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## FES PET/CT predictive value of late hormone therapy rechallenge efficacy in metastatic breast cancer

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ontext: Hormone-dependent tumors (HR+), accounting for over two-thirds of breast cancers, are initially treated with Ahormone therapy (HT). After progression on initial HT and chemotherapy, late rechallenge with other hormonal agents is a therapeutic option. Tumor hormone sensitivity is usually determined by immunohistochemistry. However, 18F-FES PET/ CT, a functional imaging targeting estrogen receptors, could be used to assess the residual expression of estrogen receptors in patients with HR+ metastatic breast cancer. The aim of this study is to identify predictive biomarkers of the effectiveness of late hormone therapy rechallenge in patients with HR+ metastatic breast cancer who have already received multiple previous lines of hormone therapy and chemotherapy, based on the analysis of multi-tracer PET-CT images (18F-FDG and 18F-FES). Methods: This retrospective study includes HR+ metastatic breast cancer patients who progressed on chemotherapy. Consecutive 18F-FDG and 18F-FES-PET/CT scans were performed between March 2022 and July 2023 to evaluate residual hormone receptor expression. The analysis was qualitative: a lesion was considered FDG+ if the uptake was higher than the hepatic background noise, and an FES-PET/CT was considered positive if all FDG+ lesions showed visual FES uptake. Subsequently, a quantitative analysis of positive FES-PET/CT was performed. The primary endpoint was progression free survival (PFS), and the secondary endpoint was overall survival (OS). Results: Thirty-six patients were included : 13 had a positive FES-PET/CT and 23 had a negative FES-PE/CT. Patients with positive FES-PET/CT underwent hormone therapy rechallenge, achieving significantly longer median PFS than negative FES-PET/CT patients (6 vs. 3 months, p = 0.032). Negative FES-PET/CT patients mostly received chemotherapy. Median OS was not reached. Conclusion: Persistence of 18F-FES uptake across all metastatic lesions can predict the effectiveness of an additional line of hormone therapy. Prospective studies with larger cohorts are needed to validate these results and to optimize therapeutic strategies.

## **Biography**

Mathilde Masse is a nuclear medicine physician at the Antoine Lacassagne Center in Nice. Her research focuses on two main areas in oncology. First, she investigates the role of 18F-FES PET imaging in metastatic hormone-dependent breast cancer, evaluating its predictive value for the effectiveness of hormone therapy rechallenge. These studies aim to refine therapeutic strategies and improve patient care. Second, she explores lung cancer, focusing on PET imaging during immunotherapy. This approach seeks to optimize treatment monitoring and adapt therapeutic management for more personalized and effective outcomes. Alongside her clinical work, Mathilde Masse is actively engaged in interdisciplinary collaborations to advance innovations in medical imaging and oncology.

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