

Detecting Advanced Esophageal Cancer by Point of Care Ultrasonography

CME Credits

Chia-Ching Chen*

Department of Emergency Medicine, Chang Bing Show Chwan Memorial Hospital, Changhua, Taiwan

Abstract

Esophageal cancer (EC) is the 8th-most common cancer and the 6th-most common cause of death worldwide in 2020. Patients with EC might present with a variety of symptoms, such as chest tightness, retrosternal pain, acid regurgitation, heartburn sensation, dyspnea, cough, recurrent pneumonia, hoarseness, dysphagia, and weight loss, which make early diagnosing EC extremely difficult. Currently, the golden diagnostic tool of EC remains endoscopic biopsy. However, in patient suspected advanced EC, point-of-care ultrasonography (POCUS) could be a first-line screening tool. By three zones of esophageal sonography including esophageal inlet, middle third segment of esophagus just beneath the cardiac chambers, and esophagogastric junction, we could be able to detect sonographic evidence of advanced EC including heterogeneous hyperechoic esophageal mass, loss of normal wall differentiation, and mass effect to adjacent structure such as left atrium. For patients with chest pain, POCUS should be focused on cardiac, adjust mediastinum and lung survey. Here, we present a 73-year-old male presented to the emergency department with retrosternal chest pain for 3 months. POCUS revealed esophageal mass which is also proved by computer tomography and endoscopic biopsy on the same day.

Keywords: Esophageal cancer, point-of-care ultrasonography, ultrasonography

INTRODUCTION

Esophageal cancer (EC) is the 8th-most common cancer and the 6th-most common cause of death worldwide in 2020.^[1] Early esophageal carcinomas usually do not have obvious symptoms or signs. Patients with EC might present with a variety of symptoms, such as chest tightness, retrosternal pain, acid regurgitation, heartburn sensation, dyspnea, cough, recurrent pneumonia, hoarseness, dysphagia, and weight loss, which make early diagnosing EC extremely difficult.^[2] Most patients with EC present to emergency department (ED) with obvious symptoms and advanced stage can be detected under carefully history taking and timely diagnostic examination. Current golden diagnostic modality is endoscopic biopsy. While contrast-enhanced computer tomography (CT) provides detailed anatomical structure for interpretation,^[3] point-of-care ultrasonography (POCUS) could be a first-line screening tool in ED setting. After excluding structure heart disease and acute lung pathology, additional effort can be made on detailed

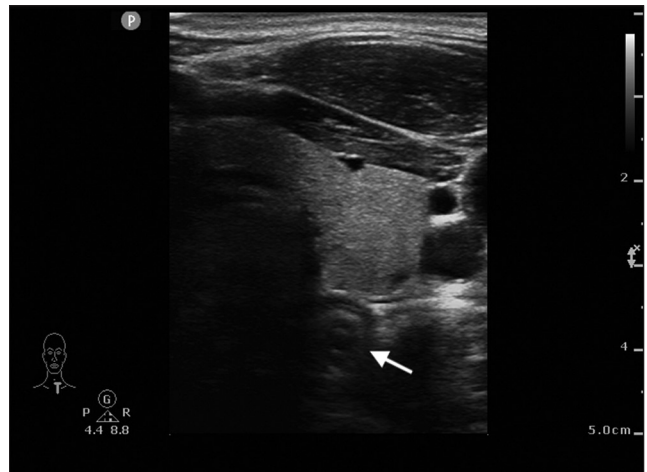


Figure 1: Transverse sonogram of the esophagus shows the cervical esophagus (arrows) as an oval and multi concentric ring structure adjacent to the posterior aspect of the left lobe of the thyroid

Address for correspondence: Dr. Chia-Ching Chen, Department of Emergency Medicine, Chang Bing Show Chwan Memorial Hospital, No. 6, Lugong Road, Lukang Zhen, Changhua County, Taiwan. E-mail: c11g@hotmail.com

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examination in mediastinum mass by ultrasound. By three zones of esophageal sonography including esophageal inlet, middle third segment of esophagus just beneath the cardiac chambers, and esophagogastric junction (EGJ), emergency physicians could be able to detect sonographic evidence of advanced EC including heterogeneous hyperechoic esophageal mass, loss of normal wall differentiation, and mass effect to adjacent structure such as left atrium.

