The War Is Opened: PSMA vs. ⁶⁴CUCL₂ vs. Choline PET/CT

TO THE EDITOR: I have read with great interest the paper by Piccardo et al. (*1*) and the editorial by Ceci et al. (*2*) recently published in your journal.

After a careful analysis of the published data, some comments seem necessary.

First, a specific ¹⁸F-choline acquisition protocol would improve the detection of recurrent prostate cancer, either for prostatic fossae or for lymph nodes. PET acquisition at only 20 min after ¹⁸F-choline injection, as reported by the authors (2), cannot be considered as a standard. In a recent review, 21 of 29 (72%) studies that focused on ¹⁸F-choline PET or PET/CT reported a late (after 60 min) wholebody scan, whereas only 8 of 29 (28%) reported acquisition at 10-15 min after tracer injection (3). In our recent experience (4) in 75 patients who underwent both an early static and a late whole-body acquisition, we found that in the case of low prostate-specific antigen levels (<2 ng/mL), early ¹⁸F-choline PET/CT scans detected recurrent disease in prostatic fossae in 15 subjects. Conversely, late images were positive in only 4 patients. Therefore, in the case of prostatic fossae recurrence, a specific acquisition protocol would be useful to improve the detection rate up to 70%. Furthermore, Oprea-Lager et al. (5) reported that a single-time-point SUV measurement 30 min after injection was a reasonable alternative for predicting the enlarged pelvic lymph nodes. However, no dedicated European guidelines are currently available for ¹⁸F-choline PET/CT examination.

Second, the authors did not report any data about 64 CuCl₂ acquisition (early; after 4 h; or late, after 24 h) for the interpretation of the images. This information would be useful for the repeatability of the study and also for understanding the correct scheduling of patients.

Third, the comments by Ceci et al. (2) are mainly focused on the comparison between 64 CuCl₂ and prostate-specific membrane antigen (PSMA)–based radiopharmaceuticals. Because most of the available data about PSMA-directed PET use 68 Ga-PSMA-11—a radiopharmaceutical agent with a urinary excretion—there is a loss of information for prostatic fossae recurrence. A study performed by Uprimny et al. (6) reported that when early (after 4–8 min) and late (after 60 min) 68 Ga-PSMA-11 PET/CT were used, an early 68 Ga-PSMA-11 scan was able to identify the presence of prostatic fossae recurrence in 50 patients, with a gain of detection rate more than 50% than late acquisition. Again, the acquisition protocol is useful for the correct interpretation of PET/CT findings.

In our opinion, the comparison between ${}^{64}CuCl_2$ and ${}^{68}Ga-PSMA-11$ or ${}^{18}F$ -fluciclovine is mandatory, however:

- A specific endpoint should be drawn, in order to assess the impact on the patients' management and consequent survival rather than only detection rate.
- A final pathology as a gold standard should be recommended in order to solve the problematic gap between imaging and the pure biochemical recurrence and to prove the new tracers' reliability. However, it should be recalled that salvage lymph node dissection is still experimental and transrectal ultra-

sound–guided biopsy of the vescico-urethral anastomosis is no longer recommended by the European Association Urology (EAU) and National Institute for Health and Care Excellence (NICE) guidelines.

However, although 64 CuCl₂ has a long half-life, its image resolution is significantly better than that of 11 C and 68 Ga (7). This characteristic has an important benefit in the identification of small areas of prostate cancer recurrence, particularly in the case of local recurrence after radical prostatectomy.

REFERENCES

- Piccardo A, Paparo F, Puntoni M, et al. ⁶⁴CuCl2 PET/CT in prostate cancer relapse. J Nucl Med. 2018;59:444–451.
- Ceci F, Fendler W, Eiber M. A new type of prostate cancer imaging: will ⁶⁴CuCl2 PET/CT flourish or vanish? J Nucl Med. 2018;59:442–443.
- Evangelista L, Cervino AR, Guttilla A, Zattoni F, Cuccurullo V, Mansi L. ¹⁸Ffluoromethylcholine or ¹⁸F-fluoroethylcholine pet for prostate cancer imaging: which is better? A literature revision. *Nucl Med Biol.* 2015;42:340–348.
- Zattoni F, Cattaneo F, Zattoni F, Evangelista L. MP77-09 early and late images of ¹⁸Fcholine (FCH) PET/CT for the detection of prostatic fossae recurrences in prostate cancer with a biochemical failure (PSA> 2 NG/ML). J Urol. 2018;199:e1030–e1031.
- Oprea-Lager DE, Vincent AD, van Moorselaar RJ, et al. Dual-phase PET-CT to differentiate [¹⁸F]Fluoromethylcholine uptake in reactive and malignant lymph nodes in patients with prostate cancer. *PLoS One.* 2012;7:e48430.
- Uprimny C, Kroiss AS, Fritz J, et al. Early PET imaging with [68]Ga-PSMA-11 increases the detection rate of local recurrence in prostate cancer patients with biochemical recurrence. *Eur J Nucl Med Mol Imaging*. 2017;44:1647–1655.
- Bunka M, Müller C, Vermeulen C, et al. Imaging quality of ⁴⁴Sc in comparison with five other PET radionuclides using Derenzo phantoms and preclinical PET. *Appl Radiat Isot.* 2016;110:129–133.

Laura Evangelista* Fabio Zattoni *Veneto Institute of Oncology IOV–IRCCS Padua, Italy

Published online Aug. 16, 2018. DOI: 10.2967/jnumed.118.218289

Role of ¹⁸F-FDG PET/CT in Cardiac Sarcoid Detection and Therapy Monitoring: Addition to the Expert Consensus

TO THE EDITOR: Although the joint Society of Nuclear Medicine and Molecular Imaging (SNMMI) and the American Society of Nuclear Cardiology (ASNC) expert consensus (1) document has provided a comprehensive review on the role of ¹⁸F-FDG PET/CT in cardiac sarcoid (CS) detection and therapy monitoring, we would like to highlight a few additional points that would warrant the authors' consideration.

Regarding patient preparation for the CS ¹⁸F-FDG PET/CT, the expert panel recommended the preferred option being for the patient to consume at least 2 high-fat (>35 g), low-carbohydrate (<3 g) meals the day before the study and then fast for at least 4–12 h. We adopted a 72-h high-fat, high-protein, very-low-carbohydrate (HFHPVLC) diet preparation, with satisfying results (2). Our

COPYRIGHT © 2019 by the Society of Nuclear Medicine and Molecular Imaging.