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Research Article

### THE PREVALENCE OF SYSTEMIC LUPUS ERYTHEMATOSUS (SLE) IN PATIENTS OF HEPATITIS B AND C VIRUS ATTENDING SERVICES HOSPITAL

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**Abstract:**

**Objective:** The aim of our study was to find out prevalence of systemic lupus erythematosus (SLE) in patients of hepatitis B and C virus.

**Study design:** A cross sectional study.

**Place and Duration:** This study was conducted at Services Hospital Lahore for the duration of eight months starting from January, 2020 to September, 2020.

**Methodology:** In the present study we include 39 diagnostic patients of systemic lupus erythematosus (SLE) of both genders. In these patients only those were included having documented diagnosis of SLE for at least 1 year or more with or without treatment. After this these cases were examined for their clinical and demographic characteristics and their blood samples were taken. We took 5ml of blood to test HBsAg for overall screening of antibodies of Hepatitis B and C. All the collected data was analyzed at SPSS software version 20.

**Results:** According to the study we analyze 39 patients having systemic lupus erythematosus (SLE). The average duration of systemic lupus erythematosus (SLE) patients was  $5.13 \pm 1.36$  years and the average age of the systemic lupus erythematosus (SLE) patients was  $27.13 \pm 7.29$ . According to gender distribution the number of females were 87.18% (34) patients and the number of males were 12.82% (5) patients. 2.56% (1) case out of 39 cases had a history with pre-HBV infection and 7.69% (3) cases out of 39 had hepatitis C virus infection. HBsAg was overall screened for HCV antibodies and were found in 20.51% (8) patients and 7.69% (3) patients.

**Conclusion:** At the end of our study, we concluded that SLE may play a role of protection against hepatitis B virus but not for hepatitis C virus infection. Moreover, experimental and epidemiological studies are essential to find out the role and mechanisms by which SLE affects hepatitis B and hepatitis C virus infections.

**Key words:** Hepatitis B Virus (HBV), Hepatitis C Virus (HCV), Systemic Lupus Erythematosus (SLE)

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**INTRODUCTION:**

Systemic lupus erythematosus (SLE) is one of the highest prevalent autoimmune disease and it has the tendency of multi organ involvement. Systemic lupus erythematosus is the most common type of lupus. SLE is an autoimmune disease in which the immune system attacks its own tissues, causing widespread inflammation and tissue damage in the affected organs. It can affect the joints, skin, brain, lungs, kidneys, and blood vessels. Systemic lupus erythematosus is a systemic autoimmune disease with a worldwide distribution. Although both men and women of all age groups can be affected, women outnumber men almost 10-fold and the typical lupus patient is a young woman during her reproductive years.

Clinically, lupus is a disease with an unpredictable course involving flares and remissions, where cumulative damage over time significantly interferes with the quality of life and adversely affects organ function. Multiple cells, tissues, and organs can be affected in this disease, and the clinical picture can vary greatly between patients. Indeed, even in the same patient the clinical picture may not be consistent over time. Organ systems most commonly involved in lupus patients include joints, skin and mucous membranes, blood cells, brain, and kidney. It is more prevalent in America, Asia and Africa as compared to the Caucasians and is higher in females as compared to males with a ratio of 10:1 and in the younger age groups. Its prevalence is highly variable across the globe. Its detection at earlier or later stage and lack of diagnostic facilities and knowledge can be one factor for low prevalence in few areas as compared to developed ones [1,2]. SLE is an immunocompromised and autoimmune state that can virtually involve and damage any part of the body ranging from skin to lung and heart and brain etc. Liver is usually devoid of these complications and in nearly 25 to 50% of the cases during the course of disease, are affected liver enzymes [3,4].

Amongst the infections, hepatitis B and C are the most prevalent and former is considered as the most common globally [5] though the number of hepatitis C is rising after the start of vaccination programs against HBV and the lack of vaccination against C virus. The highest prevalence is in South East Asia which covers around 75% of the cases. There is an ongoing debate with different degree of association regarding the viral infections and either development or propagation of the disease activity in autoimmune disorders. Epstein Bar Virus (EBV) and cytomegalovirus (CMV) is the most studied viral infection in this context [6,7]. However, the

association and prevalence of HCV infection in SLE is always controversial with high degree of variance in previous data. The local data was lacking and majority of the studies were done in the West and that's why this study was planned.

