END-07

THE ROLE OF BLOOD LEAD LEVELS IN DIABETIC NEPHROPATHY

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BACKGROUND/AIMS: Diabetic nephropathy is one of the main causes of end-stage renal disease (ESRD) in most countries. Recent studies showed environmental lead exposure may accelarate progressive renal insufficiency in non-diabetic patients with chronic renal disease. The aim of this study was to investigate the relationship between blood lead levels and diabetic nephropathy.

METHODS: Thirty-five diabetic outpatients with or without nephropathy were recruited. They were divided into 3 groups: normoalbuminuria (group 1, n=16), microalbuminuria/proteinuria (group 2, n=8/2), and chronic renal insufficiency/ESRD (group 3, n=7/2). Measurements included patients' blood pressure, HbA1c, lipids, creatinine and lead (by electrothermal atomic-absorption spectrometry, model 5100 PC, Perkin-Elmer, reference range <40 μg/dl); urine protein, albumin, and creatinine; and retinal fundus photography.

RESULTS: Group 2 had a higher urine albumin/creatinine ratio (98±87 μg/mg) than group 1 (9±6 μg/mg), group 3 had higher urine protein (242±249 mg/dL) than group 2 (91±67 mg/dL), and group 3 had higher serum creatinine (4.3±3.4 mg/dL) than group 1 (0.9±0.2 mg/dL) and group 2 (1.1±0.2 mg/dL). (p all <0.0001). Hypertension/retinopathy occurred more frequently in group 2 (70%/40%) and group 3 (78%/78%) than in group 1 (19%/25%) (p=0.005/0.037) However, the duration of diabetes (7.0±5.1 vs. 11.4±6.4 vs. 10.7±8.4 years), HbA1c (8.1±1.5 vs. 8.2±1.4 vs. 7.4±1.5%), blood lead levels (2.7±1.3 vs. 2.8±0.9 vs. 3.6±1.3 μg/dl) and the frequency of hyperlipidemia (38 vs. 80 vs. 67%) were not significantly different among the three groups.

DISCUSSION/CONCLUSIONS: Our data indicate that blood lead levels might not play a role in diabetic nephropathy.

Keywords: Diabetes mellitus; Diabetic nephropathy; Lead