

Fluorescent detection for axillary lymph node involvement in breast cancer.

Axillary lymph node dissection is accepted as part of the surgical staging of breast cancer, although it is gradually being replaced by sentinel node biopsy which is still of questionable sensitivity.

Conventional imaging techniques have to date been of too low a sensitivity and specificity to replace ALND as a diagnostic technique.

It is now possible to get clear indications of the degree and location of Axillary Lymph Node involvement which may be as sensitive as or even more sensitive than ALND. Preliminary indications are that this technique may allow detection of microscopic cellular cancer at a very early stage.

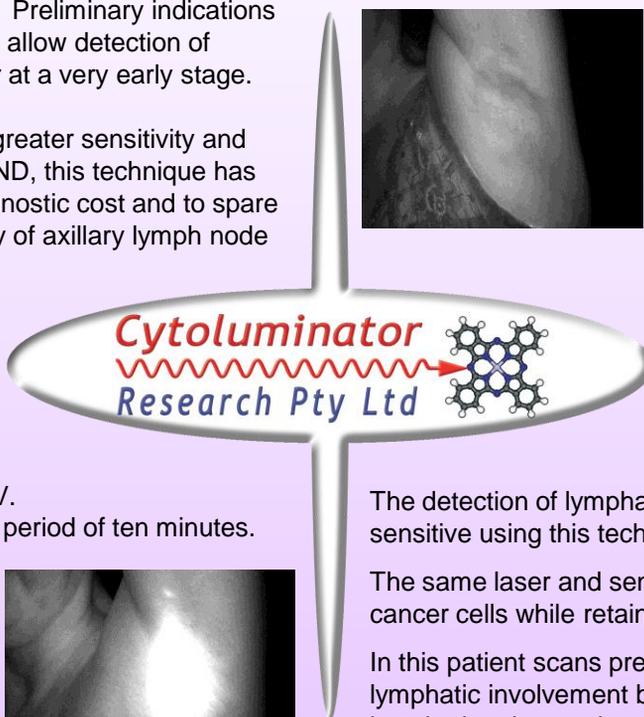
If proven to be of equal or greater sensitivity and specificity compared to ALND, this technique has the potential to reduce diagnostic cost and to spare many patients the morbidity of axillary lymph node dissection.



Following evaluation a therapeutic level of laser was given after which the photos above were taken. Sensitizer given ten weeks later resulted in the picture below left.



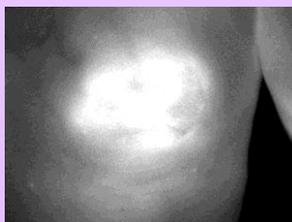
Inflammation from treatment with laser



Photosensitizer given by I.V.
60 mg administered over a period of ten minutes.



Sensitizer fluorescence was excited by 684 nm laser and viewed with filtered infrared camera.



Left axilla lymphatic involvement is obvious.

The detection of lymphatic adenopathy is easy and sensitive using this technology.

The same laser and sensitizer can selectively kill cancer cells while retaining lymphatic function.

In this patient scans previous to treatment reported lymphatic involvement but in following scans no lymphatic adenopathy was detected.

Human trials may involve detection as shown here followed by treatment as a precursor to sentinel node biopsy or lumpectomy, which would allow evaluation of excised tissues to document the degree and depth of kill of cancer and also any collateral damage to healthy tissues.

Reference:

Title: Fluorescence Imaging During Photodynamic Therapy of Experimental Tumors in Mice Sensitized with Disulfonated AIPc

Authors: Cubeddu R., Pifferi A, Taroni P, Torricelli A, Valentini G, Comelli D, D'Andrea C, Angelini V

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