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Case Report

A rare case of azygos arch tumor thrombus in a patient with esophageal squamous cell carcinoma: A case report ^{☆,☆☆}

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ABSTRACT

Esophageal cancer (EC) is among the top ten worldwide causes of cancer related morbidity and mortality. Squamous cell carcinoma (SCC) accounts for over 90% of all cases in sub-Saharan Africa [1]. Azygos arch and azygos vein tumor thrombus in esophageal squamous cell carcinoma (ESCC) is a rarely reported phenomenon. We report a case of tumor thrombus in the azygos vein and arch in a patient with esophageal squamous cell carcinoma. To date only a single case of such tumor thrombus in the arch of the azygos vein have been reported which was subsequently managed with neoadjuvant chemotherapy followed by radical resection [2].

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Introduction

Esophageal cancer (EC) is among the top 10 worldwide causes of cancer related morbidity and mortality. Squamous cell carcinoma [SCC] accounting for over 90% of all cases in sub-Saharan Africa [1]. Azygos arch and azygos vein tumor thrombus in esophageal squamous cell carcinoma (ESCC) is a rarely reported phenomenon. To the best of our research, until 2024 only 1 such case is mentioned in the literatures. We report a case of tumor thrombus both in the azygos vein and azygos

arch in a patient previously diagnosed with locally advanced esophageal squamous cell carcinoma.

Case presentation

A 45 years old female patient from the rural country side of Ethiopia, Arsi Robe presented with dysphagia to both solid and fluid for 10 months duration. She also has dry cough, loss of appetite, and epigastric discomfort. Physical exami-

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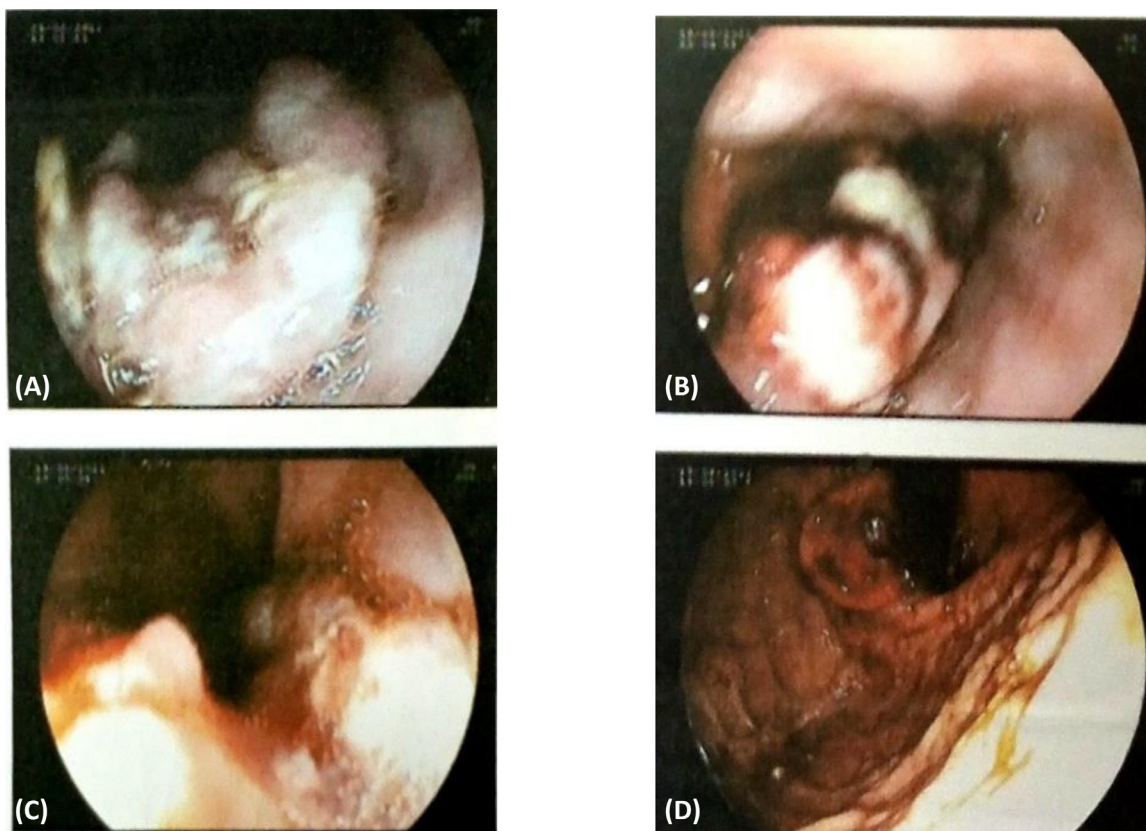


