

with a conditioned stimulus (CS). During one of the next two months, in a double-blind manner, subjects received the CS alone.

Results. Affected subjects showed a decrease in CS counts occurring following the CS alone.

Conclusion. The results suggest that the decrease in CS counts following the CS alone suggests a conditioning process in immunosuppressed subjects.

Study supported by Fetzer Institute.

32P

The Methodology in MRI Localization

D.L. Na, A. Kertesz, and D. Drost, London, ON, Canada

Objective. To standardize lesion localization by MRI.

Background. Lesion localization with MRI is usually based on matching templates to actual images. The variability in the angle of plane and thickness make it difficult to select templates. The angle of axial MRI scan lacks consistency in real clinical setting. Thirty clinical MRI scans were found to have a forward inclination of -5 to -35 degrees (mean 20.5 with SD 6.4) from the canthomeatal line.

Design/Methods. In order to delineate boundaries of 16 major gyri and regions, plastic tubes, internal diameter 1.4 mm, filled with 0.3% gadolinium-DTPA were fixed to the lateral surface of the brain specimen and medial surface of occipital lobe. MRI slices were obtained every 5 degrees from -5 to -35 degrees from bicommissural line. A pulse sequence of TR/TE = $600/20$ was used with a thickness of 3 -mm and 2 -mm gaps between slices.

Results. Excellent resolution and gadolinium-enhanced plastic tubes allowed localization of cortical anatomy at all angulations. Anatomical boundaries were identified by comparing templates with clinical scans. Three-dimensional regions of interest were used for quantification of lesions.

Conclusions. This methodology is a practical tool for quantitative MRI localization of lesion in forward inclined axial cuts that are commonly used in clinical evaluation.

33P

Quantitative Volumetry in Alzheimer's Disease: Brain-Behavior Correlations and the Effect of Education

Sandra E. Black, North York, ON, Canada; Daphne Kidron, Peter Stanchev, Gordon Cheung, Brian Buck, and Michael Bronskill, Toronto, ON, Canada; Jonathan Foster, Manchester, England

Objective. To examine volumetric brain-behaviour correlations in Alzheimer's disease (AD).

Background. Tissue classification techniques enable quantitation of brain compartments which, along with hippocampal volume measures, may be useful in diagnosis and monitoring of AD in conjunction with neuropsychological measures.

Design. Bifeature segmentation was applied to T_2 -weighted images to estimate regional brain tissue volumes, demarcated by surface reconstruction in 20 AD and 20 controls, imaged at 1.5 tesla. Hippocampal volume was derived from serial, coronal $3D$ T_1 -weighted slices. Regional volumes were correlated to neuropsychological performance.

Results. The CSF compartment differed significantly between AD and controls ($p < .0003$), most notably in the parietotemporal region. Hippocampal volume was reduced in AD subjects but this did not reach significance. When age, educa-

tion and severity were controlled, significant correlations emerged between certain cognitive tasks and their putative localization, (eg, semantic fluency-left parietal; visual reproduction-right hippocampus). Higher-educated AD subjects had less brain atrophy when age, illness duration and severity were partialled out.

Conclusion. Bifeature tissue segmentation proved to be a reliable and reproducible technique and may provide a biological measure to monitor disease progression and therapeutic response. If replicable, our findings also provide a biological basis for growing epidemiological evidence that disease expression may be influenced by educational factors.

Study supported by Ontario Mental Health Foundation.

Neuromuscular Disorders

34P

Surface-Recorded Tactile Evoked Responses: A Noninvasive Technique That Increases the Diagnostic Yield in Patients With Diabetic Neuropathy

Marcela Panizza, J. Nilsson, and B. Tommolillo, Castel Goffredo, Italy; M. Bazzani and M. Iorini, Asola, Italy

Objective. The aim of the study was to find a noninvasive, sensitive technique able to detect early alteration of sensory conduction velocity.

Background. Sensory conduction velocity evoked by tactile stimulation to the tip of a digit and recorded via near nerve electrodes is a reliable and sensitive conduction test of the most distal nerve part.

Methods. Nerve conduction studies of the median nerve, recording via surface electrodes at the wrist and stimulating electrically and tactile at digit III, were performed in fifteen diabetic patients. All patients (mean age 43 years) were diagnosed within one year, clinically asymptomatic, with normal neurological examination and normal autonomic evaluation (vibratory perception and disappearance threshold, R-R interval to deep breathing, 30/15 ratio, and postural blood pressure changes). Results were compared with those of a control group.

Results. Sensory conduction study was pathologic in 57% of the patients using electrical stimulation, and in 75% of the patients using tactile stimulation, resulting in an 18% increase of the diagnostic yield.

Conclusions. Surface recording from the median nerve of responses to tactile stimulation at the tip of digit III is a noninvasive, well-tolerated technique that increases the diagnostic yield in diabetic neuropathy.

35P

EMG Features of Diabetic Sensory Motor Polyneuropathy

Tomas Holmlund, Buffalo, NY; Asa Wilbourn, Cleveland, OH

Objective. To characterize the EMG features of a diabetic sensory motor polyneuropathy (DSMP).

Background. Electrodiagnosis has been utilized for over three decades to evaluate patients with DSMP, but a comprehensive study has never been done. This is partly due to the difficulty in isolating DSMP from coexisting factors mimicking/causing polyneuropathies (PN), i.e., uremia. In addition, many patients are over age 60, at which time the most sensitive parameters for PN may be lost normally, i.e., H-reflexes.

Design/Methods. We examined the clinical and electrophysiologic data of 105 diabetic patients with DSMP, age 20-59, who had no confounding factors.

(51.) * Black S., Kidron D., Stanchev P., Cheung G., Buck B., Bronskill M., Foster J., "Quantitative Volumetry in Alzheimer's Disease: Brain-Behaviour Correlations and the Effect of Education", *Neurology* 44 (suppl 2), April 1994 A134.