OBSERVATIONS

Elevated Plasma Plasminogen Activator Inhibitor-1 in CD36 Deficiency

CD36 is a fatty acid transporter expressed in various tissues including adipose, heart, and skeletal muscle tissues. The elevated fasting triglyceride levels,intermediate-density lipoprotein cholesterol levels, and postprandial hyperlipidemia observed in human CD36 deficiency have been suggested as being due to abnormal fatty acid metabolism and insulin resistance (1,2). Lipid abnormalities and insulin resistance in CD36 deficiency are atherogenic; however, the association between CD36 deficiency and atherosclerosis remains unknown.

We studied fasting plasma plasminogen activator inhibitor-1 (PAI-1) levels in control subjects ($n = 16$) and individuals with type I deficiency (complete CD36 deficiency; $n = 4$) and type II deficiency (partial CD36 deficiency; $n = 10$). The mean ± SD of plasma PAI-1 levels in subjects with type I deficiency (54.5 ± 8.8 μg/l; $P < 0.001$, one-factor ANOVA, Scheffe's F test) was significantly higher than those in subjects with type II deficiency (38.8 ± 7.5 μg/l) and control subjects (37.7 ± 6.2 μg/l). Further, we found a significant correlation between plasma PAI-1 levels and integrated area under the curve analysis of free fatty acid for 3 h after glucose loading ($R = 0.60$; $P = 0.0004$, Fisher's Z transformation). Integrated area under the curve analysis of free fatty acids for 3 h after glucose loading in subjects with type I deficiency (909.6 ± 358.1 μEq/l × h) was significantly higher than those in subjects with type II deficiency (452.0 ± 96.1) and control subjects (394.1 ± 159.2) (3).

Low plasma fibrinolytic activity in association with increased PAI-1 levels has been reported to be linked with an increased risk of atherosclerosis and cardiovascular disease in obesity, insulin resistance, and diabetes (4). These results indicate that CD36 deficiency induces elevation of plasma PAI-1 levels, which is associated with atherosclerosis, in humans. Increased plasma PAI-1 levels in CD36 deficiency may be due to abnormal fatty acids metabolism.

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