PS. Peripheral neuropathy associated with lymphomas, chronic lymphocytic leukemia, multiple myeloma and essential cryoglobulinemia: clinical and electrophysiologic incidence. – V. Rossi, A. Fels, G. Coscione, G. Pillo, D. Aliperta, V. Dell'Aria and L. Stella (Servizio di Neurofisiopatologia, Ospedale Cardarelli, Naples, Italy)

Electromyography of biceps brachii and tibialis anterior muscles was performed, and motor and sensory conduction velocities of median and tibial nerves were measured in 60 patients: 23 affected by Hodgkin's disease, 9 by lymphocytic lymphoma, 17 by chronic lymphocytic leukemia, 9 multiple myeloma, 2 by essential cryoglobulinemia. Only in 4 patients was there clinical evidence of a peripheral nerve involvement. Any cause of neuropathy was excluded. Electrophysiologic evidence of peripheral neuropathy was found in 33 patients. The mean duration of motor unit potentials was increased in the biceps brachii of 16 patients and in the tibialis anterior of 24 patients. Motor conduction velocity was reduced in the median nerve of 12 patients and in the tibial nerve of 18 patients. Sensory conduction velocity was decreased in the median nerve of 19 patients and in the tibial nerve of 22 patients. All subjects with electrophysiologic abnormalities, but one, showed tibial nerve involvement. Electrophysiologic findings were considered in relation to stage and duration of illness, morphology and immunologic phenotype, M component, type and light chain isotype. Relationship between previous subclinical peripheral neuropathy and neurotoxic effects of vincristine was studied.

PS. Value of the SFEMG method in muscular fatigue estimation in the cases of mitochondrial myopathy. – K. Rowińska-Marcińska, E. Sawicka, T. Nowak-Michalska and B. Emeryk (Dept. of Neurology, Warsaw Medical School, 02-097 Warsaw, Poland)

The clinical picture of so-called mitochondrial myopathies, although different, at the beginning often shows signs of muscular fatigue. The aim of this study was to test whether fatigue in this myopathy is due to disorder of neuro-muscular transmission.

Eight cases (5 male, 3 female) of mitochondrial myopathy were examined. The diagnosis was based on clinical and morphological (muscle biopsy) examination. In all cases needle EMG examination and repetitive stimulation were made, in addition single fiber EMG, the fiber density and jitter values were studied. EMG examination and fiber density in 6 cases confirmed the myopathic character of the lesion, but in 2 cases neurogenic features were found. Some of the neuromuscular transmission disturbances were found in 5 cases.

The causes of clinical fatigue in cases of mitochondrial myopathy will be discussed.

PS. Magnetomyography in rat and mouse skeletal muscle. – W.L.C. Rutten and J.H.M. Put (Biomed. Eng. Div., Twente Univ., 7500 AE Enschede, The Netherlands)

Magnetomyography (MMG) is a new non-invasive technique for the detection of magnetic fields outside an active muscle. In a configuration in which the detection coil is of a toroidal shape, with the muscle lead through the center of the coil, magnetic fields can be shown to correspond almost completely to the intracellular longitudinal currents in active muscle fibers.

Two necessary prerequisites to achieve this result are that the muscle is immersed in an electrically well conducting medium and that the toroid encloses the muscle as close as possible. In acute animal experiments in which the muscle can be partially exposed these two demands can be fulfilled very well and recording of single muscle unit activity is easily achieved. However, in longitudinal studies true non-invasiveness will be a more important demand, implying that the muscle will remain untouched inside, for example, a limb of a dystrophic mouse. In that case the magnetic efficiency will be lower due to disturbing volume conduction effects and due to the larger recording distance.

In this presentation we shall illustrate the development of and rationale behind this technique, how its sensitivity was improved to the physical limits and how it can be successfully applied to exposed and unexposed muscles in the hind limbs of rats and mice.

PS. Reciprocal IA inhibition during arm movement in man. – M. Sabatino, J.L. Pepin *, V. La Grutta and P.J. Delwaide * (Institute of Human Physiology, University of Palermo, Italy, and * Section of Neurology and Clinical Neurophysiology, University of Liège, Liège, Belgium)

IA interneuron is responsible for reciprocal inhibition between antagonist motoneurons. It receives afferent inputs both from segmentary and suprasegmentary levels. The electrically induced monosynaptic reflex (H-reflex) was used as a test in order to study reciprocal inhibition from wrist extensors to wrist flexors and the influence exerted by contralateral active and passive arm movement. Normal subjects performed a movement of turning a horizontal crank (active movement), or, alternatively, allowed passive turning without any significant resistance (passive movement) during recordings of the H-reflex and reciprocal inhibition on the contralateral side. Results showed that during contralateral voluntary and passive movement, the maximal amplitude of the H-reflex remained unaffected. On the contrary, reciprocal inhibition from wrist extensors to wrist flexors increased during both active and passive movement, although the reinforcement was of a lesser degree in the second condition. Statistical analysis demonstrated that differences were highly significant. Experimental findings may be regarded as adding new evidence on the importance of the different inputs converging onto IA interneurons and underline the role of segmentary afferents. The