ANTIBODIES TO EPSTEIN BARR VIRUS IN NORMAL CHILDREN IN RELATION TO AGE

A THESIS

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BY

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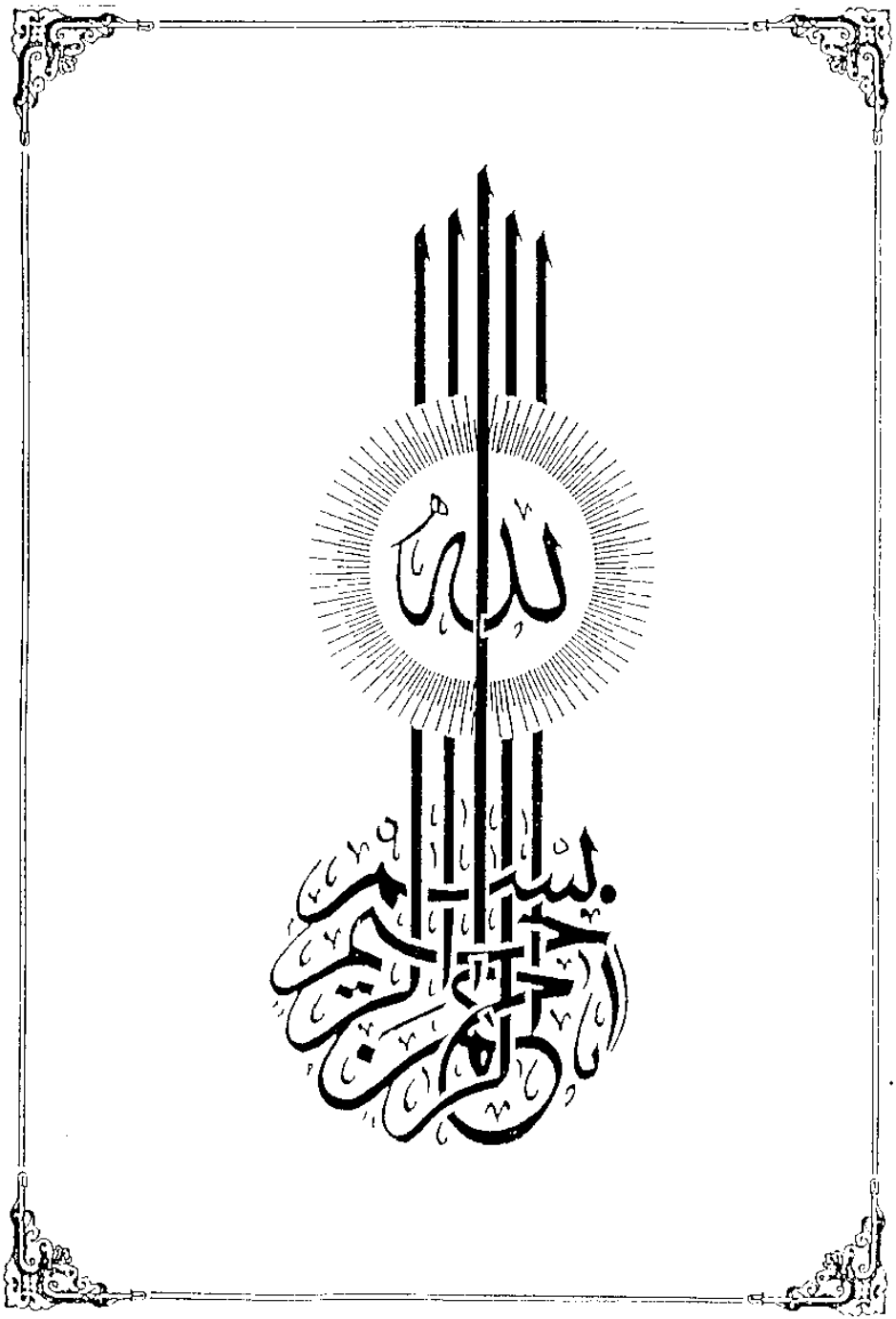

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I N D E X

PREFACE AND AIM OF THE WORK

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Epstein - Barr virus (EBV) infection is associated with a variety of lymphoproliferative diseases. Accumlated evidences strongly support EBV as the cause of infectious mononucleosis (I M) (Henle et al 1968). Necessary although not conclusive evidences support EBV as the cause of African type of Burkitt's Lymphoma (BL) and nasopharyngeal carcinoma (N P C) (Epstein et al 1964)

Patients who developed infectious mononucleosis were found to lack antibodies to E B V prior to illness and to form high levels of these antibodies during illness often of rising titre and these antibodies persist after recovery from illness (Henle et al 1968, Evans et al 1968.) Subsequent epidemiological studies have indicated that people who have had IM do not have a higher probability of contracting cancer later in life.