Although the prognosis of lupus patients has dramatically improved with the widespread introduction of potent immunosuppressive therapies and better medical management of acute disease exacerbations, a diagnosis of SLE remains associated with an appreciably shortened lifespan. Moreover, the mortality rates are still significant among patients with active disease. With more lupus patients living with chronic, intermittently active disease, it has become evident that there is significantly accelerated atherosclerotic cardiovascular disease that is insufficiently explained by traditional risk factors. A second major cause of mortality in SLE is infection. Lupus patients have an inherent susceptibility to infections due to their disease. In addition, the major side effect of the large majority of medications currently used for treatment of lupus is immunosuppression, which confers a greatly increased risk for infections with typical and atypical organ-isms.

**METHODOLOGY:**

This cross-sectional study was conducted at Services Hospital, Lahore for the duration of eight months starting from January, 2020 to September, 2020. The documented cases of SLE of either gender and age were included. The cases were included that had a documented diagnosis of SLE either on clinical criteria or Anti dsDNA positive for at least 1 year or more with or without treatment.

Then these cases were assessed regarding their clinical and demographic features and their blood samples were drawn. 5 ml of blood was taken and sent to the laboratory of the same institute where they were checked for HBs Ag to label for Hepatitis B virus and HCV antibodies to label HCV infection. All these results were then collected and recorded. SPSS version-23.0 was used for statistical analysis. Mean and SD were calculated for numerical data and frequency and percentages were calculated for nominal data.

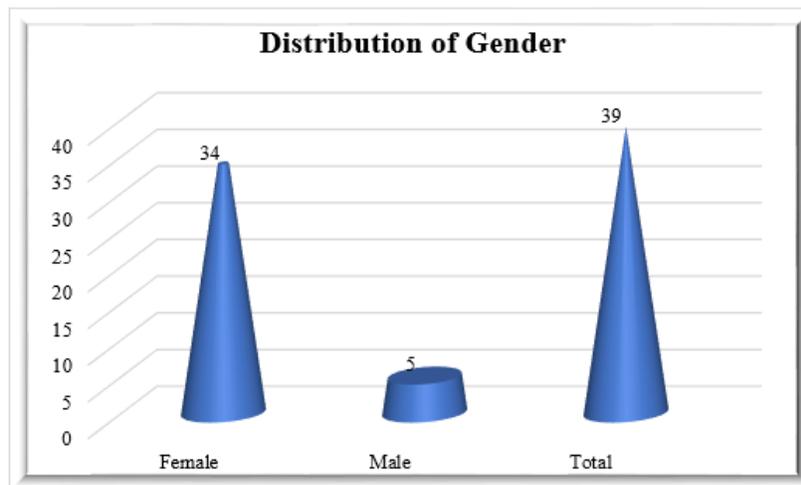
**RESULTS:**

According to the study we analyze 39 patients having systemic lupus erythematosus (SLE). The average duration of systemic lupus erythematosus (SLE) patients was  $5.13 \pm 1.36$  years and the average age of the systemic lupus erythematosus (SLE) patients was  $27.13 \pm 7.29$ . According to gender distribution the

number of females were 87.18% (34) patients and the number of males were 12.82% (5) patients.

**Table No 01: Distribution of Gender**

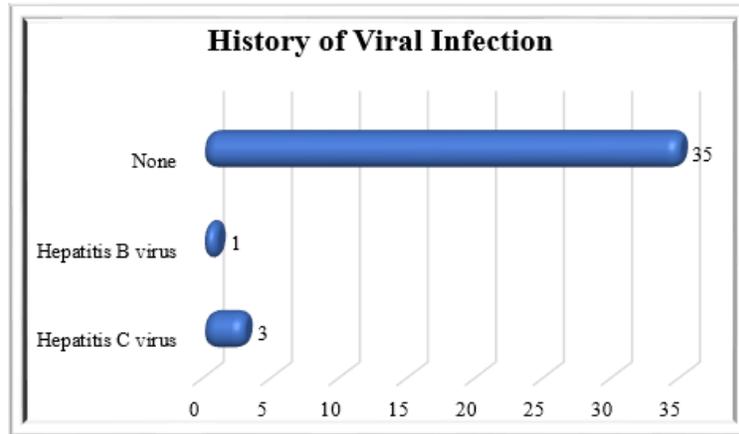
Gender	Qty	%age
Female	34	87.18%
Male	5	12.82%
Total	39	100%



2.56% (1) case out of 39 cases had a history with pre-HBV infection and 7.69% (3) cases out of 39 had hepatitis C virus infection.

