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SHORT COMMUNICATION

A PRELIMINARY STUDY OF REACTION TIME IN SCHIZOPHRENICS

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Abstract : The aim of this study was to make a preliminary study of auditory reaction time (ART) and its significance in cases of schizophrenia. It was found that ART is significantly affected and prolonged in schizophrenia as compared to normal healthy controls ($P<0.001$) when the stimulus is presented to both ears or either car separately. Distractability was higher in schizophrenics as compared to adult controls ($P<0.001$). There was no significant difference in ART within the patient group when the stimulus was presented to the right ear or left ear ($P>0.05$). There was no significant difference between ART of male and female scizophrenics ($P>0.05$).

Key words : schizophrenia auditory reaction time

INTRODUCTION

Persons suffering from catatonic schizophrenia show marked psychomotor slowing. Previous literature suggests that the reaction time (RT) of schizophrenics can be reliably distinguished from those of normal controls. RT appears to be relatively independent of socio-cultural influences and its potential advantage for the study of mental function, therefore, is that it might provide a relatively straight forward means of objectively investigating individual differences inferred to be relevant to more complicated forms of behaviour (1). Research work of Huston et al in schizophrenia have shown that RT is an index of the biological efficiency of the brain (2). RT can provide an indirect index of the processing capability of the central nervous system (3). It can also reflect the effects of brain damage, mental disorders and other psychopathologies (4,5,6). Hence, this study was undertaken to make a preliminary study of ART in schizophrenics.

METHODS

60 male patients of age group of 20 to 40 yrs diagnosed as catatonic schizophrenics by the RDC criteria were selected for the study. The patients were not suffering from any other physical illness specially neurological disorders and their hearing was normal. Duration of illness was more than 5 yrs. They had not received any antipsychotic drugs or ECT, 15 days prior to the test. The ART was measured for auditory stimulus presented into right ear (RE) left ear (LE) and both ears (BE) separately with the apparatus described by Malathi et al (7). Mean of 5 readings was calculated and compared with similar readings of 60 normal healthy male adult controls of the same age group and at the same time of the day. The distractibility was determined by finding the difference between the minimum and maximum ART values of BE of each individual of the different groups and the mean of the differences was obtained Mean ART of RE was compared with the mean ART of LE within the patient group. Mean ART of BE of 60 males was compared with the mean ART of BE of 30 females within the patient group.

RESULTS

There was a significant prolongation of the ART of BE, LE, RE, of the patient group when compared with the same readings of the adult control group (Table I). The mean distractibility in the patient group was 323.3 msec as compared to that of control group of 10 msec which was highly significant (Table II). There was no significant difference between mean ART

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(454.2±410.7msec) of RE and LE (393±420.1msec) within the patient group. The difference in the mean ART of BE of males (388.3±403.7msec) and females (402±397.8msec) in the patient group was not significant.

TABLE I : Comparison of mean ART of males with auditory input into BE, LE, RE of the control group with that of patient group.

Group	*Auditory input*	*Mean ART + SD in msec*	*P*	*Significance*
Control	BE	190 + 9.28	4.3	HS
Patient	BE	388.3 + 403.7		
Control	LE	179.5 + 16.57	4.2	HS
Patient	LE	393.9 + 460.1		
Control	RE	180.2 + 17.3	4.6	HS
Patient	RE	454.2 + 410.7		

BE = Both Ear LE = Left Ear RE = Right Ear
HS = Highly Significant

TABLE II : Comparison of the distractibility of ART in patients with control

Group	*Mean ART + SD in msec*	*P*	*Significance*
Control	10 2.29	4.67	HS
Patient	323.3 553.6		

SD : Standard Deviation HS : Highly Significant

DISCUSSION

The significant prolongation of ART of BE, LE, RE in schizophrenics as compared to healthy controls is in accordance with the earlier studies of Huston et al (2). Similar observations have been made by Yates who attributed it to a slow information processing (8). There was a significant increase in the distractibility in the patient group as compared to adult control group. Broen (9) has argued that schizophrenics deficit is primarily the consequence of increased competition between alternative response, so that an appropriate response has a lower probability of occurring. Thus problems of attention could be contributing to increased distractibility (9). Comparing ipsilateral and contraleral ART can establish whether brain damage is predominantly in or restricted to one hemisphere (10). Flor Henry (11) has pointed out that hallucinations and schizophrenia-like symptoms fit with the concept of left hemisphere dysfunction. In our study there was no statistically difference in ART of RE and LE within the patient group. This is in accordance with the views of Springer et al (12) that schizophrenia may be due to an atypical mode of information processing and also, due to inappropriate pattern of hemisphere involvement. Though mean ART of BE was more in females as compared to males within the patient group, this was not statistically significant. This probably suggests that ART is increased to the same extent in both male and female schizophrenics.

Thus differences in the arousability (13), a genereal slow rate of information processing (8), deficient response selection resulting in greater interference between alternative response (9), impaired ability to inhibit extraneous stimulation (13) could all contribute to prolongation of ART. In conclusion ART is a useful physiological parameter to study in schizophrenia and may be employed to determine the effects of therapy in these patients. It may provide an adjunct to tests of psychological functioning and a crucial aid to diagnosis.

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