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The comparison of the usefulness between Low dose and Standard dose adrenocorticotropin (ACTH) stimulation test in peritoneal dialysis patients

JIWON RYU, Yun Jung Oh, Chungsik Lee, Sung Soo Kim

Department of Internal Medicine-Nephrology, Cheju Halla General Hospital, Korea, Republic of

Objectives: Adrenal insufficiency (AI) is not uncommon disease in dialysis patients. For peritoneal dialysis (PD) patients, we investigate which of the low dose ACTH stimulation test or standard dose ACTH stimulation test is more useful for AI diagnosis in these patients.

Methods: A total of 60 patients with PD participated. At first week, we conducted a survey on symptoms and collected laboratory data. The low dose ACTH stimulation test (1mcg) was performed at first week, the standard dose ACTH stimulation test was done at 4 weeks interval. If peak serum cortisol level did not exceed over 18 mcg/dl in both tests, AI was diagnosed.

Results: The mean age of patients was 49.8 ± 13.4 years old and the proportion of male was 55%. The average duration of PD was 44 months. 37 patients (61.7%) were exposed to steroids. The causes of kidney disease were hypertension (33.3%), diabetes (31.7%), chronic glomerulonephritis (30.0%) and unknown (5.0%). With the low dose ACTH stimulation test, 22 (36.7%) patients were diagnosed. There was no significant difference in laboratory results between these patients with and without AI. In the standard dose ACTH stimulation test, 8 (8.3%) patients were diagnosed. These patients complained more fatigue and constipation (62.5% vs 15.4%, $p = 0.009$; 50.05% vs 13.5%, $p = 0.031$). And the adequacy of dialysis in AI patients was significantly lower than the other (1.98 ± 0.36 vs 1.64 ± 0.211 , $p = 0.004$). The steroid exposure was not a risk factor in all AI patients.

Conclusions: In low dose ACTH stimulation test, more PD patients were diagnosed with AI. However the patients diagnosed by the standard dose test showed significant differences in symptoms and laboratory findings. The low dose ACTH stimulation test should be not performed intentionally for the diagnosis of AI in PD patients.