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*Corresponding author

Pablo Aguiar, Nuclear Medicine Department and Molecular Imaging Group, Instituto de Investigación Sanitaria (IDIS) and University of Santiago de Compostela (USC), Spain, Email: pablo.aguiar.fernandez@ sergas.es

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Clinical Image

Submillimeter Correlation Between Dedicated Breast PET Image and Pathologic Anatomy Dimensions

Michel Herranz^{1,2}, Ines Domínguez-Prado², Pablo Aguiar^{2,3*}, Sonia Argibay² and Alvaro Ruibal^{2,3,4}

¹CyclotronUnit, GALARIA-SERGAS, Santiago de Compostela, Spain

²Nuclear Medicine Department and Molecular ImagingGroup, Instituto de Investigación Sanitaria (IDIS), Spain

³Department of Radiology and Public Health, University of Santiago de Compostela (USC), Spain ⁴FundacionTejerina, Madrid, Spain

Clinical Image

Breast PET imaging can be carried out by using dedicated breast PET (dbPET) scanners. These novel scanners consist of small ring detectors around of breast with the patient in prone position, thus facilitating breast elongation and providing higher sensitivity and better spatial resolution, which leads to a reduction of injected dose. In this work, we are aimed at studying the correlation between dbPET images and pathological studies. Our findings showed submillimeter correlation in terms of tumor size and shape when compared to the pathological study (Figure).

A 65-year-old woman was referred to our Department with a tumor in the right breast and personal history of morbidly obesity (BMI>50), uncontrolled diabetes and hypertension. Mammography showed a 15x14mm spiculated lesion, difficult to localize due to breast size, but confirmed by ultrasonography. VAB (ultrasound-guided-vacuum-assisted biopsy) yielded up a T1c

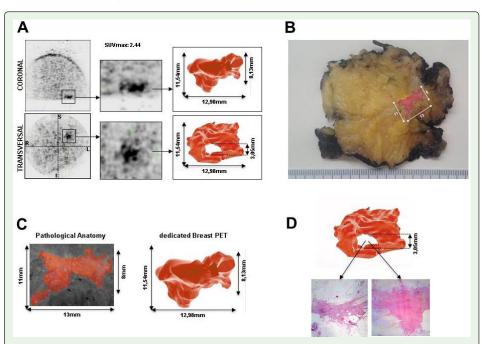


Figure: (A) A hypermetabolic area of 8x13x11mm in the upper-inner quadrant of the right breast was identified, providing SUV_{max} of 2.44 and showing sub-areas with heterogeneous uptake, such as a 3mm diameter hypometabolic region.

(B) Lumpectomy was performed and tumor dimensions were confirmed by pathological study.

(C) Our findings showed good correlation in terms of tumor size and shape when compared to the pathological study.

(D) It is note worthy that the hypometabolic region fitted VAB realization area. The sub millimeter correlation between dbPET and pathological studies is essential for the promising characterization of breast tumors based on metabolic tumor heterogeneity. The heterogeneity has been related with poor prognosis and might be used, in addition to SUVmax, as a new tool to assess invasive breast cancer aggressiveness [2].

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Invasive Lobular Carcinoma (ILC). MRI was not performed because patient size. Dedicated breast PET (dbPET) 60min after injection of 130MBq FDG was performed. The dbPET scanners consist of small ring detectors around of breast with the patient in prone position, without breast compression, facilitating breast elongation and confort [1]. The advantage of these dedicated scanners is its higher sensitivity and better spatial resolution, which leads to a reduction of injected dose and/or scan time, while keeping reasonable spatial resolution.

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