Original Research Paper

Volume-9 | Issue-3 | March-2019 | PRINT ISSN - 2249-555X

Microbiology

SEROPREVALENCE OF EPSTEIN BARR VIRUS IN PATIENTS WITH SYSTEMIC LUPUS ERYTHEMATOSUS

Dr.S.Meenakshi	MD Microbiology, Associate Professor of Microbiology, Institute of Rheumatology, Madras Medical College, Tamilnadu 600003,
Dr.D.Therese Mary*	MD Microbiology, Associate Professor of Microbiology, Department of Microbiology, Govt. Dharmapuri Medical College, Tamilnadu.*Corresponding Author
Dr.Ananthakrishnan P	Dr.Ananthakrishnan Parthasarathy, Assistant Professor of Microbiology, Institute of Rheumatology, Madras Medical College, Tamilnadu 600003,

ABSTRACT Aim and Objectives:To determine the Seroprevalence of Epstein Barr virus in patients with Systemic Lupus Erythematosus and their association with development of reactivation of Systemic Lupus Erythematosus. Study Center: Institute of Rheumatology, Madras Medical College and Rajiv Gandhi Government General Hospital, Chennai Study period: July 2018 to September 2018. Study design: Prospective Analytical Study. Inclusion criteria: Adult patients attending Rheumatology department and diagnosed with Systemic Lupus Erythematosus. Exclusion criteria: SLE patients with complication like sever renal, cardiac and respiratory system involvement and those not willing to participate in the study. Conclusion: This study suggests that EBV VCA IgA may be more useful compared to EBV VCA IgG in patients with SLE since almost all the adult SLE patients are infected with EBV.

KEYWORDS : SLE, EBV, VCA IgA , IgG

INTRODUCTION:

Various genetic and environmental factors appear to be involved in systemic lupus erythematosus (SLE). Epstein-Barr virus (EBV) is among the environmental factors that are suspected of predisposing to SLE. Epstein Barr virus is a herpes virus that because of its ubiquitous nature infects majority of adults (95%). It is transmitted via saliva and replicated initially at mucosal surfaces in oropharyngeal and nasopharyngeal epithelial cells, especially in tonsillar area. The virus enters the underlying tissues and infects resting B cells via binding of its viral envelope glycoprotein 350 (gp350) to the B-cell type 2 complement receptor (CD 21). The virus after initial infection of epithelial cells and B cells, persists by life-long latent infection in B cells with occasional re-activation and productive cycles of viral replication.

Prevalence of IgG antibodies to EBV viral capsid antigen (VCA) in an individual can persist for decades & reflect past exposure to EBV. EBV IgA antibodies indicate re-activation or re-infection with EBV especially in the presence of elevated antibody titres. EBV IgA sero-prevalence in addition to IgG overcomes the limitation of high overall EBV IgG seroprevalence.

Essentially all adult SLE patients are infected with EBV (99.5%). The statistical significance of this finding is reduced by large proportion of health adults infected as well (95%). In one study IgA antibody against EBV-VCA was the only marker with significantly higher prevalence in adults with SLE compared to healthy adults (36.1% vs 5.6%) and also confirmed that the prevalence of IgA antibody against EBV-VCA was indeed higher in adults with SLE (38.9% vs 2.8%).

The association of Epstein Barr virus in Systemic Lupus Erythematosus is based on the facts: 1, Loss of Epstein Barr virus latency may be related to chronic immune stimulation. 2, Infection with Epstein Barr virus may promote production of antibodies that cross-react with self-antigens.

Hence detecting both EBV IgA and IgG antibodies in patients with reactivation Systemic Lupus Erythematosus helps in determining the Seroprevalence of Epstein Barr virus among patients with reactivation Systemic Lupus Erythematosus in a tertiary care hospital.
Implication of the study:

Seroprevalence of Epstein Barr virus in patients with Systemic Lupus Erythematosus and their association with development of reactivation of Systemic Lupus Erythematosus will be evaluated.

Aim and Objectives:
To determine the Seroprevalence of Epstein Barr virus in patients with Systemic Lupus Erythematosus and their association with development of reactivation of Systemic Lupus Erythematosus.

