Incidental Esophageal Findings on Chest CT

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DISCLOSURE

- I have nothing to disclose.
INTRODUCTION

- Although CT has not been used as the primary modality for evaluating the benign esophageal diseases, esophageal abnormalities can be incidentally found in CT of the chest performed for a variety of reasons.

- A wide range of abnormalities can be seen in the esophagus, including wall thickening, diverticula, cysts, masses and others.
INTRODUCTION

• The purpose of this presentation is to expose radiologists to a series of cases representing various esophageal abnormalities encountered on chest CT in order to help improve the radiologist’s diagnostic accuracy when facing such cases.
Circumferential wall thickening of a relatively long segment of the esophagus, using 5 mm as the maximum normal value for wall thickness, is the most common CT findings in esophagitis. All types of esophagitis can manifest by wall thickening and it is often not possible to distinguish between different causes of esophagitis on the basis of CT findings.
Esophageal wall thickening is nonspecific and can be present in esophageal intramural pseudodiverticulosis, Barrett's esophagus, and esophageal varices.

Circumferential wall thickening of a segment of the esophagus is uncommon in malignant tumors involving the esophagus.
Diffuse circumferential wall thickening of the esophagus on sagittal (A) and axial (B) CT images of a patient with esophagitis.
Candida esophagitis

Sagittal(A), coronal(B) and axial(C) CT images of a patient with HIV and proven candida esophagitis reveal esophageal wall thickening with mucosal irregularities. Corresponding Barium esophagogram(D) shows mucosal ulceration.
Esophagitis

Sagittal(A) and axial(B) CT images of a patient with CMV esophagitis show esophageal wall thickening with mucosal ulceration.
Barrett's esophagitis

Multiple axial CT images show mass like eccentric lower esophageal wall thickening with pathology proven Barrett's esophagitis.
Esophageal dilatation can be caused by achalasia, inflammatory stenosis, scleroderma, etc.

Moderate to marked generalized dilatation of the esophagus was described in achalasia. CT scan of such patients may reveal the presence of complications, including pulmonary aspiration, secondary carcinoma, and perforation.

Asymptomatic esophageal dilatation was detected in up to 80% of patients with scleroderma.
Sagittal(A) and coronal(C) CT images of 2 different patients with achalasia demonstrate moderate diffuse esophageal dilatation. Corresponding Barium esophagogram images(B&D) show bird's beak appearance of the gastroesophageal junction.
Achalasia

Coronal(A) and axial(B) CT images of patient with achalasia demonstrate severe dilatation and tortuosity of the esophagus.
Coronal(A) and axial(B) CT images of a patient with scleroderma and sagittal and axial(I&II) CT images of a different patient with scleroderma show interstitial lung disease and asymptomatic diffuse dilatation of the esophagus.
Pulsion esophageal diverticula are formed by increased intraluminal esophageal pressure and traction diverticula occur due to fibrosis in adjacent tissue. According to their location, esophageal diverticula may be classified as upper (e.g. Zenker's diverticulum), middle and lower (e.g. epiphrenic diverticulum).

On CT scan, esophageal diverticulum may appear as an air, fluid or contrast filled pouch.
Axial (A) and sagittal (B) CT images of a patient with Zenker's diverticulum show a large diverticulum off the posterior upper esophagus that has air-fluid level. Image from upper GI series (C) of the same patient redemonstrates the diverticulum.
Killian Diverticulum

Coronal(A) and axial(B) CT images showing a large diverticulum arising from the right lateral aspect of the upper esophagus. An image from upper GI series remonstrates the diverticulum (C).
Portal hypertension in patients with hepatic diseases is the most common cause of esophageal varices.

Downhill varices associated with superior vena caval obstruction have also been reported.

Contrast CT can help delineate the relatively more enhanced varices and differentiate between esophageal and paraesophageal varices.
Esophageal varices

Axial (A&B) and coronal (C) CT images of a patient with end stage liver cirrhosis and portal hypertension show nodular appearance of the liver and enhancing esophageal varices.
ESOPHAGEAL CYSTS

- Esophageal duplication cysts represent about 20% of all gastrointestinal tract duplications.
- Duplication may be classified as cystic or tubular.
- Most duplication cysts are noncommunicating, with tubular duplications may occasionally communicate directly with the esophageal lumen.
- Cystic esophageal duplication appears as a homogeneous mass with low attenuation and a smooth border on CT. Tubular duplication may show two esophageal lumina.
Axial(A) and coronal(B) CT images show a well defined homogeneous duplication cyst along the lower thoracic esophagus.
Duplication cyst with septations

Axial(A), coronal(B), and sagittal(C) CT images reveal a duplication cyst with a smooth septum along the lower thoracic esophagus.
Axial(A) and coronal(B) CT images show a complex lesion along the lower thoracic esophagus which was resected and proved to be a duplication cyst containing blood products.
Benign esophageal tumors are rare, representing less than 1% of all esophageal neoplasms and include leiomyomas, fibrovascular polyps, papillomas, lipomas, granular cell tumors, inflammatory fibroid polyps, neurofibromas, hemangiomas and hamartomas.

Esophageal lipomas are extremely rare tumors characterized by homogenous fat density on CT, as compared to liposarcomas, which present as heterogeneous lesions with septa and tissue other than fat.
Leiomyomas, the most common benign esophageal tumor, are homogeneous submucosal masses. About 60% of these tumors are located in the distal third of the esophagus, 30% in the middle third, and 10% in the proximal third. No distinctive CT characteristics differentiate these from other benign esophageal tumors such as schwannomas, fibromas, neurofibromas, and hemangiomas.
ESOPHAGEAL MASSES

- **Fibrovascular polyps** are rare benign intraluminal masses that arise in the cervical esophagus and extend into the thoracic esophagus. Based on their histologic composition, these lesions appear at CT as fat-attenuated lesions, heterogeneous lesions with focal areas of fat attenuation, or soft-tissue-attenuated lesions with a paucity of fat.
Esophageal lipoma

Axial(A) and sagittal(C) CT images of an asymptomatic patient showing distal esophageal mass with homogenous fat density consistent with lipoma.
Esophageal leiomyoma

Coronal (A), sagittal (B) and axial (C) CT images of a patient with hiatal hernia and a submucosal homogenous mass in the distal esophagus which was resected and proved to be a leiomyoma.
Esophageal leiomyoma

Sagittal(A) and axial(B) CT images of a patient, and axial(C) CT image of a different patient show homogeneous masses arising from the esophagus with surgical pathology results consistent with leiomyoma.
Esophageal AVM

Axial(A) and coronal(B) CT images of reveal mass with coarse calcification in the distal thoracic esophagus. EUS showed large thrombosed vessels compatible with AVM.
Hiatal hernias are classified according to the position of the cardia relative to the diaphragm, as either sliding, the most common type, or paraesophageal.

Retrocardiac mass, with or without air-fluid level in the lumen represents the usual appearance of a hiatal hernia on CT. A hiatal hernia also may be identified by displacement of the stomach above the diaphragm.
Coronal CT image reveals a large obstructed hiatal hernia containing ingested material with most of the stomach located above the diaphragm.
Hiatal hernia with organoaxial volvulus

Coronal(A) CT image demonstrates a large hiatal hernia containing the stomach with organoaxial rotation. An image from a follow up CT (B) obtained next day shows dilated esophagus with ingested material suggesting obstruction.
Benign esophageal abnormalities are encountered in routine cross sectional imaging of the chest. Awareness of the CT findings of various esophageal diseases is important in diagnosis of such diseases.

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