Changes in Lipoprotein Profile after Selective LDL Apheresis

Key words: hypercholesterolemia, low-density lipoprotein, apheresis

Figure 1. Left panel: Lipoprotein profile of cholesterol. Both LDL and VLDL components were prominently reduced after apheresis and half of the pre-apheresis level was noted within 24 hours, with no changes in HDL. Right panel: Lipoprotein profiles of triglyceride. Both LDL and VLDL components were prominently reduced after apheresis and the pre-apheresis level was reached within 24 hours along with doubling of the HDL component.

Low-density lipoprotein (LDL) apheresis has been used to treat patients with severe inherited forms of hypercholesterolemia. This procedure selectively removes apolipoprotein B-containing particles such as LDL, very-low density lipoprotein (VLDL), and lipoprotein(a) [Lp(a)]. However, lipoprotein profiles of both cholesterol and triglyceride are less well understood. A 33-year-old Japanese woman with homozygous familial hypercholesterolemia was treated once a week with selective LDL filtration from the age of 28 years old. Large xanthomas occurred on the eyelid, elbow, and both sides of the knee. The plasma levels of total cholesterol, triglyceride, and Lp(a) were reduced from 390 to 121, from 322 to 27 and from 13 to 5 mg/dl immediately after apheresis (LIPOSORBER™ system) using dextran sulfate cellulose columns. HPLC analyses (CCP & 8010 series, Tosoh, Tokyo) of plasma before and after apheresis clearly showed a marked reduction of LDL and VLDL, not only of cholesterol but also triglyceride components (Fig. 1). A rebound phenomenon after 24 hours was more rapid for triglyceride than for cholesterol components.

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