Fig. 1 – (A-D), endoscopic images showing fungating mid and lower esophageal mass, involving the gastro-esophageal junction (GEJ) and the gastric cardia.

nation showed no abnormality, complete blood count (CBC) and chest radiograph at the time were unremarkable. Abdominal ultrasound showed 4cm x 6cm hypo-echoic mass in the Gastro-esophageal junction (GEJ). Upper GI Endoscopy was done and revealed fungating lower esophageal mass involving the Gastro-esophageal junction and gastric cardia (See Fig. 1). With the suspicion of esophageal cancer biopsy was taken. Microscopy showed broad sheets of infiltrative malignant squamous cells in necrotic background and Invasive squamous cell carcinoma was the diagnosis.

Pre-treatment computed tomography (CT) scan was done for staging. contrast enhanced CT of the chest and abdomen showed that there is distal thoracic esophageal, GEJ, and gastric cardia circumferential and asymmetric mass like enhancing wall thickening measuring 7 cm in length and maximum thickness of 1.7 cm. It has ill-defined margin and is causing luminal narrowing (Figs. 3A–D, green arrows). There are also multiple left gastric group enlarged rounded central necrotic lymph nodes; the largest measuring 2.5 cm in shortest diameter. They are 4 in number (Fig. 2). There is also luminal dilation and intra-luminal enhancing filling defect involving the azygos vein distal to the point where the hemi-azygos vein meets the azygos vein at the level of T-10 vertebral body extending through the azygos arch to junction of azygos vein and superior vena cava spanning approximately 12 cm in length. The vein has maximum AP diameter of 3.2 cm and indistinct margin with surrounding structures, esoph-

agus, aorta, and trachea (Fig. 3A, yellow arrow, and Figs. 4A–E, red arrows). Otherwise no Imaging evidence of metastasis to other organs was seen. The final diagnosis of locally advanced distal esophageal squamous cell carcinoma with tumor thrombus in the azygos vein and azygos arch was made.

Discussion

The azygos venous system is a vital venous collateral pathway which creates an important connection between the superior venae cavae (SVC) and inferior venae cavae (IVC). The pathway consists of the azygos, hemi-azygos, and accessory hemi-azygos veins. All of them develop from the last portion of the posterior cardinal veins [3,4].

Intravascular tumor thrombus is defined as direct extension of tumor mass into a nearby vessel. It has significant implication on the choice of treatment and also the prognosis. It is commonly encountered in advanced cases of hepatocellular carcinoma (HCC), renal cell carcinoma (RCC), adrenal cortical carcinoma (ACC) and wilms tumor [5]. Despite the high burden of esophageal squamous cell carcinoma in low income countries it is very rare to see tumor thrombus in the arch of azygos vein. Contrast enhanced computed tomography (CECT) can detect tumor thrombus with high accuracy.

