

5th International Conference on **Biomarkers & Clinical Research**

April 15-17, 2014 St. Hilda's College - University of Oxford, UK

Emerging role of prostate multiparametric MRI as a imaging-biomarker in cancer

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Prostate cancer (PCa) is the most frequently diagnosed malignancy in men. Actually, prostate-specific antigen (PSA) and digital rectal examination (DRE), are the most accepted tools for screening. PSA is known to be prostate specific, but not PCa specific. It is controversial the appropriate level of serum PSA that triggers an invasive approach by a template TRUS-guided biopsy. This technique lacks in sensitivity with a 30-45% risk of “up or down-staging” of PCa.

The recent development in imaging field, suggest the emerging role of the multi-parametric Magnetic Resonance Imaging (mpMRI) as tool for the diagnosis of PCa.

MpMRI consist in the combination of functional study, such as, diffusion-weighted imaging (DWI), dynamic contrast enhanced imaging (DCE-MRI), MR spectroscopy (MRS), and the morphological, by T2-weighted imaging. This technique provides crucial information regarding tumour location, volume, grade and extension. Thus mpMRI can find a possible role to guide biopsies, in order to improve the identification of aggressive tumor. Furthermore, in the case of low grade tumor, this technique represents an optimal tool for the active surveillance.

Here, we highlight the mpMRI as “imaging biomarker” in the diagnosis, staging, grading and treatment planning of prostate cancer and we discuss its alternative role to TRUS-guided biopsy.

Biography

Carlo Emanuele Neumaier studied Medicine and Surgery at University of Genoa (Italy) and specialised in Radiodiagnostic at the University of Genoa. He is currently a Contract Professor at the Department of Radiology and Oncology at the, University of Genoa and he works at the Diagnostic Imaging and Senology Unit, IRCCS- Azienda Ospedaliera Universitaria San Martino-IST-National Cancer Institute, Genoa. He has a strong experience in MRI, CT, Ultrasound, and Optical Imaging and he has written several scientific papers in peer-reviewed journals and book chapters. He is Principal Investigator of several national clinical research projects about the study of prostate cancer and breast cancer by Magnetic Resonance. He is invited speaker to national and international conferences and he is an active member of the European Society of Molecular Imaging (ESMI).

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