EANM PRESS RELEASE

Cancer therapy: pinpointing the target

EANM: Nuclear imaging techniques help tailoring treatments matching the individual patient's needs

(Vienna, 9 August 2011) An estimated 40% of cancer patients may be receiving the wrong chemotherapy. Too often the choice of chemotherapeutic drugs is aimed only at the average patient and thus misses the individual's specific condition and needs. Nuclear medical methods are going to improve the patients' situation markedly because they allow for predicting precisely the outcome of different therapies for individual patients according to the European Association of Nuclear Medicine (EANM).

"Currently most anti-cancer drugs are effective only in subgroups of patients. However, the application of nuclear medical diagnostics such as FDG PET/CT allows for the prescription of specific therapeutics that are best suited for an individual patient and the type of tumour," says Prof. Arturo Chiti, Member of the EANM Executive Committee. FDG PET/CT is an imaging technique using glucose (Fluoro-Deoxyglucose/FDG) as a radiopharmaceutical tracer. Primarily its goal has been to make tumours visible on the computer monitor, but it is also highly suitable for showing how cancer cells respond to chemotherapeutic treatment.

Fighting breast cancer

One important field is the fight against breast cancer, which is the second leading cancer-related death cause worldwide with more than 400,000 deaths each year. "Although chemotherapy is successful in many cases, we have to acknowledge that on the whole only half of the breast cancer patients benefit from it while the others respond with inborn or acquired drug resistance," says Prof. Chiti, pointing out that FDG PET/CT can serve as a means to reduce this error rate as its basic diagnostic principle – cancer cells being made visible through their uptake of FDG – applies also to chemotherapeuticals. Cancer cells with low FDG uptake are equally unlikely to respond to chemotherapeutical drugs, so that these patients will not benefit from this kind of treatment. In these cases, alternative treatment options can be chosen in time while avoiding potentially negative side effects of a useless chemotherapy. "Early identification of ineffective therapy might also be helpful in patients with metastatic breast cancer because many palliative treatment options are available," says Prof. Chiti. If, on the other hand, the FDG uptake of the tumour cells is high at first and starts to decrease after the initiation of chemotherapy, this is evidence of a successful treatment. But

FDG PET/CT does not only serve to assess the general suitability of chemotherapy in a patient but also to select the most efficient one. The progress in monitoring the success of chemotherapy and in approaching a more personalised treatment potentially affects all kinds of cancer including lung cancer, which is the leading cause of cancer deaths worldwide, and colorectal cancer, which is the second-most common cancer in Europe.

Promising research under way

In both areas FDG PET/CT has proven useful in improving disease management. “The technique appears to have significant potential for the characterisation of tumours, the grouping of patients with shared biological characteristics and the early assessment of tumour response to therapy,” says Prof. Chiti. He points out that there are several radiopharmaceuticals other than FDG which are under investigation, having the potential to monitor the response to therapy before, during or after therapeutic intervention. These compounds are in the final stages of preclinical development or in the early stages of clinical application and they are going to deliver more and more detailed information on tumours and possible points of therapeutic attack. “The development of such imaging agents in concert with drug development has a built-in synergy that will accelerate both processes and lead to a personalised medicine the patient as well as the health care system will highly benefit from,” says Prof. Chiti.

For an animated introduction to nuclear medicine, please visit the website www.whatisnuclearmedicine.com

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