

PSYCHOSOCIAL INFLUENCE ON IMMUNE RESPONSE AND ITS
IMPLICATIONS IN DIFFERENT PSYCHIATRIC DISORDERS

A thesis submitted for partial fulfilment of
Master degree in Neuropsychiatry

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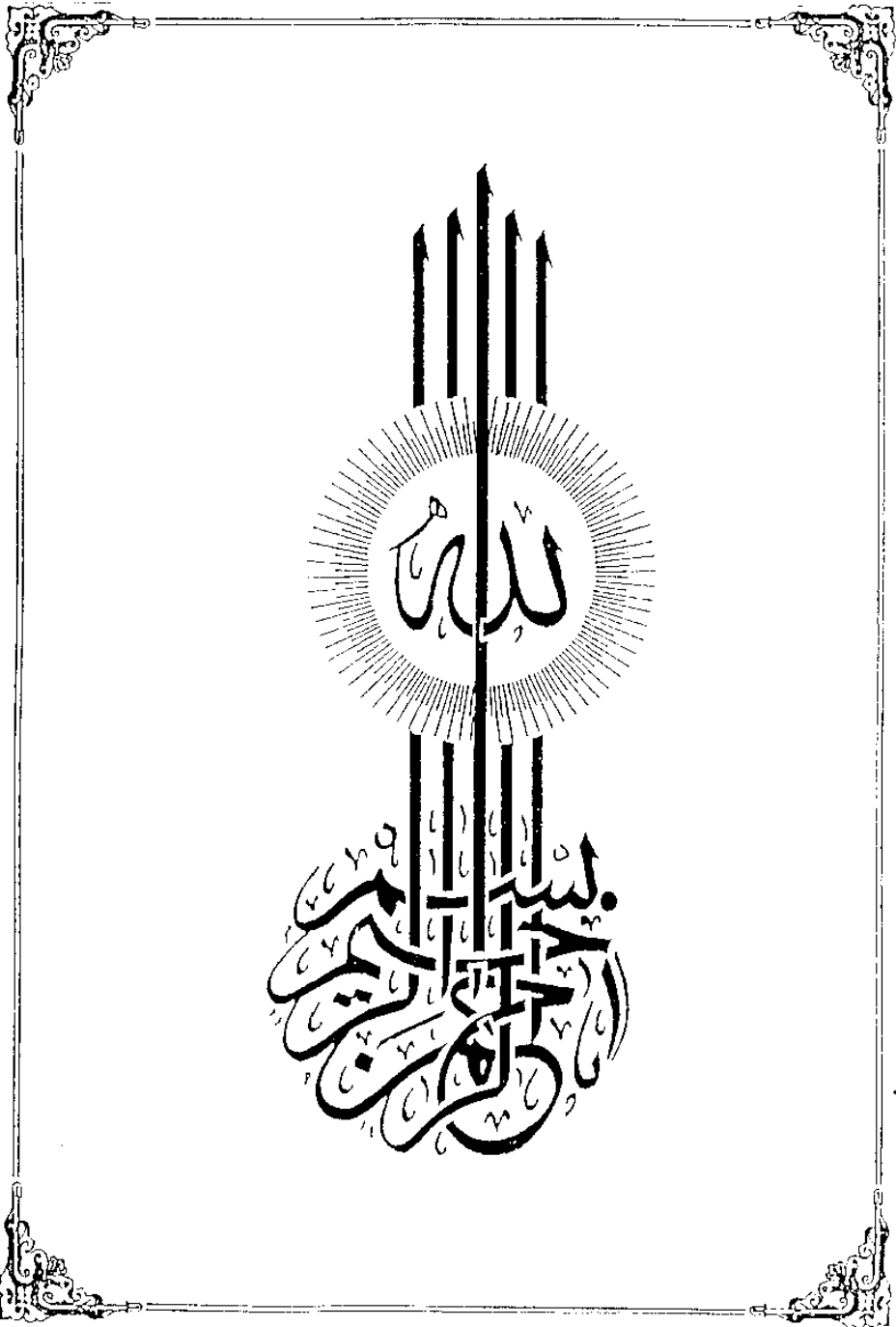
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1990

” بِسْمِ اللَّهِ الرَّحْمَنِ الرَّحِيمِ ”

ربنا ولا تحملنا مالا طاقة لنا به واعف عنا
واعف لنا وارحمنا .

” صدق الله العظيم ”



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TO MY FAMILY AND DEAR HUSBAND

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INTRODUCTION

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Immunological function plays a major role in both the onset and the course of a range of illnesses, the immune systems are being recognized as sensitive to environmental stress which may have very important implications for future understanding and treatment of many, if not most, medical diseases. Recent findings such as the behavioral conditioning of immune response and the alteration of susceptibility to disease through specific social changes or through psychological stresses show an inextricable relationship between the psychosocial events in the lives of persons and their ability to stay healthy, their tendency to get sick and their capacity to recover from illness (Stein et al., 1985).

