

비당뇨 복막투석환자에서 인슐린 저항성 및 혈중 adiponectin과 종양 발생 사이의 연관성

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Insulin Resistance and Lower Plasma Adiponectin Increase Malignancy Risk in non-diabetic Continuous Ambulatory Peritoneal Dialysis Patients

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Background: End-stage renal disease patients have a higher risk for developing cancer. Although several causes for this increased risk have been proposed, the risk factors for cancer development in this population have not been elucidated. Recently, impaired lipid and glucose metabolism have been shown to be risk factors for malignancy in the general population. Uremic conditions have been proven to cause insulin resistance. Furthermore, insulin resistance is suggested to be more prevalent in patients on peritoneal dialysis (PD) in particular, due to the excessive glucose load from the dialysate. However, the relationship between metabolic impairment and malignancy has not been investigated previously.

Purpose: The aim of this study was to determine whether metabolic derangements, including insulin resistance and altered adipokines, increase the risk of developing malignancies in PD patients.

Methods: Study subjects comprised 106 non-diabetic PD patients who had been on PD for a minimum of 3 months with no previous history of cancer. Baseline anthropometry, fasting glucose, insulin, and adiponectin were measured. The development of malignancy was evaluated by monthly chest X-ray exams, annual fecal OB tests and biannual abdominal U/S during the follow-up period.

Results: At baseline, the mean age was 51.6 ± 13.2 years, 49 patients (46.2%) were male. All patients were prescribed for continuous ambulatory peritoneal dialysis. During the mean follow-up of 41.0 ± 18.6 months, malignancy occurred in 13 patients (12.3%). The most common site of cancer was the kidney (23%), followed by thyroid (15.4%) and stomach (15.4%). Baseline insulin levels (12.7 ; 95% CI: 8.3 to 19.4 vs $7.0 \mu\text{U/mL}$; 95% CI: 6.1 to 8.0; $p=0.003$), HOMA-IR (3.0 ; 95% CI: 1.9 to 4.5 vs 1.6; 95% CI: 1.3 to 1.8; $p=0.005$) and hsCRP levels (2.23 ; 95% CI: 1.03 to 4.81 vs 0.97 mg/dL ; 95% CI: 0.75 to 1.27; $p=0.04$) were significantly higher, while plasma adiponectin levels (17.0 ± 8.5 vs $22.1 \pm 7.9 \text{ ng/ml}$, $P = 0.03$) were significantly lower in patients who developed malignancy. Cox proportional hazards analysis revealed that insulin levels (RR: 1.06; 95% CI: 1.01 to 1.11; $p=0.01$), HOMA-IR (RR: 1.25; 95% CI: 1.03 to 1.51; $p=0.02$), and lower adiponectin (RR: 0.94; 95% CI: 0.88 to 0.99; $P = 0.03$) were independent predictors of malignancy.

Conclusions: These findings demonstrate that insulin resistance and lower adiponectin levels could be risk factors for malignancy in non-diabetic PD patients.

Key Words: 복막 투석, 인슐린 저항성, Adiponectin

Peritoneal dialysis, Insulin resistance, Adiponectin