Reference

Zinner, S.H., Levy, P.S. and Koss, E.H. (1971). Familial aggregation of blood pressure in childhood. New England Journal Of Medicine, 284, 401–404.

CONTROL OF SELECTIVE FILTERING IN NORMAL AND THOUGHT-DISORDERED SUBJECTS

J.P. LAURENT and J. BARIBEAU-BRAUN

Fonds Scientifique de la Chesnaie, France, and Concordia University, Montreal, Canada

In a recent multichannel listening study using averaged evoked potential indices of selective filtering, Baribeau-Braun et al. (1983) showed that certain thought-disordered schizophrenics demonstrated deficient selective listening to one ear at slow speed of stimulation (1 sec ISI), but improved selectively at fast speed (0.5 sec ISI), as indexed by the late AEP components. One explanation for these results was that the stimuli from the task-irrelevant ear were less distracting at the fast speed of stimulation, given that there was less time available for channel-switching between ears. The present study attempted to replicate these results, and to assess if intensity of stimulation has an effect on schizophrenics vulnerability to distraction. In addition, chronic thought-disordered (CTO) schizophrenics were compared to sub-acute and acute patients (SAP).

The experiment involved 8 normal controls (N), 8 chronic thought-disordered schizophrenics (CTO), 8 sub-acute psychiatric patients (SAP) assessed on the Bannister-Francella Grid Test for Thought Disorders (1965), the Spitzer and Endicott Research Criteria for Schizophrenia and affective disorders (1975) and Cattelps Anxiety Scale (1957). The 3 samples were group-matched for age, educational and socioeconomic levels. In the selective filtering condition, subjects were instructed to attend and detect occasional random signals (1500 Hz) among non-signals (2000 Hz) in the right ear, and to ignore the signals (1500 Hz) and non-signal tones in the left ear (1000 Hz), and vice versa in the next conditions. In a divided attention condition, subjects detected signals in both ears. All tones were presented with identical intensity and duration within each condition. Selective filtering conditions for the right and left ear were repeated 5 times at 5 intensity levels: 35, 40, 45, 50 and 55 dB. The 2 speed conditions were at a mean ISI of 500 msec (varying from 250 to 750 msec) and of 1000 msec (500 to 1500 msec).

Preliminary results show a slower, more variable RT,and a reduced delayed late positive component (LPC) in the thought-disordered schizophrenics than

the non thought-disordered patients and the normals (table 1). The SAPs differed from the CTOs by manifesting a relatively larger LPC to task-irrelevant signals of the ears to be ignored. The LPC was completely absent in the normals in the response to task-irrelevant signals. The abnormally small schizophrenics' LPC indicate inefficient processing of information from detected signals. The presence of some LPC activity to task-irrelevant signals in the 'ignored' ear indicate that the latter were processed to some extent despite the absence of motor response. However, the SAPs demonstrated an overall more efficient processing of signals (larger LPC) than the schizophrenics, despite the fact that the former showed evidence of distraction (larger LPC) from the task-irrelevant ear. The effect of intensity of stimulation is still being analysed and will be discussed at the conference.

MULTICHANNEL EEG SEGMENTATION USING SPATIAL CRITERIA: SPLIT-SECOND BRAIN STATES AND THEIR POSSIBLE SIGNIFICANCES

D. LEHMANN, H. OZAKI, I. PAL and W. SKRANDIES

Department of Neurology, University Hospitals, Zürich, Switzerland

Segmentation of EEG data into time epochs with periodically stationary characteristics must consider all recording points with equal weight. In order to achieve this, reference-free parameters of the EEG scalp field distributions are used: After digital filtering to the frequency band of interest, reference-free computation of global field power over time (Lehmann and Skrandies, 1980) identifies the times (field maps) of maximal field relief. In the alpha band, there are about 20 times of maximal scalp field relief per second. At each time of maximal relief, the locations of the most positive and most negative voltage (the extreme values within the field, i.e. reference-free characteristics) are identified. The end of a segment is recognized when a map shows an extreme outside of the initially determined occurrence areas (e.g. initial location and 3 direct neighbor electrodes). field extrema locations tend to be stable for segments of varying durations, up to 2.5 sec for alpha EEG. The median segment duration in 2 min recordings from six subjects during resting was 250 msec. The segments are classed according to the locations of the field maximal and minimal values. Spectral band power computed vs. the average reference for segments as short as 600 msed shows spatial distributions which are similar to the spatial distributions of the field extrema over time. Thus, the spatial maps of power vs. the average reference might be used as conventional