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# CONSEQUENCES OF THE PROLIFERATION OF LUPUS NEPHRITIS

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**Abstract:**
***Background:*** *Systemic lupus erythematosus (SLE) is a chronic, auto immune disorder and multisystem. This disease is non-predictable and its nature is episodic. Its severe complication includes Kidney inflation.*
***Material and Methods:*** *For the research purpose 43 cases were short listed with an incidence of III/IV lupus nephritis. These patients visited OPDs and clinics from January, 2016 to October, 2017 with an additional 6-month follow-up. Nine of them were treated with mycophenolate and remaining thirty-four were treated with cyclophosphamide. At the end of six months' proteinuria and glomerular estimation of filtration rate was administrated in the patients. Response was also calculated in the patients.*
***Results:*** *Complete or partial response was observed in the 44 percent of the cases in the six months' duration whereas 64 percent of the cases were noted for their response at one year. Factors linked with the response of six months include old age at the time of diagnosis, hypertension, activity, time frame of indications before therapy and chronicity indices. Hypertension and chronic index are indicators of logistic regression response at the time of six months. Our research paper the cases of proliferative lupus represent lower rate if proteinuria, eGFR and elevated scores of chronicity when compared to African-American and Caucasian cases. Associated factors with response at six months include old age at the time of diagnosis, hypertension, activity, time frame of indications before therapy and chronicity indices. In Caucasian case similar short-term results were observed.*
**Keywords:** *Systemic Lupus Erythematosus, Chronic, Immune Disorder, Kidney Inflation.*

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## INTRODUCTION:

Systemic lupus erythematosus (SLE) is a chronic, auto immune disorder and multisystem. This disease is non-predictable and its nature is episodic. Its severe complication includes Kidney inflation. Morbidity and mortality is associated with the reason of kidney disorder. It also presents and affects directly and indirectly and causes complexities in the patients [1]. Incidence and prevalence of SLE is totally dependent on the selected patients for the definition of the SLE and its diagnostics. Female were in dominance in the research study. As the ratio of female to male was ten to one. Males suffering due to SLE had the renal disease same as in the females.

Clinical features can diagnose SLE. The criteria od diagnosis was forwarded by American Rheumatism Association (1997). According to the criteria if four are observed than the lupus diagnosis specify and sensitivity would be 96 percent. Lupus histopathology was observed naturally pleomorphic [2]. Classification of ISN and RPS 2003 has been approved by pathologists, rheumatologists and nephrologists. Its reproducibility is also established. WHO has also given even standard definition of its pathological and clinical relations. Few of the investigations have also proved it helpful in the case of chronicity biopsies also called (irreversible lesions) and activity attributes (potential reversible lesions). Renal involvement is considered as serious complication of SLE. Poor outcomes have been observed in class III & IV proliferative lupus nephritis. Focal proliferative affected cases were observed extremely varied course. The cases having mild propagation with small percentages of glomeruli fine reaction to therapy, and over five-years, < 5 percent renal failure progression [3]. Patients observed with the features of necrotizing, more crescent and proliferation formation had a prognosis same as the cases having patients with class-IV diffuse proliferative diseases. Chances are there that class-III cases will be moving into class-IV over some time period. The patients diagnosed with disease of diffuse proliferative are observed with minimum positive prognosis in older series. However, improvement is obvious in this group prognosis, as in some of the patient's series administrated with latest agents of immunosuppressive nature, more than ninety percent renal cases survived. This rate of survival has improvised by the initiation of the cyclophosphamide induction therapy, with five-year rate of survival survival in class IV at the rate of (LN) 82 percent [4]. Chronic changes were due to the factor of delayed diagnosis and in time therapy. These chronic changes were hard to manage. High risk was associated to those patients which had reduction failure and also posed severe flares risk in addition to rough renal survival. Patients achieving remission had the survival chances as 95 percent and who did not have were having survival chances of 60 percent. Research study was held at Sheikh Zayed Hospital Rahim Yar Khan for the determination of epidemiological profile, short term outcomes and clinical features in patients suffering from lupus nephritis [5].

