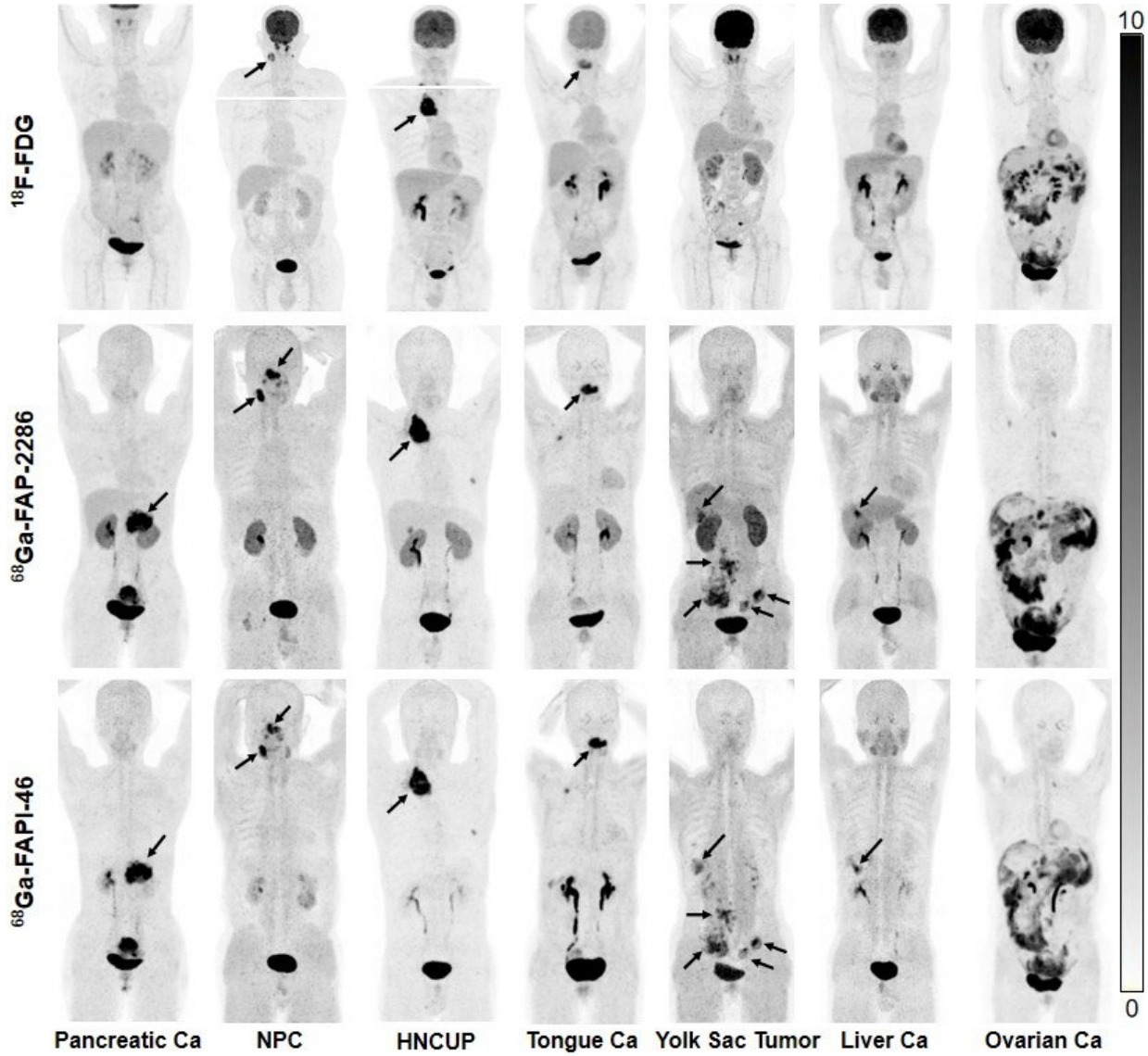
Novel PET radiotracer successfully detects multiple cancers, offers potential for new targeted radionuclide therapy

