



Cartesion Prime

Prostate-Specific Membrane
Antigen PET imaging

It is estimated that there are more than 3.1 million prostate cancer survivors in the US today and that about 268,490 new cases will be diagnosed in 2022.¹ Prostate-Specific Membrane Antigen (PSMA) is overexpressed in prostate cancer cells and is an effective target for PET imaging.² One of the PSMA-targeted radioactive PET imaging agents is the commercially available 18F-DCFPyL (Pylarify) indicated for patients with suspected prostate cancer metastasis who are candidates for therapy or suspected recurrence based on elevated prostate-specific antigen (PSA) level.³ Cartesion Prime PET/CT (Figure 1), an air-cooled Premium Digital PET scanner by Canon Medical, is founded on advanced technologies designed to meet the increasing demands on image quality, quantification, clinical workflow and support the growing utilization of PET imaging in the assessment of prostate cancer.

Patient History

51-year-old male (PSA level 36ng/ml, BMI 32.1) with history of prostate cancer had PET/CT imaging with PYLARIFY to determine recurrence and the extent of disease.

Imaging

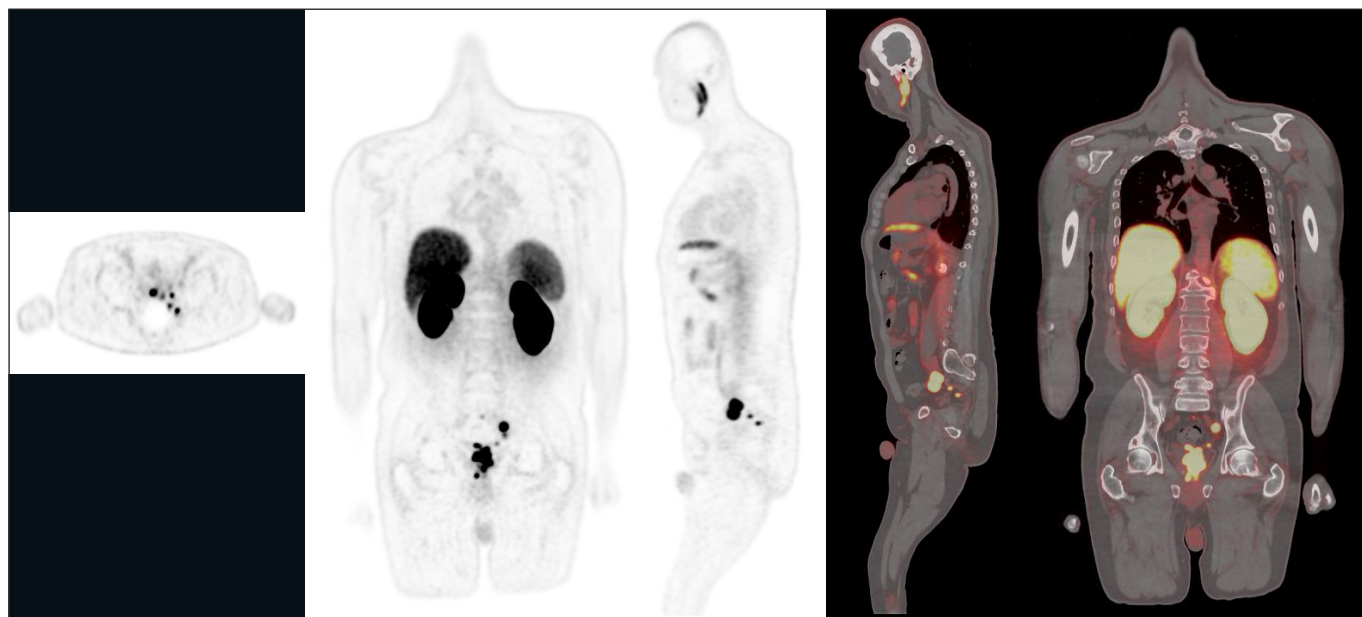
Following intravenous injection of 9.8 mCi F-18 Piflufolastat, low-dose CT and whole-body PET images were acquired on Cartesion Prime PET/CT. The workflow was streamlined using the variable bedtime (vBT) feature on Cartesion Prime PET/CT. The acquisition comprised three (3) beds at 2 minutes each and five (5) beds at 5 minutes. The bed overlap was set at 43.8%. The total scan time was 31 minutes. Images were reconstructed using OSEM with PSF, 4 iterations and 12 subsets, followed by a Gaussian filter with 6 mm FWHM.

PET Parameters

Region Covered	Injected Dose	Acquisition Time	Number of Beds	Total Scan Time	PSA Level	Reconstruction
Whole-body	9.8 mCi of PYLARIFY	2 min/bed x 3 + 5 min/bed x 5	8	31 min	36 ng/ml	TOF Listmode

Results

There are areas of increased radiotracer uptake within the lower pelvis in the prostate region including a left external iliac lymph node.



Conclusions

PET imaging plays a significant and growing role in the cancer standard of care with the continuous advances in novel tracers, theranostics, and PET technology. Cartesion Prime PET/CT (Figure 1), an air-cooled Premium Digital PET scanner by Canon Medical, is founded on advanced technologies designed to meet the increasing demands on image quality, quantification, clinical workflow and support the growing utilization of PET imaging in the assessment of prostate cancer.

¹<https://www.cancer.org/cancer/prostate-cancer/about/key-statistics>

²Ceci, F., Oprea-Lager, D.E., Emmett, L. et al. E-PSMA: the EANM standardized reporting guidelines v1.0 for PSMA-PET. Eur J Nucl Med Mol Imaging 48, 1626–1638 (2021). <https://doi.org/10.1007/s00259-021-05245-y>

³https://www.accessdata.fda.gov/drugsatfda_docs/label/2021/214793s000lbl.pdf

The clinical results, performance and views described in this case study are the experience of the author. Results may vary due to clinical setting, patient presentation and other factors. Many factors could cause the actual results and performance of Canon Medical's product to be materially different from any of the aforementioned.

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