

International Conference on Nuclear Medicine & Radiation Therapy

October 01-02, 2018 Stockholm, Sweden

Marcel P M Stokkel et al., J. med phys & appl sci 2018, Volume: 3 DOI: 10.21767/2574-285X-C1-002

THE ROLE OF NUCLEAR MEDICINE IN PROSTATE CANCER IMAGING, Treatment and surgery

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ver the past year, prostate cancer imaging and staging with gallium-68 prostate specific membrane antigen (68Ga-PSMA) PET/CT has been introduced in clinical practice. The higher sensitivity and specificity compared with C11-choline or other tracers even at low PSA levels have been shown in many papers. Also in high risk patients, 68Ga-PSMA PET/CT is increasingly used demonstrating additional value prior to surgery. Although the additional value still has to be established, its role in oncological setting is growing. The same carrier (PSMA) can be used in clinical practice for hormone refractory prostate cancer treatment by labelling it with lutethium-177 (177Lu), a beta-emitting radionuclide. An overview will be given on the diagnostic and therapeutic value in prostate cancer. A new application 68Ga-PSMA, the intra-operative evaluation of prostatectomy margins, has recently been granted by KWF-STW. This evaluation is based on the emission of Cerenkov light, which is a side-effect of the emission of protons from 68Ga. This blue light is emitted from tumors that are not completely resected during surgery, whereas in radically resected tumors this light will be attenuated from normal tissue surrounding the primary tumor. A technical evaluation of this technique is presented and the introduction into clinical practice is described. The latest development in image guided surgery is the introduction of technetium-99m PSMA (⁹⁹mTc-PSMA). By using this technique, it might become possible to preoperatively image prostate cancer metastases in loco-regional lymph nodes and to detect these nodes during surgery using standard probes. It is expected to gain a role in lymph node metastases with a diameter >5mm. In smaller lesions, its role is not clear yet. In this respect, a standard sentinel node procedure is available to image and detect lymph nodes at risk for metastatic disease. All procedures will be discussed during this presentation, high lighting the increasing role of nuclear medicine in cancer staging and treatment.

Biography

Marcel Stokkel is a Nuclear Medicine Physician since 1997 and has completed his PhD in 1999. He is Head of the Department of Nuclear Medicine and Head of the division of Diagnostic Oncology of the Netherlands Cancer Institute–Antoni van Leeuwenhoek Hosptial. In addition, he is Chair of the Netherlands Society of Nuclear Medicine. He has published almost 200 papers in reputed journals and has been serving as an Editorial Board Member of repute.

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