While endoscopic inspection provides the definitive pathological diagnosis of EC, POCUS plays an important adjunct to clinical and CT with its nature of high accessibility.

CASE REPORT

A-73-year-old male with hypertension and diabetes mellitus presented to ED with chest pain for 3 months. Dysphagia and weight loss were also reported. On arrival, he was conscious and afebrile but tachycardic (pulse rate 115 beats/min) and tachypnea (20 breaths/min). Electrocardiogram revealed sinus tachycardia without ischemia change. POCUS (Philips,

Sparq, USA) with a 4–12 MHz linear probe for esophageal inlet examination, a 2–4 MHz sector probe for middle third segment of esophagus just beneath the cardiac chambers, and a 2–6 MHz curved probe for EGJ was performed in supine position, which revealed a esophageal inlet with normal wall differentiation [Figure 1], heterogeneous hyperechoic esophageal mass with compression to the left atrium and pericardial effusion [Figures 2-4 and Video E1], and EGJ swelling [Figure 5]. Emergent CT [Figure 6] demonstrated annular wall thickness over esophagus. Endoscopic biopsy proved squamous cell carcinoma of esophagus. The patient was admitted for cancer staging and chemoradiotherapy.

DISCUSSION

Early diagnosis of EC in ED is a challenge because the initial symptoms, including chest pain, dysphagia, and weight loss, are similar to a broad differential diagnosis. While endoscopic ultrasound is the most accurate modality for locoregional staging of EC, POCUS for the evaluation of chest pain has

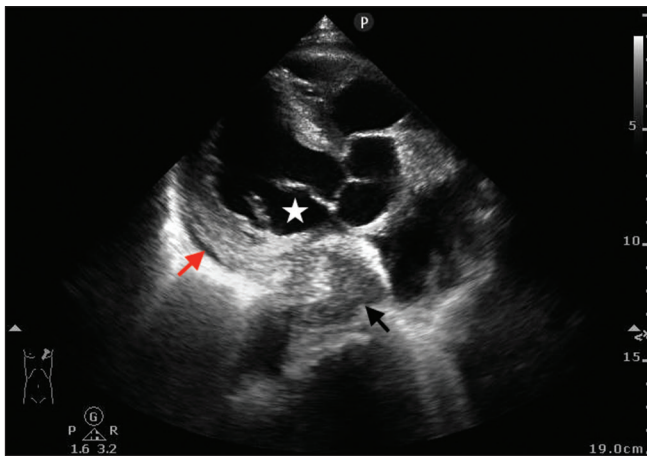


Figure 2: The parasternal long axis view of echocardiography revealed a heterogeneous hyperechoic esophageal mass (black arrow) with compression to the left atrium (star) and pericardial effusion (red arrow)

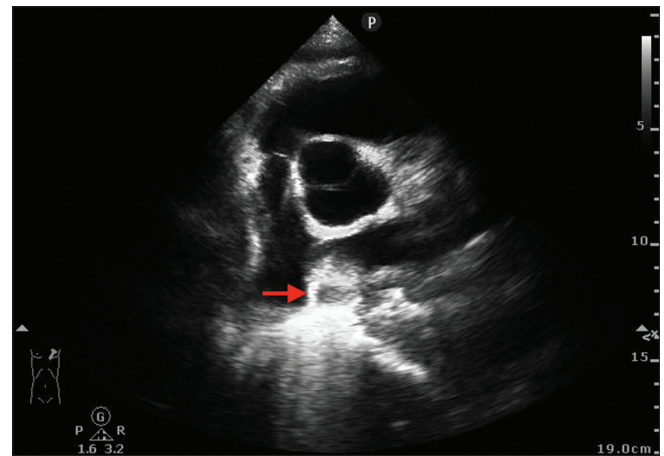


Figure 3: The parasternal short axis view at the aortic valve level showed an esophageal mass (red arrow)

