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HEMISPHERIC DIFFERENCES IN AERPs AND THOUGHT DISORDERS IN SCHIZOPHRENIA

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1. The present study attempted to determinate if two groups of schizophrenic patients present different attentional modulation deficit on each hemisphere.

Data reported in this study were recorded with schizophrenic patients chosen from the "Clinique de Chailles" (France), a specialized treatment community private hospital for schizophrenia. One hundred schizophrenics are treated for a long time (more than five years) in this institution.

2. We used the Research Diagnostic Criteria for schizophrenia of Spitzer and Endicott to assess the presence and the severity of formal thought disorders. Patients were divided in two groups according to this checklist with the following list of symptoms. the four first symptoms were rated on a 6-point scale and the last on a 3-point scale.

3. Auditory event-related potentials (AERPs) were recorded at Fz, Cz, Pz, C3, C4. Vertical electro-oculograms were recorded and half of this maximal voltage was used as standard for artefact rejection. In a focused attention condition, subjects detected rare randomized targets (1500 Hz) from standard tones (1000 Hz) in one ear while ignoring the other ear, and vice versa in the other condition. Conditions were repeated at 2 speeds of stimulation (randomized interstimulus intervals varying between 250-750 and 750-1500 msec), with target\signal probabilities of .2\.8.

4. All subjects were right-handed. The three groups were matched for age and education, the two patient groups for duration of institutionalization, medication dosage and anxiety scores on

the Cattell trait/state test. In addition a score lower than 750 for intensity and .2 for consistency on the "Bannister-Fransella Grid Test of Thought Disorders" was used as criterion for +FTD sample.

5. +FTD patients showed slower RTs than the other group although this difference didn't reach significant level. They presented more delayed hits and more false alarm.

6. On Fz and Pz, in the -FTD patients AERPs were characterized by many intrusion indices of distractibility. For example -FTD schizophrenics showed larger late positive components (FzP3a, PzP3b and PzP4) than controls during inattention (intrusion effect). These abnormal positivities increased significantly at fast speed of stimulation. This suggests that patients' hyperarousal at faster speed, increased this intrusion effect. This pattern of result was also described in normal subjects with 'conceptual loosening' assessed by the Godstein-Scheerer object sorting test. The similarity between this 'intrusion effect' in allusive thinkers and those report in this paper suggest that further research is warranted to elucidate the relationship between allusive thinking and hyperarousal in schizophrenics patients.

On the opposite, controls showed larger PzP3 and PzP4 waves during attention than inattention and late positive components were unaffected by speed of stimulation.

The +FTD schizophrenics were characterized by absence of component differentiation between frontal and parietal electrodes, between stimulation speed and attention conditions. They showed smaller amplitudes and more within-condition variability for all components, and more trials were rejected from averaging due to ocular and muscle artifacts. The Late positive components, PzP3, PzP4, were delayed by 100-150 msec, the PzP3 peaks overlapping the PzP4 scoring windows. When considering their latency shifts, the PzP3 and PzP4 components were significantly smaller than in the -FTD schizophrenics and the controls. The frontal slow negative waves, N4 and N7, were also clearly absent in +FTD patients.

7. to isolate components specifically related to target stimulus processing, we used a subtraction procedure (ERP elicited by deviant stimulus in the attention condition minus ERP elicited by the deviant stimulus in the inattentive condition) to produce the largest overall group differences in mean amplitude.

In all group attentional modulation was worse on left than right side.

-FTD patients manifest amplitude enhancement on ERP components in attention condition only on right hemisphere. These patients were also characterized by the largest slow negativity. We may speculate that this slow negativity reflect perseveration of an

idiosyncratic mode of processing compatible with their evidence of hyperarousal, input dysfunction and distractibility.

+FTD group showed little differentiation between attention condition on both hemispheres, with a significantly flatter morphology of components than the two other groups. Moreover, their rest EEG is often hypersynchronize making difficult to stand out any significant modulation by experimental factors.