Little is known about cholesterol metabolism in patients with hemodialysis (HD) in the presence or absence of coronary artery disease (CAD). We evaluated the interrelationship between lipid profile, cholesterol metabolism and coronary risk factors. Ninety patients with HD were enrolled (HD group). Age and gender-matched 50 patients who at least one cardiovascular risk factor were selected as a non-HD group. Lipid profile and biomarkers of cholesterol synthesis and absorption were analyzed. Total cholesterol (TC), triglyceride, high-density lipoprotein cholesterol (HDL-C), low-density lipoprotein cholesterol, non-HDL (TC minus HDL-C) and the ratio of LDL-C to HDL-C (L/H) in the HD group were significantly lower than those in the non-HD group. All markers of cholesterol absorption (campesterol/TC, sitosterol/TC and cholestanol/TC) and the ratio of campesterol to lathosterol (campesterol/lathosterol) in the HD group were significantly higher than those in the non-HD group. In addition, in the HD group, L/H was negatively correlated with lasosterol/TC, campesterol/TC, sitosterol/TC and cholestanol/TC. Finally, CAD was only significantly associated with BMI, which was positively associated with lasosterol/TC and negatively associated with campesterol/lathosterol in the HD group, whereas CAD was only significantly associated with HT in the non-HD group. In conclusion, HD patients showed lower cholesterol levels compared to non-HD patients, and their ability of cholesterol absorption may be compensatory accelerated. On the other hand, higher BMI, which was correlated with higher cholesterol synthesis, may be an independent predictor for the presence of CAD in HD patients.