## MATERIAL AND METHODS:

A total of forty-three cases were short listed for the research all those belonged to class III/IV lupus nephritis. All of them visited and attended the said hospital in the period of Jan, 2016 to Oct, 2017 and continued their follow-up for next 6 months. Every age group was included in the research. However, all the patients having ESRD were not selected in the research and all those unable to be treated for six months because of death or any infection were also removed from the research. Clinical investigations such as urinalysis, complete blood count, blood urea, serum creatinine & a twenty-four hours' urine protein excretion tests of all the cases were completed. Other investigations such as anti-ds DNA, complements level and antinuclear antibody were also performed on every participant. Selected cases were exposed to percutaneous renal biopsies. Slides were viewed by pathologists and immune-staining method was also completed. Renal biopsies categorization was also completed as per the criteria of WHO / RPS / ISN classification, activity indices and chronicity were also observed.

Adequacy of biopsy specimen was observed as it contained at least ten glomeruli. Percutaneous renal biopsies were indicated by urinary abnormalities and renal function impairment and provided the guidelines for the further treatment. Active LN presence was observed through RBC / WBC / granular casts present in urine or RBC > 5 / hpf, proteinuria > 0.5 gm/day and biopsy proved renal disease. Patients were administrated with an induction therapy by 1000 mg daily intravenous pulse methyl-prednisolone for continuous three days.

34 cases were administrated intravenous pulse cyclophosphamide once in a month, 500 - 750 mg / $m^2$ area of the body surface. Dose was according to the adjustment of the Nadir Leukocyte Counts (NLC), kept > 3000 / $mm^3$ after $10^{th}$ day of treatment. For renal function dose was readjusted and reduced 25 percent for (eGFR < 15 ml per minute). An oral prednisone

was given to all the participants for the time of 6 weeks at 0.5 - 1 mg per kg per day.

According to the clinical development, it slowly tapered by 10 mg per week and dose was maintained 5 - 7.5 mg per day. Nine participants were given induction of mycophenolate mofetil everyday with 4 – 6 tablets (500 mg) with prednisone. Every patient was managed with hydroxyl–chloroquine or angiotensin-II receptor antagonists & an angiotensin-converting enzyme (ACE) inhibitors. Amplified oral prednisone or additional IV methylprednisolone pulses were utilized for the treatment of renal flares. Mesna was treated with cyclophosphamide. Primary measure was a complete Response (CR). According to the consensus statement of EULAR, a sedentary urinary sediment, a decline in proteinuria to ≤ 0.2 gram / day and normal or stable renal function. Whereas, partial response was a sedentary urinary sediment, proteinuria of ≤ 0.5 gram / day, and normal or stable (if previously abnormal) GFR.

Renal relapses presence was considered in the case of these occurrences: (1) active sediment reappearance, (2) upsurge in proteinuria by 0.5 gram / day to > 1 gram / day in patient before in CR or PR, (3) a decline in the estimated GFR value by 30 ml / minute. Few patients showed ongoing activity of disease, as proteinuria was observed as (> 0.5 gram & < 3 gram / day), which was not meeting the suitability of any definitions of failure or remission. Request was made to patients to visit OPD for the 1st six months for follow-up at the interval of two weeks. After that monthly visits for the next three months were planned and requested to the patients. At every visit by the participants SLEDAI scores, any existence of adversative events and blood pressure were documented. Clinical tests such as C-3, anti-dsDNA at baseline and 24 hours' protein excretion were carried out at the interval of 6-months. Blood sugar fasting, urea, creatinine and complete blood count tests were taken for the first six-month period.

According to CKD-EPI equation (which uses 3 variables), eGFR was calculated for those patients who were at the age of sixteen or more than sixteen years. Schwartz equation was also used. Secondary end points carried complete or partial responses, six-months & one-year proteinuria, eGFRs, adverse effects, renal relapses, ESRD progression, failures of treatment or even death. SPSS-20 was used for the data entry and analysis. Statistics were presented descriptively for the value of SD and mean. Frequencies and percentages were also statistically represented. For the detection of any difference ANOVA one-way was carried out in laboratory clinical and continuous variables in the participants including complete, no or partial responses were observed for 6-months. For difference detection Chi-square test was carried out. Pearson's (bivariate) Correlation test was carried out for the finding of relation of proteinuria, response and eGFR at 6-months interval baseline and laboratory variables. P-value and Correlation coefficient (R) were also calculated. R was observed in the range of 0 & 1 which clearly indicated the strength of correlation. In the presence of strongest correlation, it can be presented with the help of highest value of R. For the outcome prediction step by step an analysis of multiple logistic regression was carried out at 6-months regarding proteinuria and eGFR. For the determination of partial predictors, no remission and complete analysis of regression was performed. Odd ratios were also determined by the tests with the help of beta, P-values and R. A significant p-value < 0.05 was considered.