Lymphopenia following exposure to stress was described as early as 1937 and has been associated with adrenal hypertrophy and involution of the thymus and spleen. Also, secretion of corticosteroids has long been considered to be the mechanism of stress induced modulation of immunity and related disease processes. The regulation of immune function in response to stress, however, is not limited to corticosteroids (Stein, 1986).

At the turn of the century, the central nervous system was first considered to be involved in the development of immune phenomena. The brain was thought to be the organ initiating the anaphylactic reaction. A series of studies conducted between 1910 to 1920 demonstrated, however, that the characteristic signs of anaphylaxis could occur in decerebrated

guinea pigs and dogs. With the development of immunologic and biochemical techniques, an impressive amount of knowledge on the cellular and chemical aspects of immune processes has evolved and the participation of the CNS in these phenomena has largely been overlooked.

Szentivanyi and Filipp (1958) were among the first to study the role of the hypothalamus on anaphylaxis. The investigation of the relationship of the hypothalamus to immune function seem appropriate since the hypothalamus is involved in the regulation of endocrine and neurotransmitter processes. Both of these systems participate in the modulation of humoral and cell mediated immunity (Stein, 1986).

There is now ample evidence of interactions between the CNS and the immune system. Both stress and psychiatric illness have been associated with impairment in immune function (Kronfol and House, 1989). Perez and Farrant (1988) have drawn parallels between the two systems; in serving functions of adaptation and defense, both the CNS and the immune system discriminate between self and non self and incorporate principles of recognition, learning, memory and transmission of information. Blalock (1984) has suggested that the immune system functions as a sensory organ for external stimuli that cannot be detected by the nervous system (i.e. bacteria, viruses, tumor cells). So the CNS and the immune system communicating through the neuroendocrine system, are closely involved in the adaptive response of the individual to the environment, this communication within and between the two systems is important for individual

and cellular integrity. Just as psychic alienation and poor ego capacity to distinguish self versus non self can lead to impairment in reality testing and psychopathology, one can think of a "cellular alienation" in which cancer cells escape recognition by lymphocytes and continue to survive (Perez and Farrant, 1988).

Many states show evidence of dysfunction in both systems as depression, Cushing syndrome, acquired immune deficiency syndrome, paraneoplastic syndromes and systemic lupus erythematosus (Blalock, 1984).

Speculation about the role of infection in mental disorders dates from the 1920s, when Menninger (1926) having observed the frequent occurrence of a dementia praecox picture in post influenzal psychosis following the 1918th epidemic, went on to propose that schizophrenia resulted from the acute infection. Similar speculations about altered immunity in depression and psychological emotional disturbances have been made (King and Cooper, 1990).

A number of investigations have found evidence suggesting altered immunity and autoimmunity in patients with schizophrenia. Whether the immune abnormalities are involved in the pathogenesis of some or all types of schizophrenia or whether such abnormalities are related to a wide range of factors, including chronic institutionalization and neuroleptic drugs, remains to be determined. Immune phenomena in psychiatric disorders other than schizophrenia have been less extensively studied. In some studies, the frequency of antinuclear antibodies,

commonly found in patients with autoimmune disorders, such as systemic lupus erythematosus, has been reported as increased in patients with depression (Kaplan and Sadock, 1988).

AIM OF THE WORK

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The present thesis was designed to clarify the following points:

1. To review the effect of different psychosocial factors on the immune system, which may be a very important implication for future understanding and treatment of many medical and psychiatric disorders.
2. To review the previous studies suggesting that the immune system is altered in patients with psychiatric disorders in order to use this altered immunity as a biological marker.

REVIEW OF LITERATURE

IMMUNE RESPONSE

Definition:

The term immunity would include "all those physiologic mechanisms that endow the animal with the capacity to recognize materials as foreign to itself, and to neutralize, eliminate or metabolize them with or without injury to its own tissues (Bellanti, 1978).

Stein and Schleifer(1985) mentioned that the immune response is responsible for the maintenance of the integrity of the organism in relation to foreign substances, such as bacteria, viruses, tissue grafts and organ transplantation and neoplasia.

Classification:

Immunity responses may be classified into two categories:

I. Non specific immunologic responses :

The first encounter of the host with a foreign configuration leads to a stereotyped response that consists of mobilization of phagocytic elements into areas where the foreign configuration has been introduced. This may occur as an isolated event or as a part of the inflammatory response. So, there are two types of non-specific immunologic responses:

1. Inflammatory response:

It can be considered as that complex series of cellular and systemic