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SERUM IMMUNOGLOBULINS AND SCHIZOPHRENIA

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SUMMARY

Fifty-four schizophrenic patients, diagnosed as per Research Diagnostic Criteria, were studied for immunoglobulin profiles. The schizophrenics were subdivided into paranoid and non-paranoid groups and their immunoglobulin profiles were compared with those of normals. There was no significant difference between normals and schizophrenic groups. Duration of illness, previous episodes of schizophrenia, family history of schizophrenia, severity of psychosis and duration of hospital stay had no influence on serum IgG, IgA and IgM in schizophrenics. The results are discussed in the light of existing literature on immunoglobulin alterations in schizophrenia.

Various immunological factors have been studied in schizophrenia and the etiology of schizophrenia has been explained on the basis of altered immunological functioning. The studies on serum immunoglobulins revealed uncorroborated and non-specific alterations in schizophrenic patients. The alteration of the immunoglobulin levels was attributed to immunological dysfunctioning in schizophrenia (Strahilevitz et al 1976, Solntseva and Faktor 1976, Pulkkinen 1977, Strahilevitz 1979 and Tiwari et al 1984). On the other hand, the elevation of immunoglobulin levels was considered as non-specific alteration as similar changes were also seen in non-schizophrenic psychiatric patients (Solomon et al 1969, Galli et al 1972, Noeva and Manolova 1976 and Fontana et al 1980).

The present study was carried out with the objective of estimating the immunoglobulin levels (serum IgG, IgA and IgM) in schizophrenics and to find out their relationship with (a) duration of illness, (b) severity of psychosis, (c) previous episodes of schizophrenia, (d) family history of schizophrenia and (e) duration of hospital stay.

Material and Methods

Fifty-four patients, diagnosed as schizophrenia on the basis of Research Diagnostic Criteria (Spitzer et al 1977), were admitted to psychiatric wards at NIMHANS, Bangalore. The patients were divided into paranoid and non-paranoid schizophrenic groups according to Research Diagnostic Criteria (Spitzer et al 1977). The age ranged between 18-45 years, the mean ages in paranoid and non-paranoid schizophrenic groups were 28 and 27 respectively. The exclusion criteria specific for the study, were female patients, poor nutrition, evidence of any physical illness, history of recent infections, prior neuroleptic treatment or electroconvulsive therapy during one year before the present admission, alcohol or drug dependence, organ transplantation or blood transfusion and history of recent vaccination.

The control sample consisted of thirty healthy male normal volunteers with no family history or past history of schizophrenia.

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Their mean age was 27 years. The same exclusion criteria used for patients sample, were applied to the controls before assessment.

Assessment of Patients: The patients' demographic variables and illness variables were recorded. The severity of psychosis was measured on Brief Psychiatric Rating Scale (B.P.R.S.) of Overall and Gorham (1962). A thorough physical examination and laboratory investigations were done every week to exclude the patients developing physical illness, especially infections during the hospital stay. The patients were kept in the hospital till their total B.P.R.S. scores decreased by 75% and were discharged after significant clinical improvement as assessed by two psychiatrists independently.

The patients were not given neuroleptics on the day of admission and about 6 ml of blood was drawn from the patients around 8 A.M. on the next day. The serum was separated from the blood immediately and the samples were stored in deep freeze at −20 °C until the serum samples were assayed in batches (not beyond 3 months).

Serum immunoglobulins IgG, IgA and IgM were assayed by measuring the antigen-antibody reaction by kinetic fixed-time analysis of Neumann et al (1978). The assays were performed with the use of commercial test kits obtained from M/s Boehringer Manheim (West Germany).

Results

The socio-demographic variables and illness variables were not significantly different between paranoid and non-paranoid schizophrenia groups (Table). The mean serum IgG, IgA, and IgM levels were not significantly different among the three groups, i.e., paranoid, non-paranoid schizophrenic groups and normal controls.

The severity of psychosis, as measured on B.P.R.S. also showed no correlation to any of the three immunoglobulins in both the patient groups. Similarly, duration of illness, previous episodes of schizophrenia, family history of schizophrenia and duration of hospital stay had no relation to serum immunoglobulins in schizophrenic patients.

Discussion

The immunoglobulin profiles of schizophrenic patients in the present study do not differ from those of normal controls. Though the method of estimation of immunoglobulins is different from radial immuno-diffusion used in most of the previous investigations, the limit of estimation of immunoglobulins has been reported to be same (Davis and Monto 1977). The negative findings are consistent with those of Arko and Parsic (1969), Hendrie et al (1975), Torrey et al (1978) and Sugerman et al (1982).

Solomon et al (1969) found elevated levels of serum IgA and IgM in both schizophrenic and non-schizophrenic psychiatric
patients, and concluded that the alteration was non-specific in schizophrenia. Noeva and Manolova (1976) found increasing levels of serum IgG in patients with schizophrenia, manic depressive psychosis and disseminated sclerosis, and emphasized the non-specificity of the alteration of immunoglobulins in schizophrenia. Similarly Fontana et al (1980) reported elevation of serum IgG and IgM concentrations in both schizophrenics and patients with affective disorder. They considered the alteration was non-specific as similar abnormality was also observed in the hospital control population. The above observations conclusively indicate that the alteration of immunoglobulins in schizophrenia was inconsistent and highly non-specific.

Amkraut et al (1973) contrary to the negative findings of the present study, found significant elevation of serum IgG, IgA and IgM levels in schizophrenic patients. Strahilevits and Davis (1970) found elevated levels of serum IgA in schizophrenic patients, but later were able to replicate their findings only for female and black schizophrenic patients (Strahilevitz et al 1976). Bock et al (1970) found low IgM levels in schizophrenic patients when compared with normal controls. These studies, though showed significant alteration of immunoglobulin levels in schizophrenic patients, do not add much to the understanding of the possible relation to schizophrenic illness, as the nature of alteration of immunoglobulins was inconsistent in various studies.

The illness variables, such as duration of illness, severity of psychosis, previous episodes of schizophrenia and family history of schizophrenia in the present study showed no influence on immunoglobulin levels. Persic et al (1973) found elevated levels of serum IgA in acute schizophrenics and decreased levels of serum IgM in chronic schizophrenics. Vecchio et al (1975) found elevated levels of serum IgA in schizophrenics with family history of schizophrenia. Pulkkinen (1977) reported serum IgA and IgG levels, higher than average at the beginning of the treatment, predict a short hospital stay. On the contrary, the present study observed no relationship between the immunoglobulin levels and duration of hospital stay.

The present study does not show evidence for abnormal immune functioning in schizophrenia, and the interpretation of findings in other reports remains largely speculative as the studies on serum immunoglobulins showed inconsistent and non-specific changes with lack of concordance among various reports.

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