## RESULTS:

In this research a total of 43 cases were enrolled. Their clinical and baselines studies are shown in Table-I. 25±9.7 years was selected as age group. Dominance of females was observed. Females were 89.5% (39) and males were 10.5% (4), during diagnosis process mean age factor was (22±10 years). 29 cases were reported arthritis 67.4 percent, 27 presented the fever 62.8 percent, 21 were reported for oral ulcers 48.8 percent, 27 for rash 62.8 percent, 24 for hypertension 55.8 percent, 9 for serositis 20.9 percent, 17 for photosensitivity 39.5 percent, 20 hair loss cases 46.5 percent & manifestation of CNS in 5 cases 11.6 percent. Mean time period of signs before therapy was observed as (11.9±14.1 months).

**Table 1: Baseline Clinical Characteristic Of 43 Patients**

| Characteristics | No. (%) |
|---|---|
| Age (years) | 25±9.7 |
| Gender (M/F) | 4 (10.5%)/39 (89.5%) |
| Age at diagnosis (years) | 22±10 |
| Arthritis | 29 (67.4%) |
| Rash (malar or peripheral) | 27 (62.8%) |
| Fever at presentation | 27 (62.8%) |
| Hypertension at onset | 24 (55.8%) |
| Oral ulcers | 21 (48.8%) |
| Hair loss | 20 (46.5%) |
| Photosensitivity | 17 (39.5%) |
| Serositis (Pleuritis of pericarditis) | 9 (20.9%) |
| CNS manifestations | 5 (11.6%) |
| Duration of symptom prior to therapy (months) | 11.9±1 4. 1 |

Table-II reflects laboratory outcomes in the group study as 4 cases 9.3 percent of thrombocytopenia (their platelets count <150 x 103 / $mm^3$, 33 cases 76.7 percent with positive anti dsDNA as > 15 I U / ml, 2 cases 4.7 percent with leucopenia as WBCs count <4000 cells / $mm^3$ & 18 cases 41.9 percent with nephrotic range of proteinuria. We can say otherwise, mean values and scores of hemoglobin value as 9.27±2.3 mg / dl, serum creatinine value as 1.62±1.38 mg / dl, SLEDAI score as 17.8±4.5, serum albumin as 3.09±0.77 g / dl, mean activity index as 7.3±3.7, urine protein excretion as 2.60±1.66 g / 24 hours, mean eGFR as 67.1±38.7 ml / min / 1.73 and chronicity index as 1.2±1.9.

Class-IV biopsy was present in 35 cases as 81.4 percent, biopsy class-III was in 5 cases as 11.6 percent, and biopsy class-IV and V was in 3 cases as 7 percent. 14 cases as 32.6 percent were found with eGFR during presentation as more than 90 ml / minute, eGFR as 30 - 60 ml / minute in 5 cases as 11.6 percent, eGFR as 60 - 90 ml / minute in 9 cases as 20.9 percent and eGFR less than 15 ml / minute was in 4 cases as 9.3 percent.

In the time of 6-months, 10 out of 43 as 23.3 percent cases were showing complete response, 9 out of 43 as 20.9 percent cases were found for partial response and 6 out of 43 as 13.9 percent cases were failure in the course of treatment. Rest of the 41.9 percent cases were having continued activity of disease, but still not attained end point. Within 6-months of onset of induction time span, 3 cases went into ESRD. It was also found that average time to attain partial remission was observed as 3.9±2.2 months and for the attainment of complete remission period was observed as 4.5±1.9 months.

**Table 2: Baseline Laboratory Values in Patients (No. of patients =43)**

| Characteristics | Values |
|---|---|
| Leucopenia | 2 (4.7%) |
| Thrombocytopenia | 4 (9.3%) |
| Anti dsDNA positive (>15 IU/ml) | 33 (76.7%) |
| Nephrotic range proteinuria | 18 (41.9%) |
| SLEDAI score | 17.8±4.5 |
| Hemoglobin (g/dl) | 9.27 ± 2.3 |
| Serum Albumin (g/dl) | 3.09±0.77 |
| C3 (mg/dl)* | 76.8 ±34.2 |
| Urine protein excretion (g/24 h) | 2.60±1.66 |