The demonstration of higher antibody titres to E B V in B L patients compared with the titres in a control population and the correlation between antibody patterns and the prognosis of the tumour provided considerable

support for a causal relation between EBV and BL. - Additional factors other than EBV infection may be required for the development of the tumour. Malaria which is highly endemic in regions where BL is prevalent could be one such factor. Heavy infection with malaria is known to suppress the immune system and to enhance the proliferation of lymphocytes. Another important factor in the genesis of the lymphoma might be the age at which primary infection with EBV occurs. Early infection might transform immature Blymphocytes enabling them to persist in the body and eventually give rise to lymphoma cells (Henle et al 1979)

Also patients with NPC exhibit a high titre to EBV antibodies (Henle et al 1979.)

Over the past several years a number of serologic surveys have measured the frequency of EBV antibodies in different human populations. (Evans et al 1968, Henle and Henle 1970, and Niederman et al 1970.) However little is known about the EBV antibodies among normal Egyptians.

The aim of the present work is to get information about EBV antibodies (heterophile and specific) among normal Egyptian individuals and correlate this with the age of individuals examined and with the results obtained in other parts of the world.

A B S T R A C T

ABSTRACT

Examination of 100 sera obtained from apparentely normal individuals aged from cord blood samples (zero) to 20 years by the Enzyme linked Immunosorbent Assay (ELISA) revealed that 60% of cord blood samples contain Epstein-Barr virus specific antibodies which are transmitted to them through the placenta and that 50% of the young infants (above zero to less than 5 years.) are also positive indicating that infection occurs earlier in developing countries - The incidence of positive results increases more and more with age to reach 80% at the (13 - 20y) age group.

Examination of these sera for agglutinins against sheep red cells showed that normal heterophile antibodies appear earlier, and the titre in the Egyptians is relatively low, the highest titre was 1:20 and no agglutinins were detected in 38% of cases.

Absorption of these normal sera with guinea pig kidney emulsion showed that no agglutinins were detected in sera of cord blood samples (The Paul - Bunnell Davidsohn antibodies are IgM which do not cross the

placenta). Yet agglutinins appeared in young infants and children (above zero to less than 5 years) indicating that EBV infection in Egypt occurs at an earlier age.

EBV specific antibodies positive cases that are negative in Paul-Bunnell Davidsohn test indicate past infection and represent 51% of sera examined. While EBV specific antibodies positive cases that are positive in Paul-Bunnell Davidsohn test indicate recent infection and represent 10% of sera examined.

INTRODUCTION AND REVIEW OF LITERATURE

GENERAL FEATURES OF INFECTIOUS MONONUCLEOSIS

Glandular fever is a peculiar disease which affects only human beings. This clinical syndrome was first described by Emil Pfeiffer in 1889 in Germany. However it seems probable that this condition or one remarkably like it had already been described by Filatow in 1885 in Russia. Turk (1907) noticed a peculiar lymphoid picture in the disease. Sprunt and Evans (1920) suggested the alternative name of infectious mononucleasis (IM).

The disease is an ill defined clinical syndrome but in most cases it presents as an acute infectious disease characterised by fever, enlargment of the lymph nodes especially in the posterior cervical region, splenomegaly, acute abdominal symptoms, slight jaundice and a rash usually of the rubella type is sometimes observed. A distinctive palatal enanthem develops usually between the fifth and seventh days of the illness (Paul 1939 - Caird and Holt 1958.) and usually at the junction of

the soft and hard palate and tends to be near the mid line. Hepatitis is regarded by Dunnet (1963) as an almost constant feature.

These symptoms and signs do not appear with equal frequency in all the suspected cases, some of them may predominate in some cases and may be absent in others.

The duration of the disease varies but it is usually 2-3 weeks - relapses are not uncommon. Severe complications may occur but fatal cases are rare (Bernstein 1940, Niederman 1958, Evans 1960, Hoaglond 1960, 1967 and Chessin et al 1968.)

The haematological changes are very impressive in IM. and the most important of which are :-

1. Absolute lymphocytosis : the number of circulating lymphocytes will almost always be 4500 - 5000 per cubic m.m. or greater (Hoagland 1967.)
2. Relative lymphocytosis : in the range of 70-90% occurs during the first two weeks of the illness and return to normal during the third or fourth week.