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Platform Session III

In Vivo Clinical MR Spectroscopy in Oncology

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In Vivo MR Spectroscopy permits non-invasive examination of metabolic characteristics of human cancers in a clinical environment. Surgical intervention and histopathological analysis of biopsy specimens still represent the gold standard in morphologically and clinically unclear cases. MRS has addressed the question of tumor differentiation and grading of malignancy based on the evaluation of metabolic patterns or metabolite levels characteristic or specific for tumor type, malignancy, or prognosis. Water-suppressed ^1H MRS shows total choline, total creatine, N-acetyl aspartate, glutamate, glutamine, inositols, lactate, lipids, alanine in brain, and shows citrate, lipids, choline, aminoacids typically in prostate, and choline, lipids in breast cancer. ^{31}P -MRS can be acquired in various human cancer, but clinically not suitable for small acquisitional voxel of tumor tissue compared with proton spectroscopy. In this presentation, differential diagnosis and therapeutic monitoring of brain tumor, breast cancer and prostate cancer will be addressed.