Functional MRI in the evaluation of achalasia
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Patient: 65 years, female

Clinical History:
Patient with dysphagia and regurgitation

Imaging Findings:
A 65 years old patient was referred to our hospital complaining severe dysphagia with food regurgitation since 6 months. The woman underwent endoscopic examination: a gross dilatation of the esophageal lumen was evidenced in addiction to lumen narrowing in correspondence of the lower esophageal sphincter. Barium fluoroscopy confirmed the endoscopic findings showing poor clearence of the contrast medium and tertiary contraction waves typical of achalasia; however, to exclude the suspect of extrinsic compression of the lower esophageal sphincter (pseudoachalasia) was requested MRI examination. Functional magnetic resonance was performed using HASTE T2-weighted and Dynamic Turbo-FLASH T1-weighted sequences after administration of oral contrast agent (Gd-DTPA + yoghurt). MRI findings excluded the presence of extrinsic compression in the correspondence of lower esophageal sphincter; on the other hand the characteristics of esophageal motility were compatible with those of barium fluoroscopy confirming the diagnosis of achalasia.

Discussion:
Achalasia is an esophageal motor disorder characterized by increased lower esophageal sphincter (LES) pressure, diminished-to-absent peristalsis in the distal portion of the esophagus composed of smooth muscle, and lack of a coordinated LES relaxation in response to swallowing. Primary achalasia is the most common subtype and is associated with loss of ganglion cells in the esophageal myenteric plexus. These important inhibitory neurons induce LES relaxation and coordinate proximal-to-distal peristaltic contraction of the esophagus. Secondary achalasia or pseudoachalasia is relatively uncommon. This condition exists when a process other than intrinsic disease of the esophageal myenteric plexus is the etiology. Examples of maladies causing secondary achalasia include certain malignancies, diabetes mellitus, and Chagas disease. Dysphagia is the most common presenting symptom in patients with achalasia. The ingestion of either solids or liquids can result in dysphagia, though dysphagia for solids is more common. The natural history varies. Some patients notice that the dysphagia reaches a certain point of severity and then stops progressing. In others, the dysphagia continues to worsen, resulting in decreased oral intake, malnutrition, and inanition. Therefore, weight loss is included in the complex of signs and symptoms associated with achalasia, and it is usually a sign of advanced esophageal disease. The radiologic examination of choice in the diagnosis of achalasia is a barium swallow study performed under fluoroscopic guidance; in the last years functional MRI became a further interesting option to evaluate esophageal motility and morphology.
Differential Diagnosis List: Achalasia

Final Diagnosis: Achalasia

References:

Diseases of the esophagus: diagnosis with esophagography.
Levine MS, Rubesin SE. (PMID: 16170017)

Esophageal magnetic resonance fluoroscopy: optimization of the sequence.

Gockel I, Bohl JR, Junginger T.
Achalasia: new insights in pathogenesis.
Description: In the barium fluoroscopy examination the esophagus appears grossly dilated with an irregular and ridged aspect of the wall. Comparing to MR, barium fluoroscopy allows a more accurate evaluation of the GEJ that appears with the typical “beak-like” aspect. Origin:
Figure 2

Description: MR-fluoroscopy findings: time intervals between each image were at 5 (a), 10 (b), 15 (c) and 20 (d) seconds. The esophageal lumen is grossly dilated (60 mm) and the peristaltic activity results completely disrupted, with totally insufficient bolus progression (at sequence end, contrast agent is still present in the esophagus). Origin: