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Contrast enhanced digital mammography: Our experience

Bhavika K Patel
Mayo Clinic, USA

Contrast Enhanced Digital Mammography is the newest of the contrast enhanced imaging technologies in breast imaging. CEDM holds great promise to improve breast cancer screening by addressing the potential drawbacks of MRI. CEDM generates a high-resolution, low-energy, full-field digital mammography image and, similar to MRI, a contrast-enhanced image that provides lesion vascularity information. The resulting contrast enhanced subtraction images maximize the conspicuity of iodinated contrast agent in the breast while minimizing the structured noise of non-enhancing fibroglandular tissue, thus revealing lesions with higher neovascularity and extracellular leakage of contrast agent more apparently. The high spatial resolution of the digital detector reveals lesion details with approximately ten times the spatial resolution of breast MRI. We present our clinical experience of over 400 CEDM cases over the past year of diagnostic use. In this presentation we will demonstrate classic examples of benign and malignant breast cases on CEDM. We will also present general overview of study results and a brief discussion on how to implement CEDM into the workplace.

Sentinel lymph node detection in breast surgery using ICG vs. ⁹⁹Tc: A comparison among different diagnostic protocols

Cattin F, Fogacci T, Frisoni G L, Fabiocchi L, Dellachiesa L, Semprini G and Samorani D

Background: Equivalence in sensibility and specificity between ⁹⁹Tc and ICG (Indocyanine Green) in sentinel lymph node detection for breast cancer is nowadays demonstrated. The radioactive medium of contrast needs to be injected a Nuclear Medicine Department. On the contrary, ICG can be injected directly in the operatory theatre. This implies that, using ⁹⁹Tc, patients must undergo two travels instead than the one required using ICG. Aim of our study is to determine the economic expenses linked to the two possible ways to detect sentinel lymph nodes in breast surgery.

Materials & Methods: 291 Patients (01/2013-07/2014) of the Breast Unit of the Santarcangelo di Romagna Hospital underwent both a ⁹⁹Tc injection and a ICG injection during the validation study of the ICG technique. Patients received ⁹⁹Tc in the Nuclear Medicine of the Cesena Hospital (the nearest to the Santarcangelo one). The cost for each kilometer has been calculated (considering a 0.2788 € refund for kilometer), as well as the carbon footprint (considering a mean CO₂ emission of 118.2 g/km). ⁹⁹Tc injection has a cost, all considered, of 1500€ for one patient, and just 100€ are due to the tracer itself. ICG costs 302€ each patient, which become 102€ after the first 250 patients, considering the infrared detecting machine amortization.

Results: An overall amount of 49778.5Km has been required when using ⁹⁹Tc, on the contrary IDG has required 18861.7Km. This implies a carbon footprint of 5.88 tons of CO₂ when using ⁹⁹Tc and of 2.22 tons of CO₂ when using ICG. The overall amount of costs of the ⁹⁹Tc pathway has been 450363.62€. Considering the same patients, the overall cost of the ICG pathway has been 84883.39€. This means that ICG costs are 18.84% of the ⁹⁹Tc costs.

Conclusions: ICG is a safe tracer, as it has a sensibility and specificity equal to the radioactive one. It is cheaper as the traditional radioactive techniques as well, especially if surgery is performed in peripheric centers or in hospitals which do not own a Nuclear Medicine Department. Considering our results, we can suggest the use of ICG for the sentinel lymph node detection in breast surgery, not only as safe technique, but also as cost-effective one.