**Table No 02: History of Viral Infection before SLE Diagnosis**

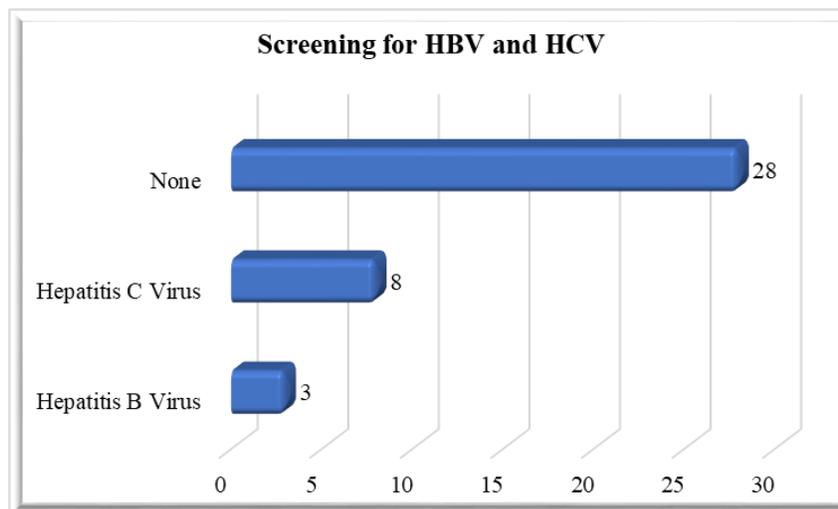
Variables	Qty	%age
Hepatitis C virus	3	7.69%
Hepatitis B virus	1	2.56%
None	35	89.75%
Total	39	100%



was overall screened for HCV antibodies and were found in 20.51% (8) patients and 7.69% (3) patients.

**Table No 03: Screening for HBV and HCV**

Variables	Quantity	Percentage
<b>Hepatitis B Virus</b>	03	7.69%
<b>Hepatitis C Virus</b>	08	20.51%
<b>None</b>	28	71.79%
<b>Total</b>	39	100%



### DISCUSSION:

Autoimmune disorders are of great concern as they are multisystem disease and pose great social, psychological, medical as well as financial burden on the cases in terms of multisystem involvement. Along with this, the rising trends of viral infections are another dilemma that is not only a burning issue in the immune competent cases, but also for these SLE cases as they further deteriorate the overall condition of the subjects and the treatment augmented suppresses the immune systems [8,9]. In the present study on

screening overall HBsAg was seen in 3 (7.69%) of the cases. The data regarding the prevalence of seroprevalence of hepatitis B and C in auto immune disorders like SLE remained highly variable and number of studies conducted in the past had controversial role, especially in building the causality relationship of hepatitis and the development or flare up of the autoimmune disorders [10,11]. In a study done by Watanabe et al also found a relatively lower number of cases having HBV in SLE cases and they proposed a relatively protective mechanism of HBV in

development of SLE and the seroprevalence in their study was less than 1% of the cases [12]. In other studies, done by Kivity S et al and Liu X et al also supported the abovementioned finding that HBV has a protective role in SLE flares [13,14].

In a meta-analysis the adjusted OR of HBsAg in cases of SLE was 0.21 again indicating its lower risk [15]. In the present study anti HCV antibodies were seen in 08 (20.51%) of the cases. These results were similar to the results of the previous studies done in the past where they have almost similarly shown that HCV infection is a high burden entity in cases of SLE as compared to HBV. In a met analysis as compared to control group, there was significant number of cases having concomitant SLE and HCV infection ( $p = < 0.05$ ) [16]. This variability of these viruses (Hep B and C) can be as they belong to the different families and have different mode of involvement of these cases. In other studies, done by Rehermann B et al and Costa CA et al also revealed a higher prevalence of HCV infection and in the former study this difference was statistically high for HCV with  $p$  value  $< 0.05$  [17].

### CONCLUSION:

At the end of our study, we concluded that SLE may play a role of protection against hepatitis B virus but not for hepatitis C virus infection. Moreover, experimental and epidemiological studies are essential to find out the role and mechanisms by which SLE affects hepatitis B and hepatitis C virus infections.

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