

Submitted by: Babar Khan, Shafqat Khan

Department of Nuclear Cardiology, Aga Khan University Hospital, Karachi, Pakistan.

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History

A 50 year male, non-smoker but hypertensive referred for adenosine stress myocardial perfusion imaging (Ad-MPI). Adenosine stress followed by rest MPI was performed with Tc-99m Tetrofosmin (Myoview). During adenosine stress, patient did not have chest pain, no significant ECG change with a physiological hemodynamic response.

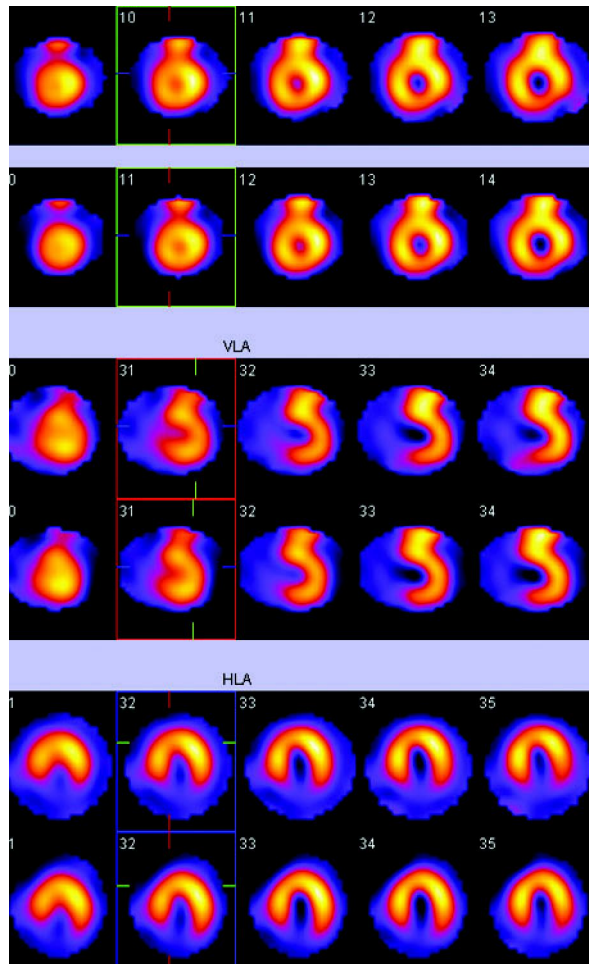


Figure 1: Adenosine stress and rest MPI.

Questions

Q1. Interpret MPI findings?

QUIZ

Answers

Scan shows a small fixed perfusion defect of moderate intensity over basal inferior wall (diaphragmatic attenuation) with no evidence of inducible ischemia. LV cavity is normal size.

An area of extra-cardiac activity is seen over 12 o'clock of SA and VLA slices which needs further correlation.

Reply: Correct. For further evaluation of extra-cardiac activity, raw images of MPI were evaluated which revealed a well-defined area of extra-cardiac uptake of Tetrofosmin over left hilar region (Fig. 2).

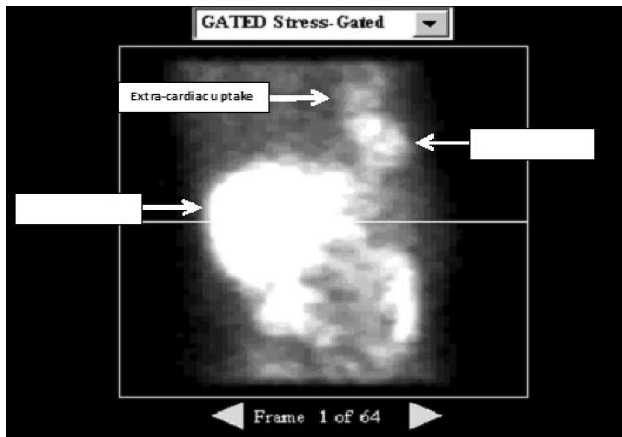


Figure 2: Raw stress image showing various sites of Tetrofosmin uptake.

An X-ray chest PA view was reviewed which revealed a well-defined mass lesion in left hilar region (Fig. 3).

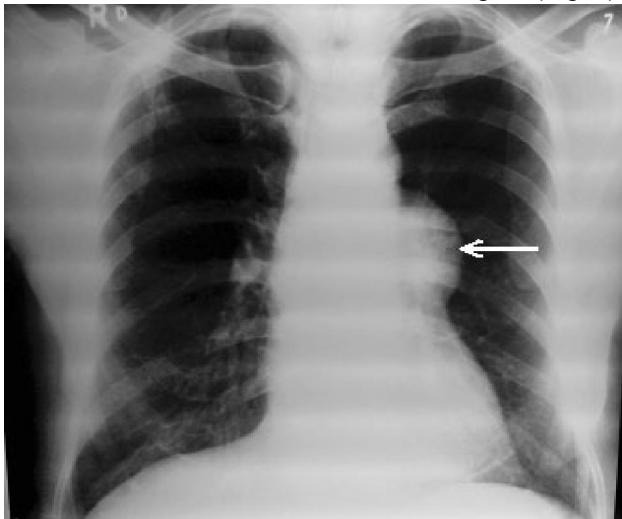


Figure 3: X-ray chest PA view showing a well-defined area in left hilar region (arrow).

Discussion

Myocardial perfusion imaging (MPI) is the most popular nuclear cardiology procedure due to its high sensitivity, diagnostic accuracy and prognostic significance. Tracers like MIBI (methoxy Isobutyl Isonitrile) and Tetrofosmin are commonly used for MPI. Extra-cardiac uptake of these tracers is not uncommon with reported incidence of 1.7%¹ and 20%.² Abnormal uptake of Tc-99m tetrofosmin has been reported in benign or malignant tumors and also in infectious or non-infectious diseases.³ Therefore it is very important to review the raw images in cine mode before reconstructing the tomo images as this could find out a silent benign or malignant intrathoracic abnormality or a breast lesion in female.

References

1. Williams KA, Hill KA, Sheridan CM. Noncardiac findings on dual-isotope myocardial perfusion SPECT. J Nucl Cardiol 2003;10:395-402.
2. Aziz K, Jones S, Yasuda T, gewirtz H, Scott JA. Under-reporting of abnormal extra-cardiac uptake of Tc-99m MIBI myocardial perfusion scan. J NuclCardiol 2004; 11(4): 28-9.
3. Vijayakumar, V., Gupta, R., & Rahman, A. Pathologic extracardiac uptake of Tc-99m tetrofosmin identified in the chest during myocardial perfusion imaging. Journal of Nuclear Cardiology, 2005; 12(4): 473-5.