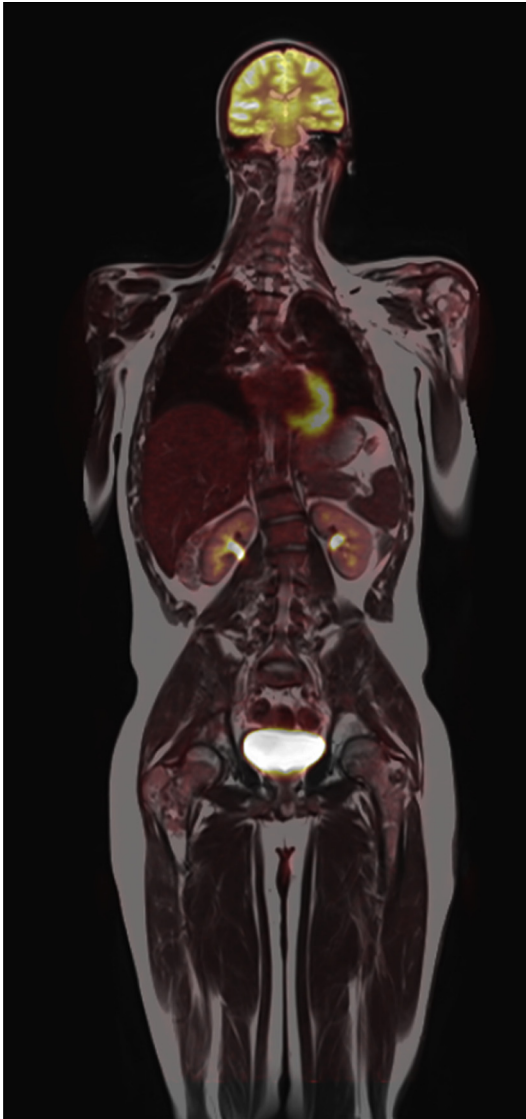


references to motion correction, quantification, and registration artifacts. Various PET/MRI protocols, with particular attention to MSK pathology and the use of advanced MR techniques (e.g. WB DWI and WB STIR) will be discussed. Various case examples, including its potential benefit in the initial assessment of multiple myeloma, bone and soft tissue tumors, its value in restaging in MSK tumors, and its potential role in therapy response assessment will be introduced. While FDG is the most common radionuclide used today, the possibility of using this architecture in the era of personalized medicine, with development of targeted tracers and receptor-specific tagged antibodies linked to various radionuclides will be explored.



Whole body PET/MRI FDG image demonstrated successfully treated bone lymphoma.

#### Brief CV

**Research Area(s):** BMD/osteoporosis/orthopedic applications, MRI sequences, Informatics, MSK imaging

**Technical Expertise:** MRI, CT, US, MSK biopsies and procedures

**Email:** [richmob@ccf.org](mailto:richmob@ccf.org)

#### MULTIMODAL IMAGING OF EXPERIMENTAL BONE METASTASIS

Tobias Baeuerle

*University Medical Center Erlangen, Institute of Radiology, Erlangen, Germany*



Bone is among the most common locations of metastasis and therefore represents an important target for diagnostic imaging in cancer patients as well as in preclinical research. Non-invasive imaging modalities monitor molecular, functional and morphologic changes in both compartments of these skeletal lesions – the bone and the soft tissue tumor compartment. In the bone compartment, morphologic information on skeletal destruction is assessed by computed tomography (CT) and radiography. Pathogenic processes of osteoclast and osteoblast activity, however, can be imaged using optical imaging, positron emission tomography (PET), single photon emission CT (SPECT) and skeletal scintigraphy. Accordingly, conventional magnetic resonance imaging (MRI), ultrasound and CT as well as diffusion-weighted MRI and optical imaging are used to assess morphologic aspects on the macroscopic and cellular level of the soft tissue tumor compartment. Imaging methods such as PET, dynamic contrast-enhanced techniques and vessel size imaging further elucidate on pathogenic processes in this compartment including information on metabolism and vascularization. By monitoring these aspects in bone lesions, new insights in the pathogenesis of skeletal metastases can be gained when complementary information from multimodal imaging is combined. This talk summarizes emerging and established imaging techniques in experimental bone metastasis for the assessment of tumor and bone cell activity including molecular, functional and morphological aspects. Finally, the translation of multimodal imaging techniques of skeletal lesions into the clinical situation is demonstrated for cancer patients.

#### Brief CV

**Research Area:** Clinical and experimental imaging of malignant bone lesions using different modalities

**Technical Expertise:** Magnetic Resonance Imaging, Computed Tomography, Ultrasound, Positron Emission Tomography

**Email:** [tobias.baeuerle@uk-erlangen.de](mailto:tobias.baeuerle@uk-erlangen.de)

**Website:** <http://www.radiologie.uk-erlangen.de/en/>

#### VIRTUAL REALITY BASED SURGICAL SIMULATION

Pheng Ann Heng

*Department of Computer Science & Engineering, The Chinese University of Hong Kong, Hong Kong*



The main focus of surgical simulation is to develop and deliver virtual reality based training and computer enhanced learning in surgery. Traditionally, medical students learn diagnostic, therapeutic and surgical skills through difficult clinical training on patients. Advanced technologies such as virtual reality and visualization can help to make the surgical training process more efficient, engaging and flexible. It is possible to construct immersive virtual environments to provide realistic visualization and dexterous haptic feedbacks for surgical training. In this talk, I would introduce related virtual