Hot Quadrate Sign Under Focus of F18-FDG PET-CT: An Incidental Finding

Ayesha Zubair, Aamna Hassan
Department of Nuclear Medicine, Shaukat Khanum Memorial Cancer Hospital and Research Center, Lahore1.
Correspondence: Aamna Hassan. Email: aamnah@skm.org.pk
ORCID ID: 0000-0003-0026-0729

Abstract

"Hot quadrate lobe sign" refers to visualization of caudate lobe of liver due to excess accumulation of radiotracer secondary to superior vena cava obstruction. Collateral channels are formed between thoracic and mediastinal vessels; internal mammary through the paraumbilical vessels which drain blood to the left portal vein and into the caudate lobe of liver. It was first described on Tc99-m sulfur colloid scan. We present a case with superior vena cava obstruction presenting as hot quadrate lobe sign on F18-FDG PET-CT.

Keywords: F18-FDG PET-CT, caudate lobe, superior vena obstruction, collateral vessels.
DOI: https://doi.org/10.47391/JPMA.25-06

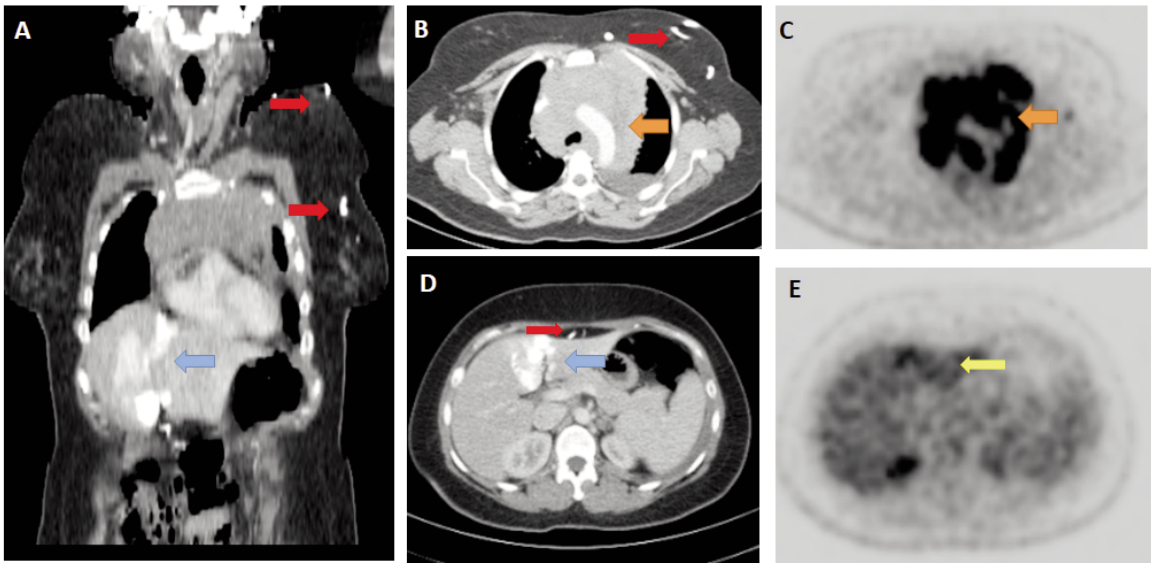

Figure: A demonstrates coronal CT image while Figure B, C, D, E show trans-axial images of the patient. Red arrows demonstrate collateral vessels secondary to superior vena cava obstruction. Blue arrows indicate pooling of contrast medium while yellow arrow indicates FDG accumulation in caudate lobe. Mediastinal mass obstructing major mediastinal vessels is shown by orange arrow.

Case discussion: A 34-year-old female with classic Hodgkin's Lymphoma underwent staging F18-FDG PET-CT scan which demonstrated a large FDG avid anterior mediastinal mass encasing all major vessels, causing compressive effects on superior vena cava and trachea (Fig A, B, C). The low dose, enhanced CT component, collateral vessels were visualized in anterior chest and abdominal wall along with pooling of iodinated contrast in caudate lobe without underlying structural abnormality (Fig A, B, D, E). There was corresponding enhanced FDG accumulation on PET component in the caudate lobe secondary to superior vena cava obstruction.

The hot quadrate lobe sign, also known as hot liver sign, is defined as increased accumulation of radiotracer in caudate lobe of liver due to superior vena cava obstruction by collateral thoracic and mediastinal vessels.[1] First defined in Tc99m sulfur colloid scan, it was subsequently described in contrast enhanced computed tomography (CECT) as pooling of contrast medium in the caudate lobe as a result of portosystemic shunt.[2] On FDG PET-CT it is depicted as geographic increased FDG accumulation in hepatic segment IVA (the caudate lobe) in the absence of underlying morphologic lesion.[3] Although rare, hot liver sign should be kept in the differential in patients with suspected superior vena cava obstruction. If the hot quadrate lobe sign is incidentally seen on abdominal imaging, further imaging of the thorax must be done to

assess for obstructive pathology in the mediastinum which may have lead to collateral formation and as a result pooling in the caudate lobe.

References

1. Masih K, Suthar PP, Virmani S. The Hot Quadrate Sign on a Ventilation-Perfusion (V/Q) Scan. Cureus. 2024;16:e64122.
2. Dickson AM. The focal hepatic hot spot sign. Radiology. 2005;237:647-8.
3. Jundt MC, Broski SM, Binkovitz LA. 18F-FDG PET/CT Equivalent of the Hepatic Hot Spot Sign With CT Correlation. Clin Nucl Med. 2018;43:e147-e148