilated distal esophagus (cardia) includes life style, eating behavior, medical and surgical therapy. See treatment of heartburn and reflux.

The length of the dilated distal esophagus helps us to tailor the type of anti reflux surgery. A short cardia (3.0 cm) we recommend the fundoplication (Nissen, Toupet). Treatment of Barrett’s esophagus within the dilated distal esophagus includes radiofrequency ablation (±endoscopic mucosal resection, depending on the presence or absence of polyps, nodes, tumors).
Self care

Self care of the dilated distal esophagus avoids the cause, i.e. gastric over distension (large meals, carbonated beverages, juices, sweeties, alcohol, cigarette smoking).

Prevention

Prevention of the dilated distal esophagus includes avoidance of the causes: gastric over distension (large meals, carbonated beverages), sweet diet, alcohol, cigarette smoking.

Complications

Complications of the dilated distal esophagus include Barrett’s esophagus, dysplasia and cancer (the cancer of the cardia, cardiac cancer). The cardia is dilated, therefore swallowing disorder develops at an advanced stage of the cancer with bad prognosis and limited treatment options. Consequently we recommend the accurate assessment of the dilated distal esophagus during the screening endoscopy at age 40 for women and men. Early diagnosis of premalignant Barrett’s esophagus of the dilated distal esophagus (cardia) offers early treatment (radiofrequency ablation) for cancer prevention.

Self test

Relief of heartburn and acid reflux under treatment with avoidance of large meals, sweeties, carbonated beverages, with use of antacids or proton pump inhibitor indicates the presence of a dilated distal esophagus. We recommend urgent gastroscopy for the exclusion of a premalignant Barrett’s esophagus.

Expert opinion

Fritz Wrba (Pathologist, Vienna). There has been a lot of misconception and confusion about the definition of the pathology of reflux. In contrast to that, clear and strict criteria define the dilated distal esophagus. Now the pathologist can profoundly help the clinician, the gastroenterologist and surgeon, to identify reflux at the morphologic level.

Martin Riegler (Surgeon, Vienna). For long the cardia has been attributed to the stomach. It has been thought, that the cardia is a normal upper portion of the stomach. What has been taken for normal upper stomach now reveals as abnormal alteration of the lower part of the esophagus. The cardia is caused by reflux. Now we have to rewrite the anatomy of the stomach. There is no gastric cardia. The cardia always is the dilated reflux-injured portion of the esophagus. We know that and consider it for diagnosis and therapy.

Sebastian Schoppmann (Surgeon, Vienna). If we talked about the cardia we mostly though it was the proximal part of the stomach. Now we have learnt that the cardia belongs to the esophagus. The cardia is the morphologic consequence of the reflux. Therefore, our modern approach considers the dilated distal esophagus, the cardia, as the target for diagnosis and treatment of reflux.

Literature


