Abstract Category: Clinical Case Challenge in Cardio-Oncology
Title: A Multimodal Approach to Evaluate for Cardiac Metastasis in a Case of Non-Small Cell Lung Cancer

ABSTRACT BODY

Background and Purpose
Cardiac metastases have been found in up to 9.1% of autopsies of patients with advanced cancer (1). There are no established guidelines for noninvasive diagnosis of cardiac metastasis.

Case Description and Outcomes
An 84-year-old male with mitral valve prolapse and mitral regurgitation, 40-pack-year smoking history, is diagnosed with biopsy-proven non-small cell lung cancer. An 18F-FDG PET-CT identified an FDG-avid left upper lobe mass, mediastinal adenopathy, and an intra-cardiac focus of FDG avidity suggestive of cardiac metastasis. Patient refused further evaluation with cardiac MRI (CMRI). Echocardiogram was inconclusive. He was started on immunotherapy with anti-PD-1 therapy (pembrolizumab), and after three cycles there was decreased FDG avidity on follow-up PET-CT at the primary site and resolution of intra-cardiac focus. Several months later, intra-cardiac avidity returned on PET-CT. The patient consented to CMRI at this point (10 months since diagnosis), which did not show the presence of a malignant mass.

Discussion
A multimodal approach that includes CMRI and PET-CT can be used when evaluating for cardiac metastasis. PET-CT alone lacks specificity; falsely-positive in infection, ischemia (2), atherosclerosis (3) and hypertrophy (4). Multimodal imaging allows for optimal evaluation of both response to treatment and potential pseudo-progression, which describes recurrent avidity on PET-CT due to immune cell infiltration of a tumor milieu that has been reported in patients with immunotherapy. Intra-cardiac FDG avidity does not necessarily indicate metastatic involvement. Pseudo-progression and false positives should be considered.

References
**OCT 2018:**
PET-CT positive for intracardiac focus

**JAN 2019:**
PET-CT negative for cardiac involvement

**JUL 2019:**
PET-CT positive for cardiac involvement

**OCT 2019:**
Resolving intracardiac PET-CT avidity

**MAR 2019:**
PET-CT negative for cardiac involvement

**MAY 2019:**
PET-CT negative for cardiac involvement

**AUG 2019:**
CMRI negative for cardiac involvement

**Pembrolizumab (200mg IV q21 d)**

**OCT 2018**
Pembrolizumab therapy initiated