Journal of Nuclear Medicine, published on October 19, 2017 as doi:10.2967/jnumed.117.198226

Response to letter by Yu et al

David Birnie[1] , Hiroshi Ohira,[2] Rob Beanlands3

[1] Arrhythmia Service and [3] Molecular Function and Imaging Program, the National Cardiac PET Centre and, Division of Cardiology, Department of Medicine, University of Ottawa Heart Institute, Ottawa, Canada

[2] First Department of Medicine, Hokkaido University school of Medicine, Sapporo, Japan

We thank Lu et al for their comments and we certainly agree with many and most importantly "Imaging of cardiac sarcoidosis remains challenging" for us all. To answer their specific points. Firstly regarding duration of dietary preparation, our patients were recommended to consume two high fat, low carbohydrate meals, this is consistent which recent guidelines.[1] We specifically choose to *not* exclude non-compliant patients as we wanted to challenge our readers with a spectrum of real world cases. Second Yu et al make a good point about correlating the FDG PET/CT results and other imaging such as cardiac MRI and clinical findings. We are looking at this in other ongoing projects and did not think it was needed for the main message of the current paper.[2]

Thirdly regarding figures 1 and 2, we did not screen the entire set but chose the first good examples identified. Also that Yu et al do not agree with our image interpretation absolutely highlights the main message of our paper. For figure 1B Yu et al correctly point out the issue of papillary muscle activity however the patient also clearly has basal anterior uptake and patchy RV uptake consistent with 'focal an diffuse pattern'. Whether the focal on diffuse pattern should be considered indeterrminate for CS is controversial. However the recent SNMMI–ASNC Expert Consensus Document[1] considered 'focal on diffuse pattern' to be consistent with possible inflammation. Further the consensus document specifically highlights the importance in this situation of the location of the abnormal focal uptake.[1] For figure 2B there

is faint diffuse myocardial uptake so poor preparation may have contributed to this but the lateral uptake intensity is in keeping with normal variant. [1,3,4]

Finally we agree with Yu et al's comment that it is possible, with a modified patient preparation protocol (for example with 72 hours of dietary preparation[5]) we might have achieved even greater inter-observer agreement. However the value, patient compliance and practically of very prolonged diet preparation has not been tested in prospectively. Our work sets a standard against which subsequent research can be measured and we very much hope that inter-reader variability can be greatly improved. Further research like this is vitally important as clinicians caring for patients with CS base important management decisions on FDG-PET imaging results.

1. Chareonthaitawee P, Beanlands RS, Chen W, et al. Joint SNMMI-ASNC Expert Consensus Document on the Role of 18F-FDG PET/CT in Cardiac Sarcoid Detection and Therapy Monitoring. J Nucl Med 2017;58:1341-53.

2. Ohira H, Mc Ardle B, deKemp RA, et al. Inter- and Intra- observer agreement of FDG-PET/CT image interpretation in patients referred for assessment of Cardiac Sarcoidosis. J Nucl Med 2017.

3. Osborne MT, Hulten EA, Murthy VL, et al. Patient preparation for cardiac fluorine-18 fluorodeoxyglucose positron emission tomography imaging of inflammation. Journal of nuclear cardiology : official publication of the American Society of Nuclear Cardiology 2017;24:86-99.

4. Morooka M, Moroi M, Uno K, et al. Long fasting is effective in inhibiting physiological myocardial 18F-FDG uptake and for evaluating active lesions of cardiac sarcoidosis. EJNMMI Res 2014;4:1.

5. Lu Y, Grant C, Xie K, Sweiss NJ. Suppression of Myocardial 18F-FDG Uptake Through Prolonged High-Fat, High-Protein, and Very-Low-Carbohydrate Diet Before FDG-PET/CT for Evaluation of Patients With Suspected Cardiac Sarcoidosis. Clinical nuclear medicine 2017;42:88-94.