March 16 2023



Maximum-intensity projection images of 18F-fluorodeoxyglucose (FDG), 68Ga-FAP-2286, and 68Ga-FAPI-46 PET/CT imaging in seven patients with different types of cancer (histologically confirmed). Tumor lesions are indicated with arrows. Abbreviation: Ca = carcinoma, HNCUP = head and neck carcinoma of unknown primary, NPC = nasopharyngeal carcinoma. Credit: Pang Y and Zhao L et al., The First Affiliated Hospital of Xiamen University, Xiamen, China.

A new radiotracer, ^{68}Ga-FAP-2286, has been found to be more effective than the most commonly used nuclear medicine cancer imaging radiotracer, ^{18}F-FDG. In a study published in the March issue of *The Journal of Nuclear Medicine*, ^{68}Ga-FAP-2286 detected 100 percent of primary tumors across multiple cancer types as compared to ^{18}F-FDG, which identified only 80 percent. ^{68}Ga-FAP-2286 was also more effective in detecting lymph node metastases and distant metastases.

Currently, ^{18}F-FDG, which measures glucose metabolism, is used extensively in nuclear medicine cancer imaging. Recent advances have shown that fibroblast activation protein (FAP), which is overexpressed in cancer cells, may be a better target for the imaging of solid tumors.

"In this study we aimed to investigate the diagnostic accuracy of ^{68}Ga-FAP-2286—a radionuclide developed to target FAP—for detecting the primary and metastatic lesions in patients with various types of cancer," said Haojun Chen, MD, Ph.D., nuclear medicine physician at the First Affiliated Hospital of Xiamen University in Xiamen, China.

Sixty-four patients with 14 types of cancer were included in the study. Sixty-three of the patients underwent paired ^{68}Ga-FAP-2286 and ^{18}F-FDG PET/CT, and 19 patients underwent paired ^{68}Ga-FAP-2286 and ^{68}Ga-FAP-46 (another ^{68}Ga-radiolabeled variant). Results were evaluated and compared.

^{68}Ga-FAP-2286 PET yielded a higher radiotracer uptake, tumor-to-background ratio and tumor detectability than ^{18}F-FDG. In addition, ^{68}Ga-FAP-2286 and ^{68}Ga-FAPI-46 yielded comparable clinical results.

"The novel radionuclide ^{68}Ga-FAP-2286 is shown to be a promising FAP-inhibitor derivative for safe cancer diagnosis, staging and restaging," stated Chen. "Specifically, it may be a better alternative for diagnosing the cancer types that exhibit low-to-moderate uptake of ^{18}F-FDG, such as head and neck, gastric, pancreatic and liver cancer."

Chen also noted that FAP-2286 not only exhibits promising characteristics for diagnosis, but also for cancer treatment. "Due to its molecular makeup, FAP-2286 can be paired with ^{177}Lu to create a new radiopharmaceutical therapy," he said. "^{177}Lu-FAP 2286 has the potential to offer potent and selective FAP binding, which could lead substantial therapeutic efficacy for cancer patients in the future."

More information: Yizhen Pang et al, PET imaging of fibroblast activation protein in various types of cancers by using 68Ga-FAP-2286: Comparison with 18F-FDG and 68Ga-FAPI-46 in a single-center, prospective study, *Journal of Nuclear Medicine* (2022). DOI: 10.2967/jnumed.122.264544

Provided by Society of Nuclear Medicine and Molecular Imaging

Citation: Novel PET radiotracer successfully detects multiple cancers, offers potential for new targeted radionuclide therapy (2023, March 16) retrieved 6 May 2023 from https://medicalxpress.com/news/2023-03-pet-radiotracer-successfully-multiple-cancers.html

This document is subject to copyright. Apart from any fair dealing for the purpose of private study or research, no part may be reproduced without the written permission. The content is provided for information purposes only.