Study Center:
Institute of Rheumatology,
Madras Medical College and Rajiv Gandhi Government General Hospital, Chennai
Study period:
July 2018 to September 2018

Study design:
Prospective Analytical Study

Inclusion criteria:
Adult patients attending Rheumatology department and diagnosed with Systemic Lupus Erythematosus, according to American College of Rheumatology (ACR) criteria, and willing to participate in the study.

Exclusion criteria:
SLE patients with complication like sever renal, cardiac and respiratory system involvement and those not willing to participate in the study.

Material and Methods:
This is study was conducted in proven Systemic Lupus Erythematosus patients attending Rajiv Gandhi Government General Hospital including both inpatients and patients receiving out patients attending Rheumatology clinic. Informed consent will be obtained from each patient. Study included 45 cases and 45 controls as subjects.

Peripheral blood sample was collected from all patients selected for the study and serum was separated within 4 hours after collection and stored at -80◦C before being tested. Haemolytic samples were rejected. Enzyme linked immunosorbent assay was done using Eroimmun kits to detect EBV VCA IgG and IgA antibodies.

EBV VCA IgG ELISA – After diluting the serum 1:101 in sample buffer the test was done according to the kit instructions using a positive control as well as negative control for internal quality assessment and the results were interpreted quantitatively in relative units (RU) /ml since this is a quantitative test using three calibrators (200RU/ml. 20RU/ml, 2RU/ml respectively). The cut-off was taken as 20RU/ml.

EBV VCA IgA ELISA – is a semi-quantitative assay using a calibrator for calculation and a positive control as well as a negative control for internal quality assessment. The final results were evaluated semi

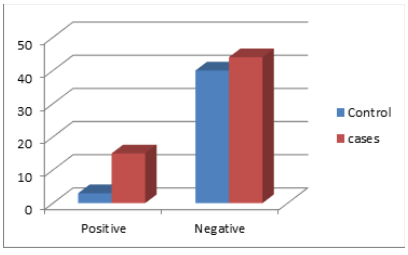
quantitatively by calculating the ratio of the OD value of the sample to the OD value of the calibrator expressed as relative OD (rOD).

Results and Analysis:

Results of the study were documented and analysed using Correlation study to determine the relationship between SLE and EBV in those with latent EBV infection.

Of the 45 controls- 40 tested positive for EBV IgG and only 3 were positive for EBV IgA. Of the 45 patients – 44 tested positive for EBV IgG and 15 were positive for EBV IgA.

	Positive	Negative
Control	3	40
cases	15	44



Conclusion:

This study suggests that EBV VCA IgA may be more useful compared to EBV VCA IgG in patients with SLE since almost all the adult SLE patients are infected with EBV. However, the statistical significance of this finding is reduced by the large proportion of healthy adults infected as well. Hence, a more specific marker for EBV in SLE patients would be EBV VCA IgA. But this may be considered a pilot study and still needs a bigger sample size for confirmation and to ensure significant statistical association. Further studies have to be done in our Institute to correlate the association of EBV VCA IgA with disease flares as has been suggested in some studies so as to conclude whether prevention of treatment of SLE patients with significant IgA levels may prevent disease flares.

REFERENCES:

1. High prevalence of IgA antibody against EBV VCA in adult patients with lupus with disease flare- Journal of Rheumatology, Jan 2005, 32 (1) 44-47.Chung-Jen Chen, Kuei-Hsiang Lin, Shih-Chang Lin.
2. Epstein-Barr Virus and Systemic Lupus Erythematosus, Review Article- Clinical and Developmental Immunology, Volume 2012, Anette Holck, Draborg, Karen Duus and Gunnar Houen.
3. Lupus and The Role of Epstein-Barr Virus- April 2005, Arthritis and Rheumatism, National Institute of Environmental and Health Sciences
4. Systemic Lupus erythematosus in adults is associated with previous Epstein-Barr virus exposure, Judith A. James, Barbara R. Neas, Kathy L. Moser, Teresa Hall, Arthritis and Rheumatism/ Volume 44, issue 5
5. Strong Viral associations with SLE among Filipinos-Lupus Science & Medicine, 2017;4, Vista ES, Weisman MH, Ishimori ML, et al.
6. Association of clinical & serological parameters of SLE in patients with EBV antibody profile, Journal of Medical Virology, 2018 March; 90(3):559-563, Chougule D, Nadkar M, Rajadyaksha A Conflict of Interest: Nil