

**First results of molecular imaging (FDG and FES) in prospective study for selecting second line hormonotherapy in estrogen receptors positive metastatic breast cancer patients**

B. Maucherat, A. Leduc-Pennec, N. Fleury, Ludovic Ferrer, E. Bourbouloux, H. Simon, M. Le Thiec, D. Rusu, V. Fleury, M. Colombie, et al.

► **To cite this version:**

B. Maucherat, A. Leduc-Pennec, N. Fleury, Ludovic Ferrer, E. Bourbouloux, et al.. First results of molecular imaging (FDG and FES) in prospective study for selecting second line hormonotherapy in estrogen receptors positive metastatic breast cancer patients. *European Journal of Nuclear Medicine and Molecular Imaging*, Springer Verlag (Germany), 2019, 46 (1), pp.S117. inserm-02337440

**HAL Id: inserm-02337440**

**<https://www.hal.inserm.fr/inserm-02337440>**

Submitted on 29 Oct 2019

**HAL** is a multi-disciplinary open access archive for the deposit and dissemination of scientific research documents, whether they are published or not. The documents may come from teaching and research institutions in France or abroad, or from public or private research centers.

L'archive ouverte pluridisciplinaire **HAL**, est destinée au dépôt et à la diffusion de documents scientifiques de niveau recherche, publiés ou non, émanant des établissements d'enseignement et de recherche français ou étrangers, des laboratoires publics ou privés.

## OP-284

### First results of molecular imaging (FDG and FES) in prospective study for selecting second line hormonotherapy in estrogen receptors positive metastatic breast cancer patients

*B. Maucherat<sup>1</sup>, A. Leduc-Pennec<sup>2</sup>, N. Fleury<sup>3</sup>, L. Ferrer<sup>4,5</sup>, E. Bourbouloux<sup>6</sup>, H. Simon<sup>7</sup>, M. Le Thiec<sup>1</sup>, D. Rusu<sup>1</sup>, V. Fleury<sup>1</sup>, M. Colombie<sup>1</sup>, A. Morel<sup>1</sup>, F. Kraeber-Bodere<sup>1,5</sup>, L. Campion<sup>8,5</sup>, C. Rousseau<sup>1,5</sup>;*

*<sup>1</sup>ICO Cancer Center, Nuclear Medicine Unit, Saint Herblain, FRANCE, <sup>2</sup>University Hospital, Nuclear Medicine Unit, Brest, FRANCE, <sup>3</sup>ICO Cancer Center, DRCl, Saint Herblain, FRANCE, <sup>4</sup>ICO Cancer Center, Physics Unit, Saint Herblain, FRANCE, <sup>5</sup>CRCINA, University of Nantes, INSERM UMR1232, CNRS-ERL6001, Nantes, FRANCE, <sup>6</sup>ICO Cancer Center, Oncology Unit, Saint Herblain, FRANCE, <sup>7</sup>University Hospital, Oncology Unit, Brest, FRANCE, <sup>8</sup>ICO Cancer Center, Biometrics, Saint Herblain, FRANCE.*

**Aim/Introduction:** About 70% of primitive breast cancers had positive estrogen receptors (ER) and may benefit from hormonotherapy. However, ER expression in breast cancer metastases is heterogeneous and about 15% of metastases lost this expression over time. Biopsies were not possible systematically.  $16\alpha$ - $18$ Fluoro- $17\beta$ -Oestradiol ( $^{18}$ FES) is a radiopharmaceutical which predict the response to the first line hormonotherapy. The aim of this prospective study (NCT03442504) was to determine the predictive value of PET at the patient level, before a second line hormonotherapy (2nd-HT) on the FDG response obtained at 6 weeks of treatment.

**Materials and Methods:** We prospectively included 12 ER+ metastatic breast cancer patients, HER2 negative, in progression despite first line hormonotherapy. For the complete study, 60 patients will be included. Due to 2nd-HT proposed by oncologist, we performed  $^{18}$ FES PET-CT ( $^{18}$ FES-BL) and  $^{18}$ FDG PET-CT ( $^{18}$ FDG-BL) at baseline in the month before the new treatment introduction. Follow-up with  $^{18}$ FDG PET-CT and CT

were performed to detect treatment response, particularly with a first FDG PET-CT at 6 weeks ( $^{18}\text{F}$ FDG-6W). Semi-quantitative data were extracted from  $^{18}\text{F}$ FES-BL,  $^{18}\text{F}$ FDG-BL and  $^{18}\text{F}$ FDG-6W, and compared to the progression free survival (PFS) during the 2nd-HT treatment, among which SUVmax and adapted thresholded Total Tumour Volume (TTV). **Results:** At breast cancer diagnosis, 6 patients (50%) had lymph node metastases and 5 (41,6%) had visceral metastases. After first line hormonotherapy, only one patient had no positive FES (FES+) lesion while more than 40 FDG positive (FDG+) lesions were detected. Eleven patients (91,6%) had between 3 and more than 40 FES+ lesions. Three patients (25%) had more FES+ lesions than FDG+ lesions, 4 patients (33,3%) had more FDG+ lesions than FES+ and 5 patients (41,7%) had as many FES+ lesions as FDG+. Despite the 2nd-HT started, no significant result was found for the semi-quantitative data outside a likely poor prognosis of  $^{18}\text{F}$ FDG-BL TTV ( $p=0.079$ ). We noted a trend for a better PFS when the  $^{18}\text{F}$ FES-BL TTV was greater or equal to the  $^{18}\text{F}$ FDG-BL TTV. Comparing  $^{18}\text{F}$ FDG-BL and  $^{18}\text{F}$ FDG-6W, a  $^{18}\text{F}$ FDG-BL TTV greater or equal to the  $^{18}\text{F}$ FES-BL TTV seemed predict the stability or progression of the  $^{18}\text{F}$ FDG-6W TTV. **Conclusion:**  $^{18}\text{F}$ FES PET-CT seemed to be interesting for the 2nd-HT response prediction. These results must be confirmed with the the following study patients. **References:** None.