

PLASMA HOMOCYSTEINE IN ESRD PATIENTS

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Aim: The aim of this study was to determine the amount of homocysteine in ESRD patients.

Introduction: Homocysteine is a sulfur-containing amino acid formed during metabolism of the essential amino acid methionine. Serum total homocysteine concentration (tHcy) has been recognized as an atherogenic factor.

Hyperhomocysteinemia, a new cardiovascular risk factor, occurs in 85-100% of patients with end-stage renal disease. There is reasonably good clinical evidence that hyperhomocysteinemia in itself does not cause renal insufficiency. Two, not mutually exclusive, hypotheses are those in renal failure: i) homocysteine disposal is impaired in the kidneys themselves and ii) extra-renal homocysteine metabolism is defective, possibly due to uremic toxins.

Materials and Method: The study population consisted of 40 patients at Hemodialysis Unit, Tehran University Medical School hospital. Patients were excluded if they had been on dialysis for less than one year. A separate 40 healthy subjects were enrolled in this study as normal controls. HPLC with fluorimetric detection was used to determine plasma tHcy.

Results: Plasma homocysteine concentrations in ESRD patients were significantly higher than those obtained in normal volunteers (22.46 ± 16.32 vs. 17.59 ± 4.79 micro mol /liter respectively, $P < 0.001$).

The results implicate a decreased homocysteine clearance instead of an increased production as the cause of hyperhomocysteinemia in renal failure.

CONCLUSION: We can conclude that hyperhomocysteinemia is important risk factor for cardiovascular diseases in ESRD patients, according to its high prevalence in these patients. Hcy levels increase as renal function declines and progresses to ESRD; the causes of hyperhomocysteinemia are still unclear.