clinical study on imaging acute stroke. It is hoped that the new information afforded by FFC-MRI will aid in the detection and assessment of stroke.

Conclusions. The novel system design described here will allow us to explore the unique T_1 dispersion contrast made available by FFC-MRI. Future work will concentrate on identifying how this newly accessible region of the T_1 dispersion curve can be exploited for clinical diagnosis.

Reference


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[OA022] T2 and T_1 relaxometry of benign and malignant lipomatous tumors

Katerina Nikiforaki^{a, *}, Georgios C. Manikis^{a}, Eleni Lagoudaki^{b}, Georgios C. Manikis^{a}, Eleftherios Kontopodis^{a}, Kostas Marias^{d}, Eelco Bree de^{d}, Apostolos Karantanas^{g}

^{a} Foundation for Research and Technology, University of Crete, Computational Biomedicine Laboratory, Heraklion, Crete, Greece

^{b} University Hospital of Crete, Pathology Dpt., Heraklion, Greece

^{c} Foundation for Research and Technology, Technological Educational Institute of Crete, Computational Biomedicine Laboratory, Heraklion, Greece

^{d} Medical School of Crete University Hospital, Department of Surgical Oncology, Heraklion, Greece

^{e} University Hospital of Heraklion, Foundation for Research and Technology (Forth), Department of Radiology, Heraklion, Greece

^{f} University Hospital of Heraklion, University of Crete, Medical Physics Department, Heraklion, Greece

* Corresponding author.

Purpose. Non-invasive characterization of lipomatous tumors can be challenging as several histological types have similar imaging characteristics. In this study we examine the use of a new biomarker based on spin coupling related signal loss between two acquisitions of different echo spacing to differentiate between benign lipomas, well, intermediate and poorly differentiated liposarcomas (l, wdl, idl, pdl, respectively). This study was based on previous work showing differences between vegetable oils of different botanical origin using the same protocol [1].

Methods. Fourteen patients (9 male, 5 female, age: 37–87, mean 58) with soft tissue masses (5 lipomas, 2 myxoid, 5 dedifferentiated, 2 pleiomorphic liposarcomas) underwent MRI prior to any therapeutic intervention. MRI protocol, among other sequences, included two Multi Echo Spin Echo CPMG sequences with different echo spacing, 13.4 and 26.8 ms respectively, i.e. above and below the approximate threshold of 20 ms in order to have bright and dark fat appearance on T2-w images. All surgically excised specimens were histopathologically examined to determine the kind of lipomatous tumor and to localize sites of well or poor differentiation in the cases of dedifferentiated liposarcomas as distance from the upper tumor limit (z) and distance from the center (x,y). Relative signal loss between bright and dark fat images on TE 80 ms was calculated in order to measure the spin coupling Ratio (Rsc), defined as mean ROI value in the lesion divided by the same value in normal subcutaneous fat for the same patient.

Results. Mean (SD) of Rsc for l, wdl, idl and pdl was 1.036 (0.06), 0.77 (0.18), 0.055 (0.06) and 0.16 (0.57), respectively.

Conclusions. A new biomarker related on spin coupling signal loss is indicative of the differentiation grade of lipomatous tumors, with special interest regarding the clinically challenging question of benign lipomas vs. well differentiated liposarcomas. It is of note that Rsc decreases with increased differentiation grade (1–3).