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Role of clinically available magnetic resonance spectroscopy in the quantitative assessment of disease activity in patients with acute Charcot neuroarthropathy

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Objective. Magnetic resonance spectroscopy (MRS) is a readily available imaging modality for non-invasive metabolite detection in different parts of the body. Aim of this study was to apply clinically available MRS to assess the disease course in patients with acute Charcot neuroarthropathy (CN). **Research design and methods.** Lipid polyunsaturation index (PUI) was measured by a 3-T spectroscopy system comparing ten diabetic patients with acute CN, ten diabetic patients with neuropathy, and ten normal control subjects. **Results.** At baseline evaluation, PUI values were significantly higher in patients with acute CN with respect to controls and were directly proportional to ΔT and to the timemeth final recovery.

Table 1. PUI values during follow-up

| PUI (mean \pm SD) at | | |
|------------------------|----------------------------------|----------------------------------|
| Baseline | clinical recovery | final recovery |
| 0.055 \pm 0.0025 | 0.045 \pm 0.0017 (p=0.004)* | 0.031 \pm 0.034 (p=0.002)** |

*=with respect to baseline values; ** with respect to clinical recovery's values.

During follow-up, a decrease of PUI values was observed in all patients with respect to baseline values and 100% agreement was found between MRI evidence of bone marrow edema and PUI values indicative of disease activity. **Conclusions.** MRS provides measurable parameters that allow to quantitatively evaluate disease activity in acute CN. MRS may thus represent an innovative tool to guide clinicians in patient management, and to assess treatment response.