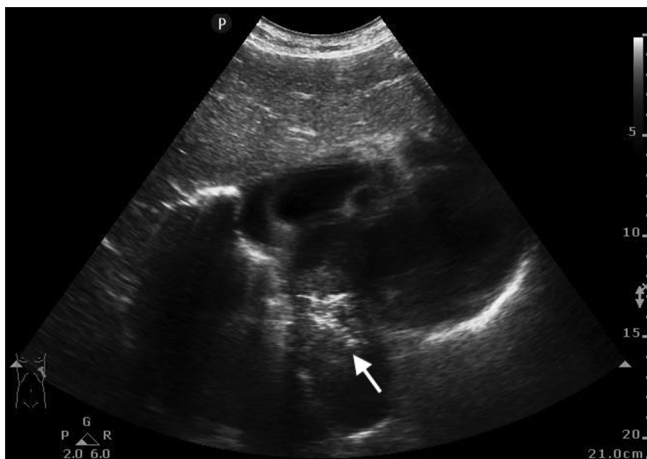


Figure 4: The subcostal four chamber view showed an esophageal mass (arrow) with compression to the left atrium



Figure 5: Longitudinal epigastric scan of the hepatic left lobe and EGJ showed an increased thickness of the wall of the abdominal esophagus (arrow). EGJ: Esophagogastric junction

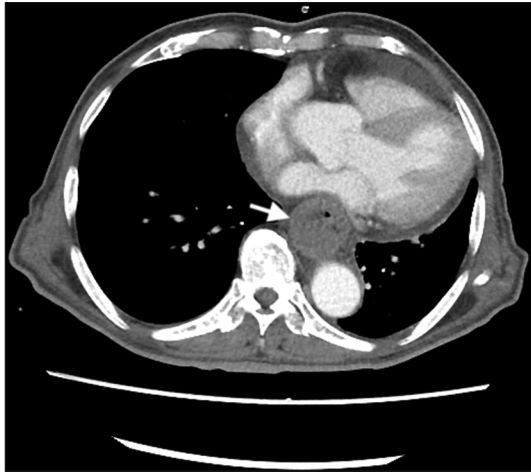


Figure 6: Contrast-enhanced CT demonstrated annular wall thickness over esophagus (white arrow). CT: Computer tomography

grown rapidly because of the excellent diagnostic accuracy for cardiac and lung pathology without radiation.^[4,5]

The POCUS for patients with atypical chest pain should be focused on cardiac, thoracic, and mediastinum examinations. For patients with atypical chest pain and dysphagia suspecting EC, we suggest a new POCUS protocol for rapid screening advanced EC.^[6-12] Sonographic manifestation of advanced EC includes heterogeneous hypoechoic mass with loss of esophageal normal wall differentiation and lumen narrowing, adjacent structure abnormality such as pericardial effusion, pleural effusion, and lymphadenopathy.^[13] By three zones of esophageal sonography including esophageal inlet, middle third segment of esophagus just beneath the cardiac chambers, and EGJ, emergency physicians could be able to detect sonographic evidence of advanced EC and arrange timely and efficient workup.

In this patient, we found an esophageal mass lesion through cardiac window. Esophagogastroduodenoscopy was then performed with biopsy proved EC.

Declaration of patient consent

The authors certify that they have obtained all appropriate patient consent forms. In the form, the patient has given

his consent for his images and other clinical information to be reported in the journal. The patient understands that his name and initials will not be published, and due efforts will be made to conceal his identity, but anonymity cannot be guaranteed.

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Nil.

Conflicts of interest

There are no conflicts of interest.

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