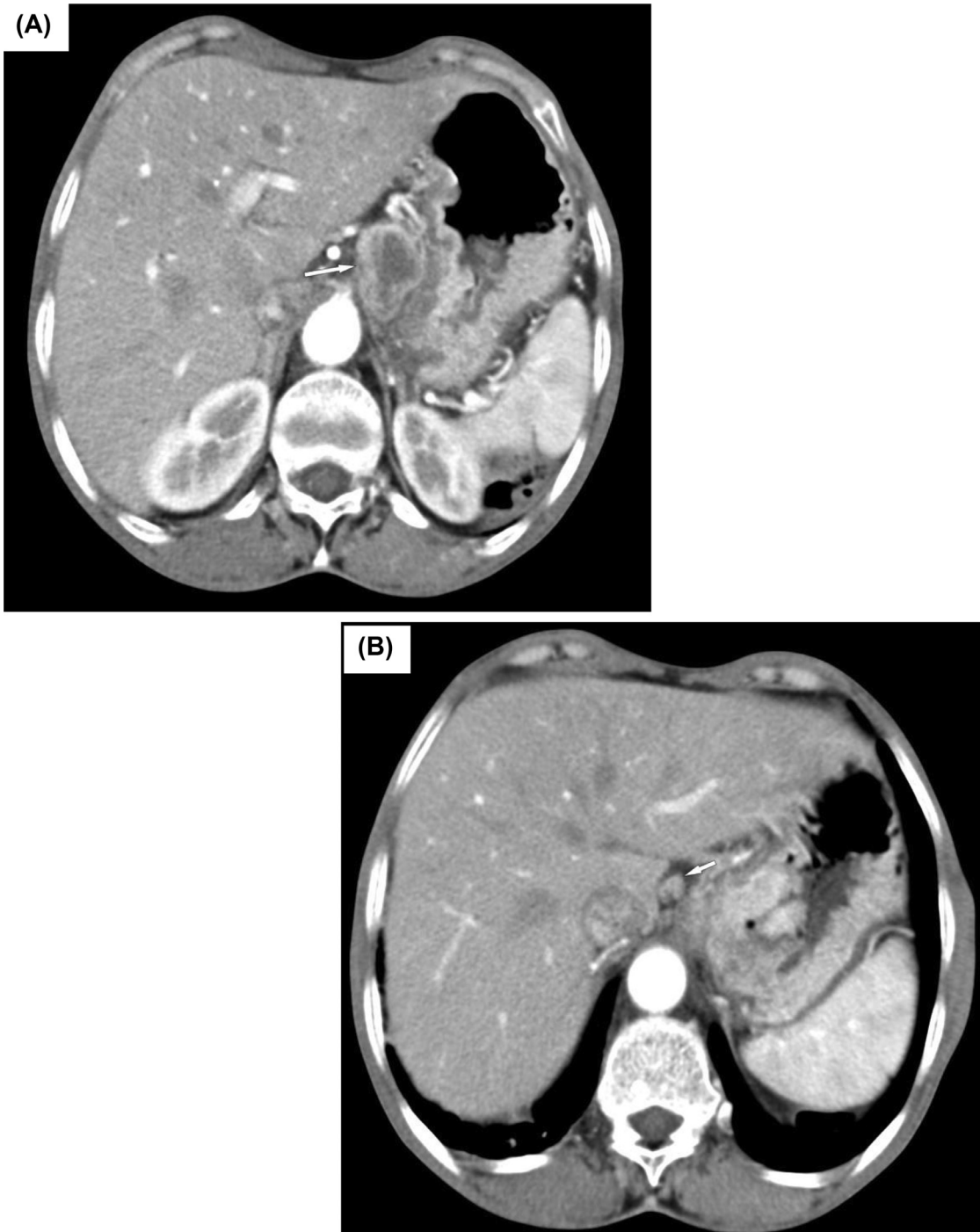


Fig. 2 – (A and B), Contrast enhanced axial chest CT images showing enlarged celiac region lymph nodes, some having hypo-dense center; the largest measuring 2.5 cm in shortest diameter.

It also helps in differentiating it from bland thrombus. On CT, Contiguity with the mass, presence of enhancement and vessel expansion differentiate tumor thrombus from bland thrombus [5].

Esophageal cancer (EC) is among the top 10 worldwide causes of cancer related morbidity and mortality. According to recent statistics (2020) esophageal cancer rank seventh in terms of incidence (604,000 new cases) and sixth in

mortality (544,000 deaths). Among the 2 most common histologic sub-types (squamous cell carcinoma [SCC] and adenocarcinoma [AC]) SCC accounts for over 90% of all cases in sub-Saharan Africa [1]. In addition to presence of nodal and metastatic disease, local direct vascular extension of the tumor also affects the staging, management, and prognosis of disease in esophageal squamous cell carcinoma (ESCC).

