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Proinflammatory High Density Lipoproteins and Oxidized Low Density Lipoproteins in Systemic Lupus Erythematosus and Rheumatoid Arthritis Patients

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Abstract

Background: Premature atherosclerosis is a major comorbid condition in SLE patients. Oxidation of LDL is an important factor in atherogenesis. Normal high-density lipoproteins (HDL) protects LDL from oxidation, serving an anti-inflammatory role. HDL, however are chameleon like lipoproteins, with the capacity to be proinflammatory during acute phase responses.

Objective: The present study was undertaken to assess the functional capacity of HDL, and levels of ox-LDL in SLE and RA patients in relation to control subjects and its association with disease activity and different disease manifestations specially those related to atherosclerosis.

Methods: The study was conducted on 31female SLE patients, 15 female RA patients, and 25 healthy age matched female controls. The mean age of SLE patients was 29.82±5.585 years and mean age of RA patients was 37.4±8.66years. All the patients were subjected to full history taking, general examination, locomotor system examination, and laboratory investigations including complete blood count, ESR, urinalysis, liver function tests, serum creatinine, serum total cholesterol, high density lipoprotein (HDL), low density lipoprotein LDL, and serum triglycerides. Serum rheumatoid factor (RF) was done for all RA patients, and antinuclear antibodies (ANA) and anti n-DNA antibodies for all SLE patients. Traditional risk factors for atherosclerosis were evaluated. Proinflammatory HDL was measured by cell free assay and ox-LDL level was measured by ELISA.

Results: Serum levels of oxLDL were significantly higher in SLE and RA patients (mean ±SD 189.02±81.04 mg/dl and 92.2±47.37 mg/dl respectively) versus 39.648±7.97 mg/dl in controls with p =0.0001 between SLE and controls, and P =0.0001 between RA and controls). The levels of oxLDL were statistically significantly higher in SLE patients with CAD compared with patients without CAD (P=0.045), in addition, patients with lupus nephritis had statistically significant higher levels of oxLDL (P=0.004). SLE and RA patients had more proinflammatory HDL (mean± SD score 1.01±0.2 FU and 0.97±0.29 FU respectively) versus 0.68±0.3 FU in controls (SLE versus controls, P=0,002 and RA versus controls P=0.004). Thirty two % of SLE patients had high proinflammatory HDL, while 46.7% of RA patients had proinflammatory HDL.SLE patients with CAD, CVS,and hypertention had significantly higher proinflammatory HDL scores than patients without (p= 0.003, 0.012, and 0.014 respectively).Levels of proinflammatory HDL correlated significantly with the mean ESR in both SLE (r=0.545, P=0.002) and RA (r=0.577, P=0.035). Levels of oxLDL correlated significantly with levels of proinflammatory HDL in SLE (r= 0.507, P=0.004) and RA patients(r=0.885, P=0.0001).

Conclusion: HDL are more proinflammatory in a significant proportion of SLE and RA patients and are associated with elevated levels of oxLDL.

Key words: Lipoproteins, lupus, erythematosus, rheumatoid arthritis**.**

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