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IMAGE OF THE MONTH

Whole-body parametric [^{18}F]-FDG PET/CT improves interpretation of a distant lesion as venous embolus in a lung cancer patient

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Despite well-known limitations of static analysis of FDG-PET images, the ease of its use leads to a widespread use of semi-quantitative indices, most commonly the standardized uptake value (SUV). In contrast to static imaging, dynamic imaging with kinetic modeling allows estimation of quantitative parameters, independent of uptake time, body weight, or injected dose, therefore potentially improving the interpretation of FDG-accumulation [1]. With improvements in scanner sensitivity and reconstruction algorithms, recently proposed multipass whole-body (WB) protocols in conjunction with image-derived input functions (IF) have made WB kinetic parameter estimation feasible [2]. Here we present a case of a patient with bronchial cancer and a venous thrombus in the left brachiocephalic vein (green arrows) with unclear FDG accumulation in the left axillary region (blue arrows) on SUV images (a). The patient was injected (134.1 MBq) and data over the heart were acquired for 7 min (blue insert: 155–180 s), followed by 10 WB passes (35 s/bed). The IF was extracted from the descending aorta and after appropriate corrections was used to estimate glucose influx (Ki) (b) and volume of distribution (Vd) (c) [3]. Note the high tumor uptake (red arrows) while missing accumulation in the axillar region on Ki (b), compared to high uptake in venous regions but low accumulation in the primary tumor on Vd (c). Standard static imaging was performed after the WB dynamic protocol (2.5 min/bed) (a), axial images are given for both areas of interest (a1/a2, scaled SUV 0-6). Only after review of the parametric images, the cause of FDG accumulation was linked to venous collaterals due to thrombosis.

This article is part of the Topical Collection on Oncology - Chest.

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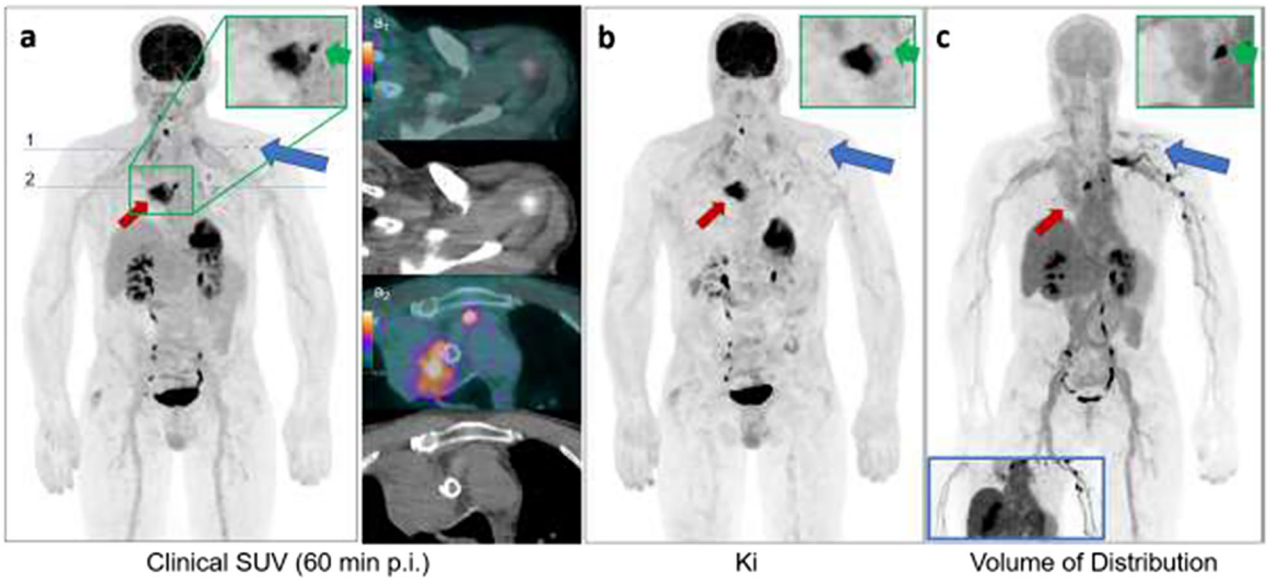

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Compliance with ethical standards

Conflict of interest F.K. is an employee of GE imaging. He was involved in image reconstruction, not in image interpretation. I.A.B. and M.H. have received research grants and speaker honoraria from GE. All other authors declare that they have no conflict of interest.

Ethics approval Ethics approval and informed consent was given.

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