

was related to more severe ataxia, as assessed by the SARA. These preliminary results support our hypothesis that sodium MRI may be a new imaging marker that could shed new insights into the metabolic pathophysiological mechanisms of FRDA.

References

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P15. Multimodal mapping of nerve pathology with a multichannel approach—F. Weitkamp^{1,*}, E. Elzenheimer², W. Schulte-Mattler³, G. Schmidt², H. Laufs¹ (¹Universitätsklinikum Schleswig-Holstein, Department of Neurology, Kiel, Germany, ²Christian-Albrechts-Universität Kiel, Technical Faculty, Kiel, Germany, ³Universitätsklinikum Regensburg, Department of Neurology, Regensburg, Germany)

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Objective: Clinical electroneurography, the diagnostic standard for the assessment of thickly myelinated peripheral nerves, is of limited spatial resolution since it provides only average data (nerve conduction velocity [NCV], nerve or muscle action potential amplitude) on relatively large nerve segments. Accordingly, different distribution patterns of axonal or myelin pathologies cannot be distinguished. But precisely this is relevant to ensure correct diagnosis and therapies. These can pose a relevant burden on the patient ranging from spontaneous recovery over surgical to medical, partly highly expensive, treatment.

Hence, our main objective is to optimize the diagnostic specificity via a multichannel neurographical approach. By adding ultrasound data, a functional-structural model can be developed as a novel basis for medical decision making.

Methods: Based on ultrasound, eight electrodes are positioned along the course of the median and ulnar nerve, respectively, and nerve depth (distance to skin) profiles are recorded. Bipolar direct current stimulation is applied close to the M. abductor pollicis brevis and the M. abductor digiti minimi, resulting in the excitation of both motor and sensory nerve fibers (mixed nerve technique) (Buschbacher, 1999) such that eight mixed nerve action potentials (NAPs) can be recorded along the nerve. We performed reference measurements in 10 healthy volunteers.

Results: Median nerve depth ranged from 2 to 23 mm, and we recorded reproducible signals at all locations with a maximum of 8 averages (at 20 mm) in good correspondence with previously published values (Fig. 1) (Watson et al., 2002). Fig. 2 reports the (inverse) relationship between NAP amplitudes and depth.

Discussion: Using the setup described, we reliably obtain NAP and their latencies of two peripheral nerves along their course with slight or no averaging. The interesting question is, if and how different pathologies influence the amplitude level. The next step will be the assessment of nerve pathologies to test that diagnostic and therapeutic decision making benefits from structural-functional nerve mapping with high spatial resolution.

References

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Nerve conduction velocity of N. medianus of 10 healthy volunteers. The box presents the middle 50% and the median of the data. The 'whiskers' display min/max.

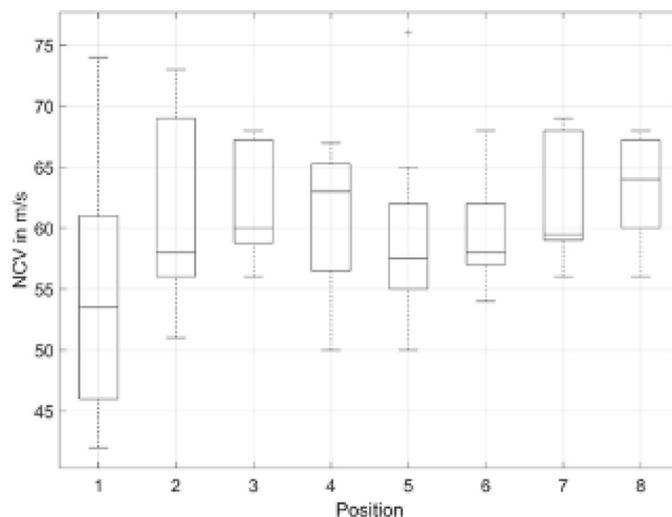


Fig. 1.

Depth (columns) and amplitude (dotted lines) at respectively 8 positions of 10 healthy volunteers of N. medianus.

