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비당뇨 복막투석 환자에서 혈중 백혈구 수치와 대사상 증후군 사이의 연관성

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Association of White Blood Cell Count with Metabolic Syndrome in Peritoneal Dialysis Patients

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Background : Metabolic syndrome is associated with an increased risk of developing diabetes and cardiovascular disease. Although some data suggest that the prevalence of metabolic syndrome is higher in patients treated with peritoneal dialysis (PD), the factors related to this increased risk are not well elucidated.

Purpose : We examined whether peripheral white blood cell (WBC) count is correlated with the risk of metabolic syndrome in non-diabetic PD patients.

Methods : We enrolled 104 non-diabetic PD patients without current infections or chronic inflammatory diseases. Complete blood cell count, anthropometry, blood pressure, fasting glucose, insulin, and lipid profiles were measured after the first two hours of PD exchange with 1.5% dextrose dialysate in an overnight fasting state. The preceding overnight dwell was regulated to 1.5% dextrose dialysate to standardize the glucose load. Metabolic syndrome was defined in accordance with the National Cholesterol Education Program (Adult Treatment Panel III) criteria.

Results : Metabolic syndrome was present in 49 patients (47.1%). Patients with metabolic syndrome had a higher WBC count (5,715.1±1,546.3 versus 7,132.7±1,534.2 /㎕, p<0.001) and hsCRP level (0.82; 95% CI: 0.35 to 0.84 versus 1.89 mg/dL; 95% CI: 1.19 to 3.32; p=0.01). WBC count increased significantly with the number of metabolic syndrome components (P for trend < 0.001). WBC count positively correlated with body mass index (r=0.25, p=0.01), insulin (r=0.36, p<0.001), HOMA-IR (r=0.36, p<0.001), and triglyceride (r=0.33, p=0.001) and negatively with HDL cholesterol (r=−0.36, p<0.001). The risk of metabolic syndrome increased with higher WBC counts, resulting in an adjusted odds ratio of 1.65 (per 10^3/㎕ increase, 95% CI: 1.20 to 2.28, p=0.002). However, when values were further adjusted for hsCRP level, WBC count remained an independent factor associated with metabolic syndrome (OR: 1.58; 95% CI: 1.13 to 2.20; p=0.01), conversely, the significance of hsCRP level disappeared with adjustment for WBC count (OR: 1.10; 95% CI: 0.98 to 1.17; p=0.15).

Conclusion : These findings demonstrate that metabolic syndrome is prevalent among non-diabetic PD patients and that WBC count is strongly associated with metabolic syndrome and its components.

Key Words : 백혈구, 대사성 증후군, 복막투석
Leukocytes, Metabolic syndrome X, Peritoneal dialysis