| | | |
|---|---|---|
| Serum creatinine (mg/dl) | | 1.62±1.38 |
| eGFR (ml/min) | | 67.1 ± 38.7 |
| Activity index | | 7.3±3.7 |
| Chronicity index | | 1.2±1.9 |
| Biopsy class III | | 5 (11.6%) |
| Biopsy class IV | | 35 (81.4%) |
| Biopsy class IV+V | | 3 (7.0%) |
| eGFR at presentation | >90 ml/min | 14 (32.6%) |
| | 60-90 ml/min | 9 (20.9%) |
| | 30-60 ml/min | 11 (26%) |
| | 15-30 ml/min | 5 (11.6%) |
| | <15 ml/min | 4 (9.3%) |

*Normal C-3 level between 90-180 mg/dl

For the comparison of mean values for different cases along with response to treatment, categories such as complete, partial and no response, variance analysis ANOVA tests were also carried out. With the help of test, no significant differences in mean proteinuria, age, eGFR, hemoglobin & activity index among the cases of partial or complete response (from all the comparison P-value > 0.05) and presenting no response. Cases having complete response were observed for 0.25±0.64, considerable low chronicity Index was compared to no or partial response respectively 1.62±2.11 & 1.0±1.71, P-value = 0.017. Symptoms timeframe before therapy was significantly low in the cases reflecting complete response as 6.7±10 than those having no response as 16.5±15.7 and those having a partial response as 15.5 ± 11, and P-value = 0.029 as reflected in Table-III.

**Table 3: Results of ANOVA Test Between Important Baseline Clinical and Laboratory Variables Distributed by Response Categories**

| Variable | No Response | Partial Response | Complete Response | P-Value |
|---|---|---|---|---|
| Age (years) | 26.2±11.0 | 25.6±8.4 | 21.7±9.8 | 0.215 |
| Hb (g/dl) | 9.7±2.1 | 8.2±2.5 | 9.2±2.2 | 0.053 |
| Proteinuria (g/24 hr) | 2.78±1.78 | 2.83 ± 1.34 | 1.96±1.49 | 0.142 |
| eGFR (ml/min) | 63±38 | 64±39 | 81 ±41 | 0.208 |
| Activity index | 7.9±3.5 | 7. 1±4.9 | 6.0±2.6 | 0.145 |
| Chronicity Index | 1.62±2.11 | 1.0±1.71 | 0.25±0.64 | **0.01 7*** |
| Duration of symptoms prior to the therapy (months) | 16.5±15.7 | 15.5±11.0 | 6.7± 10.0 | **0.029*** |

For the assessment of correlation between baseline variables cases & outcome, Pearson's correlation test was utilized. Significant correlation between eGFR at six-months was present and baseline renal function, age at hypertension, diagnosis, proteinuria and glomeruli percentage in sample of biopsy, with activity, chronicity indices and crescents. At the interval of six-months, response correlation with diagnosis, age at activity, hypertension, duration of symptoms and chronicity indices. No mycophenolate correlation or cyclophosphamide related treatment in the presence of outcome variables.

**Table 4: Pearson's and Point Bi-Serial Correlation between Outcomes and Baseline Variables**

| Baseline Variables | R Values | R Values | R Values |
|---|---|---|---|
| | eGFR at months | Proteinuria | Response |
| Age at diagnosis | -0.563* | 0.121$^{NS}$ | -0.1 19$^{NS}$ |
| Hypertension | -0.270* | 0.250* | -0.274* |
| SLEDAI | -0.260* | 0.972$^{NS}$ | 0.998$^{NS}$ |
| Proteinuria | -0.278* | 0.362$^{NS}$ | -0.1 83$^{NS}$ |
| Nephrotic syndrome | -0.217* | 0.143$^{NS}$ | -0.207$^{NS}$ |
| eGFR (baseline) | 0.575* | -0.117$^{NS}$ | 0.1 76$^{NS}$ |
| Crescents among Glomeruli | -0.287* | -0.1 33$^{NS}$ | -0.1 33$^{NS}$ |
| Activity index | -0.46 7* | 0.11 6$^{NS}$ | -0.213* |
| Chronicity index | -0.571 * | 0.21 5* | -0.305* |
| Duration of symptoms | -0.109 $^{NS}$ | 0.170$^{NS}$ | -0.264***** |
| Therapy | 0.058 $^{NS}$ | -0.081 $^{NS}$ | 0.027$^{NS}$ |