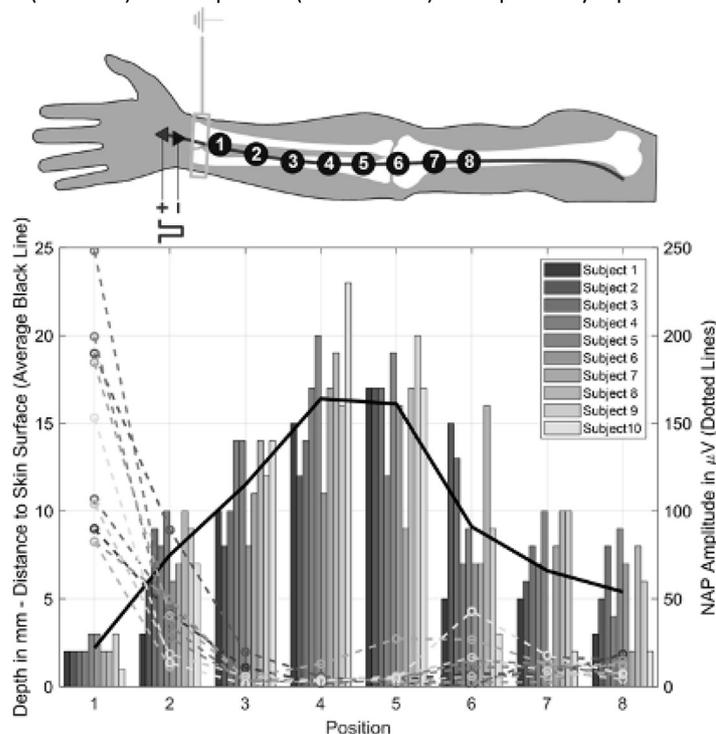


Fig. 2.

P16. Overlap Myositis in Felty Syndrome with mitochondrial affection—T. Kendzierski¹, I. Schneider^{1,*}, T. Kraya¹, G. Stoltenburg-Didinger², C. Schäfer³, G. Keyßer³, S. Zierz¹ (¹University Hospital Halle/Saale, Department of Neurology, Halle/Saale, Germany, ²Charité – Universitätsmedizin Berlin, Institute of Cell and Neurobiology, Berlin, Germany, ³University Hospital Halle/Saale, Department of Rheumatology, Halle/Saale, Germany)

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Overlap Myositis is a rare complication of auto-inflammatory disorders that presents as an add-on muscle weakness with increased creatin kinase.

A 34 year old woman presented with myalgia in both thighs that increased with exercise and spread out to the lower extremities. She reported accompanying weakness of the proximal muscles of the upper and lower limbs that was objectified by clinical examination as paresis grade 4/5 in the MRC score. There was a history of rheumatic ailment for ten years with diagnosis of Felty Syndrome 2.5 years ago. Level of the creatine kinase presented normal with 2.47 $\mu\text{kat/l}$ (147.71 U/l); (normal < 2.85 $\mu\text{kat/l}$, < 170.43 U/l). Because of muscle symptoms treatment with glucocorticosteroids had been intensified from 2 mg to 20 mg daily. However, muscle biopsy of the left vastus lateralis muscle showed a severe inflammatory process with predominantly CD8+ and CD138+ lymphatic cells within the infiltrates. The capillary walls were not thickened but the endothelial cells had proliferated. Furthermore an abnormal amount of COX- negative fibres (30% of all muscle fibres) was observed.

Histologically polymyositis with COX-negative fibers was diagnosed. That is most likely a presentation of an overlap myositis in

the context of the rheumatological disease. This case demonstrates a rare finding of Felty syndrome that is associated with myositis. The massive inflammation despite immunosuppressive therapy and the extent of mitochondrial dysfunction are extraordinary features that suggest an ongoing disease with the need for a more aggressive immunosuppression.

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P17. Impaired auditory attention in adolescents with developmental dyslexia—K. Rufener^{1,*}, K. Krauel², H.J. Heinze¹, T. Zaehle¹ (¹Klinikum Magdeburg, Clinic for Neurology, Magdeburg, Germany, ²Klinikum Magdeburg, Klinik für Kinder- und Jugendpsychiatrie, Magdeburg, Germany)

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Theoretical background: Developmental dyslexia (DD) refers to the pathological impairment in the acquisition of reading and/or writing skills that is not accounted for by biological age, intelligence or inadequate schooling (WHO, 2011). It is hypothesized that DD relies, at least in part, on the impaired ability to shift attention to relevant information (Hari and Renvall, 2001). On a neurophysiological level, attention is represented by alpha oscillations (about 8–12 Hz). In adults with DD, recent studies showed altered alpha oscillations during the processing of auditory and visual stimuli (Dhar et al., 2010) but also in resting state (Papagiannopoulou and Lagopoulos, 2016). However, until today, there is only sparse knowledge on auditory attention and the underlying neural mechanisms in adolescents with DD.