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Effects of Sulodexide on Hemostatic Factors, Lipid Profile and Inflammation in Chronic Peritoneal Dialysis Patients

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Sulodexide is a standardized extractive glycosaminoglycan containing 80% fast moving heparin and 20% dermatan sulfate. Sulodexide has antithrombotic properties, both through the antithrombin III and the heparin cofactor II pathways. It brings lipid fractions back to baseline values via the activation of the lipoprotein lipase. Glycosaminoglycan also has anti-inflammatory activity. In this study, we evaluated the effects of sulodexide on hemostatic factors, lipid profile and inflammation in chronic peritoneal dialysis (CPD) patients.

Between April and July 2005, 106 ESRD patients who had been on chronic peritoneal dialysis at Asan Medical Center Dialysis Clinic were recruited for this prospective study. Patients with acute inflammation/infection, liver disease and patients taking aspirin, warfarin or lipid-lowering agents were excluded.

The 106 patients (56 men and 50 women) had a mean (±S.D.) age of 52.9±13.6 years and a median duration of chronic peritoneal dialysis of 28 months (range, 3-126 months). Diabetic nephropathy was present in 33 patients (31%). These 106 patients were randomized to 500 lipoprotein lipase releasing units (LRU)/day of sulodexide for 8 weeks (treatment group) or to no medication (control group).

There were no between-group differences in age, sex, duration of chronic peritoneal dialysis, presence of diabetes as a cause of ESRD, blood urea nitrogen, serum creatinine, Kt/V, normalized protein catabolic rate, and residual renal function. Blood samples for prothrombin time (PT), activated partial prothrombin time (aPTT), fibrinogen, D-dimer, von Willebrand factor (vWF), total cholesterol, triglycerides, HDL-cholesterol, apolipoprotein A1, apolipoprotein B, lipoprotein (a) and high sensitivity C-reactive protein (hs-CRP) were taken from each patient before starting medication and after 8 weeks.

Of 106 CPD patients, 101 completed the study. One patient in the treatment group refused to take medications because of gastrointestinal discomforts. Two patients in the treatment group were admitted because of peritonitis and pneumonia during the study period. One patient in the control group had transplantation and the other patient was admitted with anorexia and general weakness, Bleeding episode was not reported throughout the study.

At baseline, there were no between-group differences in any of these parameters. Between baseline and 8 weeks, PT and aPTT were not significantly altered in either group. Sulodexide therapy decreased plasma fibrinogen level from 499.1±122.0 mg/dL at baseline 418.9±95.0 mg/dL at 8 weeks ($p<0.01$) and plasma D-dimer concentration, a marker of intravascular coagulation, from 0.91±0.70 mg/L to 0.75±0.63 mg/L ($p<0.01$), however, fibrinogen and D-dimer concentrations in the control group were not changed. Blood concentrations of vWF, lipid profile and hs-CRP were not significantly changed in either the treatment or control group.

We have shown here that sulodexide was effective in partially reversing the thrombogenic coagulation profile in chronic peritoneal dialysis patients without increasing the risk of bleeding.