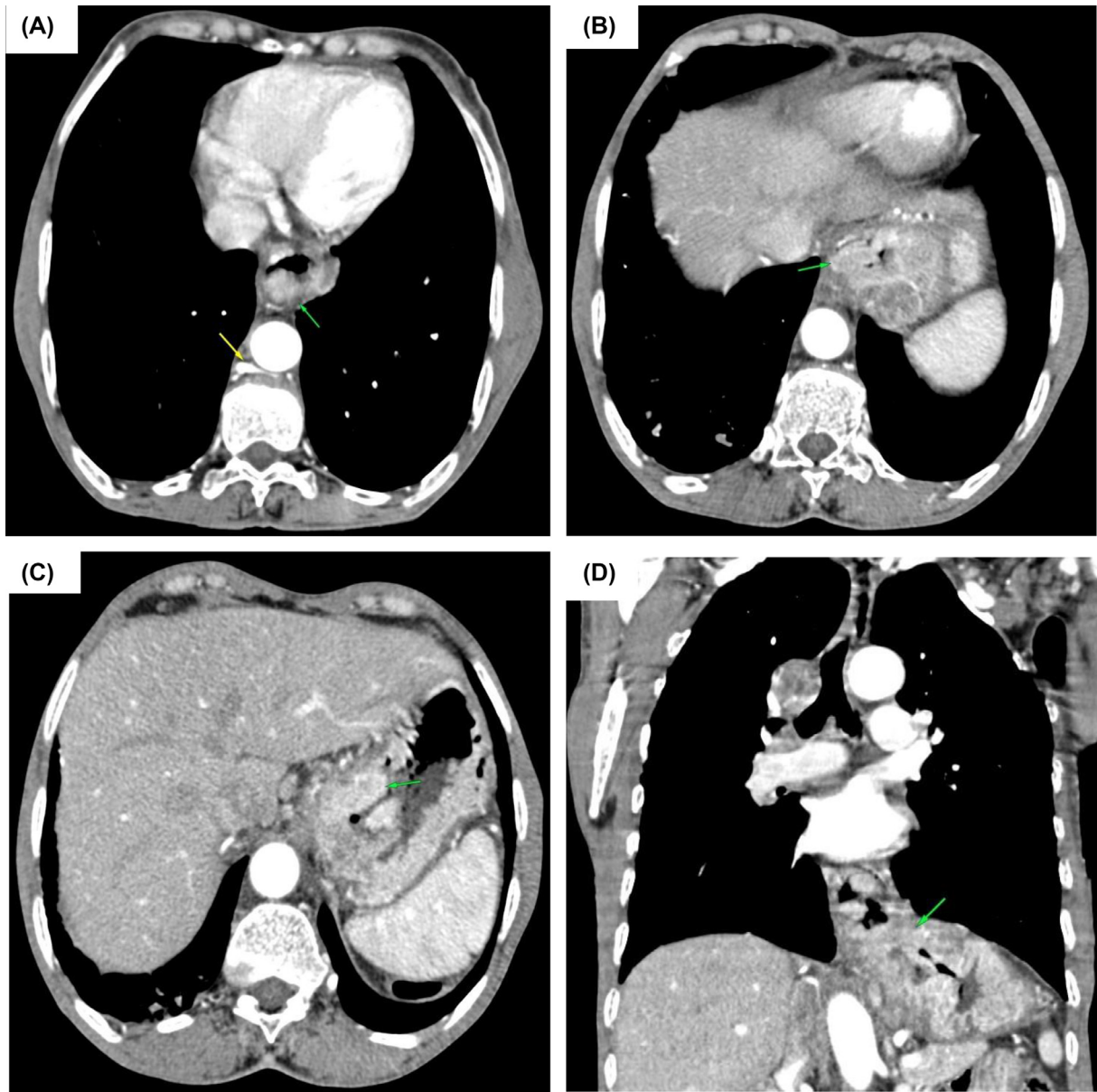


Fig. 3 – Contrast enhanced axial (A, B, and C) and coronal (D) chest CT images showing distal esophageal, gastro-esophageal junction (GEJ) and gastric cardia mass like enhancing thickening (Green arrows). The mass has luminal component and is causing luminal narrowing. Multiple enlarged celiac and para-esophageal regional lymph nodes are seen with some having necrotic center. The junction points between the hemi-azygos and the azygos veins is seen in (C) (Yellow arrow).

One of the explanations for the formation of azygos arch tumor thrombus in esophageal cancer is as a result of the direct extension the tumor from the primary site. In the absence of clear direct extension, the exact mechanism for the development of azygos arch tumor thrombus is not fully understood [2].

Our case shows tumor thrombus both in the azygos vein and arch with expanded vascular lumen and enhancing internal small vessels. There was no clear continuity between the mass and the thrombus. To the best of our knowledge only a single case of azygos arch tumor thrombus in a 63-year-old male with esophageal squamous cell carcinoma have

been reported to date and the patient was treated with neo-adjuvant chemotherapy followed by McKeown radical resection.

