

Oncology Clinical Science: Breast

Monday October 11, 2010 16:00h - 16:30h

Room: Hall Z

P430 Simultaneous detection of breast tumor resection margins and sentinel node biopsy using a high energy gamma probe
16:00h -
16:30h

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Introduction:breast-conserving surgery for selected patients with early infiltrating breast cancer has become the preferred method of treatment by intraoperative assessment of lesion margins and sentinel lymph node biopsy. Evaluation of margins represents an evolving feature of breast conserving surgery, as positive/close margins are associated with higher local post-surgical recurrence. 18F-FDG concentrates in cells with high metabolic rate, and represents an ideal radio tracer to identify neoplastic tissues. The most recent hand-held radiation probes can help localize 18F-FDG-avid are as intraoperatively by detecting high energy annihilation gamma rays or beta particles. **Materials and methods:** we describe the case of a 79-year-old woman with infiltrating cancer in the external upper-left breast quadrant. The patient had undergone 18F-FDG PET/CT which showed an area of glucose hypermetabolism corresponding to the mammary lesion. No other areas of pathological radio tracer uptake were found. Lymphoscintigraphy was performed the day before surgery, after intradermal injection of 99mTc-nanocolloid on the cutaneous projection of the mammary lesion. The lymphoscintigraphic images showed the presence of two different areas of uptake in the left axilla corresponding to sentinel nodes. Three hours before surgery, the patient underwent an i.v. injection of 200 MBq 18F-FDG. We used an innovative high energy gamma probe (Gammalocator DXI GF&E) to detect positron annihilation quanta. This electronic collimation probe with suppression of background energy is based on a multiple detector system which correlates the count rates of single units of detection thanks to elaborate algorithms, with a range overdrawn from 100 keV to 1 MeV. **Results:** by measuring the radioactive counts of the lesion before surgery and considering the counts rate of the right clavicle as background, we found an in vivo target/background ratio of 20:1. We then re-evaluated the resection margins after external upper left quadrantectomy. The counts ex vivo of the quadrantectomy margins and the resection bed were the same as those of the background. We then proceeded with the search for sentinel lymph nodes. By changing the energy window level, the nodes were found easily, even if with in vivo target/background ratio less than the one previously reported (10:1). Intraoperative histology showed presence infiltrating breast cancer, margins free of neoplastic infiltration, and sentinel lymph nodes with micrometastases (the surgeon performed therefore axillary lymphadenectomy). **Conclusion:** in our experience, the high energy gamma probe used for detection of lesion margins and sentinel lymph nodes can play an important role in breast-conserving surgery.