Controlling breast cancer metastases in bone with lasers and photosensitizers.

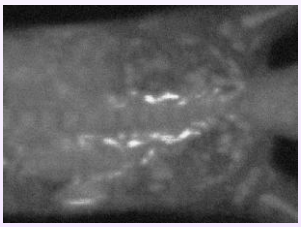
The use of photosensitizers and lasers has world wide approval for controlling various types of cancer in both early and late stage.

It is currently approved by the FDA in the US for post salvage breast cancer, lung cancer and is widely used for treating Barrets oesophagus, which prevents the development of oesophageal cancer.

Unfortunately the sensitizer which has the widest approval has serious design flaws which limit the depth of penetration and the selectivity of cancer versus normal tissue. In addition the common sensitizer requires weeks of light avoidance.

A sensitizer developed in Australia overcomes these limitations and makes possible the application of this technology to a wider range of cancers, including effective treatment of bone metastases.

Ankle before and after treatment. Pain symptoms subsided in 3 days after treatment, new sensitizer ten weeks later did not show fluorescence.



Skull metastases

Patient was treated for extensive spinal mets. PET scan report stated "diffuse increase in uptake does not imply bony metastases". Scan did report increased pleural and liver uptake, neither of which had been treated.

Photosensitizer given by I.V.

48 mg administered over a period of 12 minutes.

False colour used for enhancement.

Manubrium had been diagnosed previously and the fluorescence corresponded.

Patient was treated with therapeutic laser levels.

Two months later fluorescence still absent in treated area and new CT scans did not show cancer in the manubrium.

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

Although this technology is in it's infancy, there seems to be great promise as it has so far been able to reverse bony metastases, providing at the least rapid remission of pain symptoms.

To date we have treated three patients with spinal metastases. All have had complete remission of pain and where follow up scans have been done the bone metastases have gone into remission, insofar as the sensitivity of the scan is able to determine.

There has been no indication of neural damage associated with treating the spine, as would be expected due to the fact that this sensitizer has extremely low neural uptake.

Reference

Title: Photodynamic therapy for the treatment of metastatic lesions in bone: studies in rat and porcine models

Authors: Burch, S.; Bisland, S.; Siewerdsen, Jeff; Bogaards, Arjen; Moseley, Douglas; Yee, A.; Finkelstein, J.; Wilson, Brian

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