SUMMARY AND CONCLUSION

The aim of this study was to measure the ***serum*** and ***urinary*** levels of MCP-1 in patients with SLE and find out their relation to the clinical disease status. Also, to correlate these levels with the histopathological indices of renal biopsies and scrutinize the use of this cytokine as a biomarker of renal disease in SLE.

This study included thirty female patients fulfilling at least four of the updated ACR revised criteria for the classification of SLE ***(Hochberg et al., 1997)*** as well as carefully chosen twenty apparently healthy subjects age and sex matched to our patients as a control group.

All patients were subjected to full history taking, complete clinical examination and laboratory investigation. ***Serum*** and ***urinary*** levels of MCP-1 in SLE patients and control were determined by the ELISA technique. Activity of SLE disease was measured according to SLEDAI index and the activity of renal disease was measured according to rSLEDAI..

A kidney biopsy was obtained from each patient on the same day of blood sampling under computed tomography "CT" guidance using a true cut needle biopsy. Specimens were stained with hematoxylin and eosin (H&E) and classified according to the World Health Organization (WHO) criteria for grading of lupus nephritis (LN).

Activity and chronicity indices (AIS and CIS, respectively) were used for biopsies assessment according to the standards of the National Institute of Health (NIH) for LN.

Patients' ages ranged between 17-45 years (**mean ±SD** 27.7±8.2 years). Their disease duration ranged between 6 months-12 years **(mean**

± SD 4.2 ± 3 years). Patients and controls were matched for age (***P >0.05)*** and sex ***(P >0.05)***.

Six patients (20%) had fever, 24 (80%) had malar rash, 4 (15%) had discoid rash, 6 (20%) had alopecia, 3 (10%) had photosensitivity, 3 (10%) had oral ulcers, 27 (90%) had arthralgia and/or arthralgia, 18 (60%) had renal manifestations (hypertension and /or eye lid puffiness and /or lower limb edema) 18 (60%) had serositis, 12 (40%) had neurological manifestation (psychosis and lupus headache), 15 (50%) had hematological manifestations , 3(10%) had cardiac manifestation, 4(13%) had pulmonary manifestations.

There was a statistically significant difference **(*P* <0.05)** between the mean ***serum*** MCP-1 level of SLE patients (**mean ± SD** 192.7±54.5pg/ml) and the control group (**mean ± SD** 150.8±68.2 pg/ml).

There was a statistically highly significant difference (***P* <0.001**) between the mean ***urinary*** MCP-1 level of SLE patients (**mean ± SD** 1790.5±874.2 pg/ml) and the control group (**mean ± SD** 399.3±85.6 pg/ml).

The mean level of ***urinary*** MCP-1 in group IIA (2409.8±516.3 pg/ml) was statistically significantly higher (***P* <0.001**) than its mean level in group IIB (1023.3±60.9 pg/ml).

There was no statistically significant difference of the mean value of the ***serum*** MCP-1 between group IIA and group IIB. (***P >0.05***).

The mean ***serum*** MCP-1 level showed , non statistically significant differences regarding the presence fever ***(P> 0.05),*** malar rash ***(P> 0.05),*** discoid rash ***(P> 0.05),*** alopecia ***(P> 0.05),*** photosensitivity ***(P> 0.05)***, oral ulcers ***(P> 0.05),*** renal manifestations ***(P> 0.05)*** , neurological

manifestations ***(P> 0.05),*** hematological manifestations (***P> 0.05)***, cardic manifestations***(P> 0.05)*** and pulmonary manifestations ***(P>0.05).***The mean ***serum*** MCP-1 level showed, statistically significant differences regarding the presence arthritis/arthralgia (***P<0.05).***

Regarding the mean ***urinary*** MCP-1 level, it was significantly higher only in patients with renal affection ***(P<0.001).***

There were statistically high significant positive correlations of ***urinary*** MCP-1 levels with 24h. protein in urine ***(r = 0.89, P < 0.001)*** and the rSLEDAI score ***(r= 0.95, P < 0.01)*** and statistically significant positive correlations ***(P < 0.05)*** with the ESR ***(r = 0.89),*** anti-ds DNA titre ***(r = 0.44)*** and total SLEDAI score ***(r = 0.91)***.

A statistically significant negative correlation ***(P <0.05)*** of ***urinary*** MCP-1 levels with HB ***(r = -0.68),*** creatinine clearance ***(r = - 0.89)*** and C3 titre ***(r = - 0.28)*** was also observed.

There were insignificant differences ***(P>0.05)*** between the mean levels of C, C4, ANA, anti-ds DNA or ***serum*** MCP-1 regarding the WHO morphological classification of LN.

Urinary MCP-1 level, showed statistically significant difference ***(P<0.05)*** among the histopathological groups, being higher in patients with class IV and lower in patients with class II. Meanwhile, ***it*** had statistically significant positive correlation ***(P <0.05)*** with the activity scores ***(r = 0.38)*** of the examined renal biopsies.

Urinary MCP-1 alone, showed a higher diagnostic sensitivity for LN of 94.4% and equal specificity of 83.3% to anti-ds DNA antibody. Diagnostic sensitivity and specificity for LN was greatest when both tests were positive in combination being 88.8% sensitive and 100% specific.

CONCLUSIONS

- *Urinary* not ***serum*** MCP-1 is a useful non invasive technique for the assessment of renal disease in SLE patients as it shows a good correlation with the clinical, laboratory and pathological parameters of LN diseas activity.

- MCP-1 (***urinary*** or ***serum***), may be involved in the pathogenesis of SLE, while ***urinary*** MCP-1 in particular may be involved in the pathogenesis of LN.

- MCP-1 could be a potential therapeutic target in LN.

RECOMMENDATIONS

Longitudinal studies with serial urinary MCP-1 measurements will be required to determine the utility of these molecules in monitoring the disease course of LN, early prediction of renal flare and treatment intensification.