**Multiple Logistic Regression Tests:**

For the estimation of correlations between outcome & baseline variable, multiple logistic regression, step by step model was carried out. This is for the detection of eGFR predictors at the interval of six-months as reflected in statistical test, eGFR at baseline predicted eGFR at the interval of six-months as R=0.56, odds ratio=6.05 and P-value=0.0011, chronicity index as R=0.65, odds ratio=4.95 & P-value = 0.002. Minimum predictor was age at the time of diagnosis as R=0.48, odds ratio=1.47 and P-value = 0.003 as shown in Table-IV. Despite the association between every activity index & result and also symptoms duration at bivariate (Pearson) statistical test for correlation, variables on multiple logistic regression tests reflected no significant association because they are not forecaster for expected outcomes as shown in Table-V.

**Table 5: Results of Multiple Logistic Regression Test (Stepwise) for Prediction of eGFR at 6 Month**

| | B | R | Odds Ratio | P |
|---|---|---|---|---|
| Age at diagnosis | **0.39** | **0.48** | **1.47** | **0.003** |
| Hypertension | 0.16 | 0.14 | 1.10 | 0.36 |
| SLEDAI | 0.28 | 0.27 | 1.32 | 0.29 |
| Proteinuria | -0.12 | 0.15 | 1.12 | 0.67 |
| Nephrotic syndrome | - 0.17 | 0.20 | 1.18 | 0.46 |
| eGFR (baseline) | **1.8** | **0.56** | **6.05** | **0.0011** |
| Percentage of crescents among glomeruli | -0.22 | 0.14 | 1.24 | 0.61 |
| Activity index | -0.27 | 0.22 | 1.31 | 0.87 |
| Chronicity index | **- 1.6** | **0.65** | **4.95** | **0.002** |
| Duration of symptoms | -0.42 | 0.25 | 1.52 | 0.17 |
| Therapy | 0.21 | 0.10 | 1.20 | 0.95 |

The absence of chronicity index, hypertension was respectively (R=0.30, odds ratio=1.39 and P-value = 0.043 & R=0.33, odds ratio=2.7 and P-value = 0.044 were observed as the predictors of complete and partial response at the interval of six-months as exposed by logistic regression analysis and reflected in Table-VI.

**Table 6: Results of Multiple Logistic Regression Test (Stepwise) for Prediction of any Response (Partial or Complete)**

| | B | R | Odds Ratio | P |
|---|---|---|---|---|
| Absence of Hypertension | **0.994** | **0.33** | **2.70** | **0.044** |
| Chronicity index | **-0.330** | **0.30** | **1.39** | **0.043** |

No renal flares were notices in the interval of first six-months' time. Out of twenty-one only two cases were reported for renal flares as 9.5 percent during the 1st year as they were beyond six-months. Both the cases were characterized by an increased proteinuria without any no active sediment. In one of them the time was seven and in second time was observed as nine months. Patients went into remission at the end of 1st year. One out of thirteen cases as 7.7 percent had flares during second year, because of the proteinuria presence respectively 13 & 16 months.

## DISCUSSIONS:

A substantial improvement was observed in the patients of lupus nephritis and survival was vivid and they were referred to the nephrologists. They also reflected an improved awareness, newer induction regimens effectiveness and overall medical care enhancement [6]. Numerous research studies have compared the results of LN and they have been cofounded through histology variations (class-III, IV & V lesions), various remission criteria, treatment regimens, flare and relapse [7]. According to the criteria set by American College of Rheumatology (ACR) about remission is a composite consisting of urinary protein to creatinine ratio as ≤ 0.2 mg / mg, eGFR > 90 ml / minute & inactive urinary sediment. Achievement of complete remission is difficult, especially in the cases having higher indices of chronicity [8]. Stable or normal eGFR is taken as acceptable for partial and complete response, as per EULAR response criteria. National Institute of Health (NIH) defined it as patients having refractory disease and show no response to treatment of the disease, who have determined decline in level of serum creatinine or active urinary casts, and level of proteinuria doesn't lower to less than half of pre-treatment value as < 3 g / day [9]. In the present research the patients were observed having increased level of creatinine as compared to African-American & Caucasian patients, but on the other hand a lower proteinuria degree at baseline. At on-set & lower activity with young age, but advanced chronicity indices on renal biopsy [10]. In the patients, response rate was 23 percent & 21 percent respectively for PR and CR at an interval of six-months. 53 percent of the cases got primary end point efficacy during the cyclophosphamide arm of ALMS research for a period of six months [11]. Decrease in urine protein / creatinine ratio is well-established, which had been estimated with the help of a 24 hours' urine collection, to < 3 in cases having baseline nephrotic range P/Cr as > 3, or by > 50 percent in the cases having sub-nephrotic baseline P/ Cr as < 3 [12]. Increases patients number reached complete or partial response during follow-up as 64 percent at the end of 1st year. Its comparison was made with Chinese patients who followed-up for longer durations, their follow-up exposed at minimum complete or partial response rate as 82 & 55 percent [13]. In the population of European Caucasian, the observed response was noticed as 62 & 88 percent in one of the held researches. Whereas, for the remission, the median time span is generally longer than six-months [14].