Summary

Intravascular tumor thrombus in the azygos arch and vein are rarely reported in esophageal squamous cell carcinoma. To date only 2 of such case has been reported, including our case. CT plays a pivotal role in detecting the tumor extension

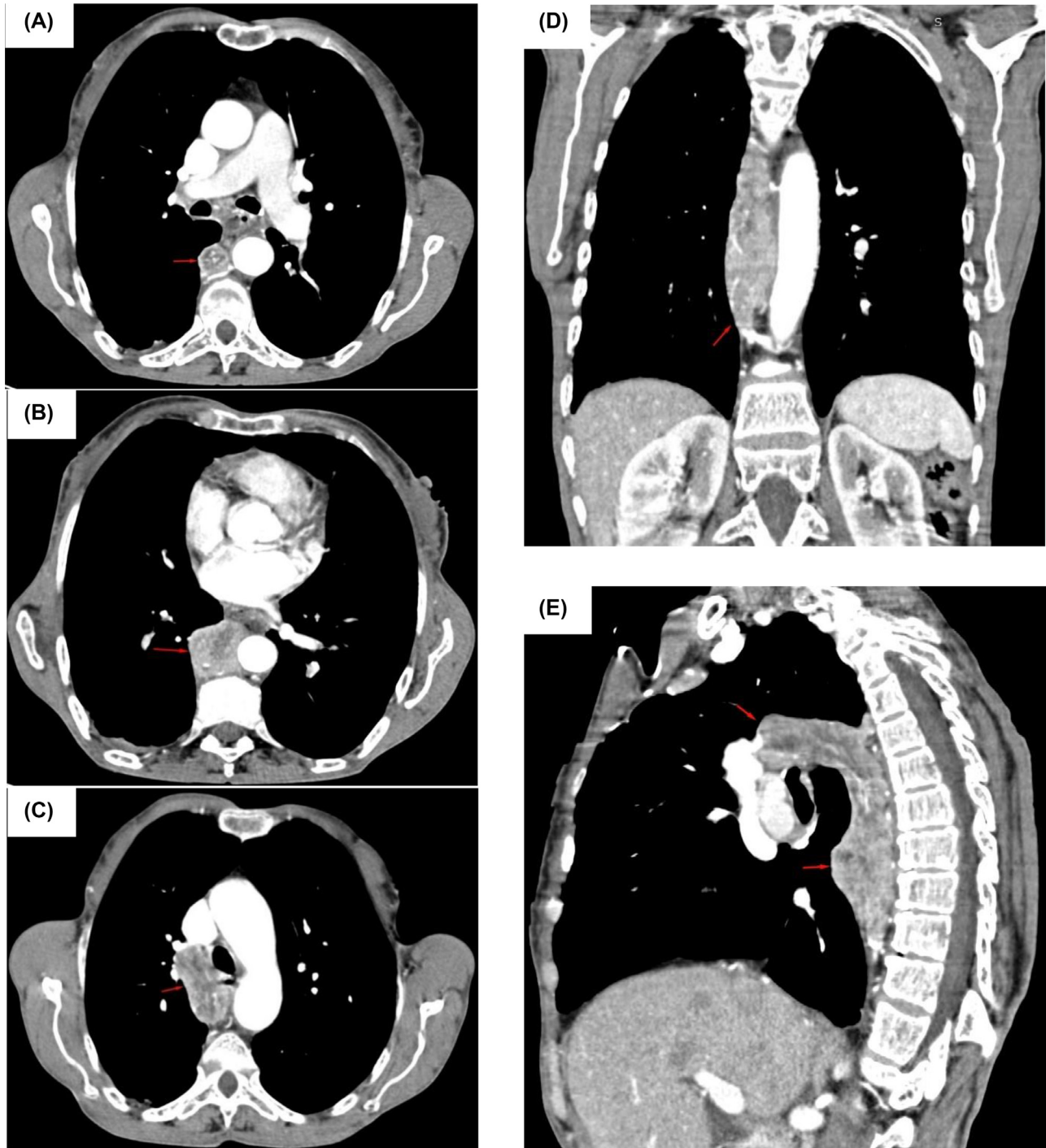


Fig. 4 – Contrast enhanced axial (A, B and C), coronal (D) and sagittal (E) chest CT images showing luminal dilation and intra-luminal enhancing filling defect, which is tumor thrombus (Red arrows) in the azygos vein distal to the junction point of the hemi-azygos vein at the level of T-10 vertebral body extending distally into the azygos arch up to the junction of azygos and superior vena cava.

and differentiating it from bland thrombus. The mechanism by which it can be present without imaging evidence of direct extension from the primary tumor and its exact impact on patient prognosis remains an open question to be answered with future studies.

Patient consent

Patient written informed consent is obtained for publication from the patient.

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