Delay of 12 months was observed in patients from start of disease to therapy administration. This delay was found to be more in patients with no response versus those who have attained complete response. This is the refractory disease's cause [15].

Decrease in proteinuria is a marker for the renal results. Observation reflects that response of patients was in connotation with a non-significant fashion towards decreased proteinuria degrees. In time response to therapy by six-months was also established by an analysis of multivariate analysis in long-term results of Euro–Lupus cohort. It is also called as decline in creatinine and decline in proteinuria at the interval of six-months, < 1 gm per day, which predicts long-term results. Poor prognostic marker is diagnosis at a young age. Patients' age at the time of diagnosis ranges from 9 – 48 years in the findings of our research. In which 5 cases were < 12 years in the course of diagnosis. Diagnosed age of the patient and percentage has negative association with eGFR and response at the interval of six-months. Longer treatment latency in the patients of older age could have been reason for this. Hypertension, renal impairment at baseline, presence of crescents and higher chronicity index at baseline are related markers of poor prognosis, which were also verified in research [16].

Reported rates had variations of relapse from 25 – 46 percent at respectively five and ten years. For the

provision of relative rates of lapse, follow-up timeframe was very limited, but there was a relapse for 2 cases in 1st & 2nd years. At the end of 1st six-months, 14 percent of the cases witnessed failure of treatment, which was same as the failure treatment rate (20 percent and 16 percent respectively in high-dose arm and low-dose cyclophosphamide arm) as per Euro Lupus trial. An Indian research shows that average remission time was observed as fifteen-months in a cohort of Class-IV predominant lupus cases and remission rates were 82.05 percent. Ace/ARB uses predicted remission, timely diagnosis and a higher presentation of creatinine was noticed in this research. Poor outcome risk factors in another research were concentrated on long-term LN survival are creatinine, hypertension and hematuria occurrence of most important infection & remission lack [17].

Another research showed better outcomes (84.6 percent were in partial or complete remission) from pediatric lupus at the interval of 1 year. Eastern India research showed pediatric population that male to female ratio was observed as (1: 3.8) [18]. Manifestations in renal was observed as 54 percent of total patients. Predominant kid's histological presentation was diffuse proliferative glomerulonephritis (WHO class-IV) that was common in boys instead of girls. In comparison to adult women, adult men presented a severe renal impairment as (60 percent versus 37.5 percent), with higher blood urea as (63.25 versus 48 mg / dL), and mean serum creatinine higher levels (2.67 versus 1.62 mg / dl [19]. Current research evaluated a group of patients having proliferative lupus nephritis. Responses to therapy were measured along with its short-term predictors. Outcomes were negatively associated with baseline age. At the interval of six-months, major variances for the prediction of e GFR were in chronicity index, e GFR at diagnosis age and baseline.

## CONCLUSION:

In conclusion it is observed that there is a significant patient's survival improvement in the disease of LN. Association has been made with awareness, nephrologists earlier consultations, effectiveness of fresher schedules of induction and an overall progress in the field of medical care. At the interval of six-months, fifty percent of the cases had partial or complete response and about two third of patients at 1 year. At the interval of six-months, factors associating with response are diagnosis at older age, hypertension, activity, chronicity indices and symptoms duration prior to therapy. Response predictors by logistic regression were chronicity index and hypertension. In the comparison of Caucasian patients with African-American, patients having proliferative LN presented lesser e GFR, lower proteinuria and higher chronicity scores. No associations by treatment provided by cyclophosphamide or mycophenolate with results variables.

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