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Clinical characteristics of Japanese patients with severe hypertriglyceridemia

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BACKGROUND: Although of interest, few data exist on the clinical characteristics of Japanese patients with an extremely high triglyceride level (≥1000 mg/dL).

OBJECTIVE: We assessed the clinical characteristics of Japanese patients with an extremely high triglyceride level.

METHODS: We investigated the presence of coronary artery disease, history of pancreatitis, the presence of fatty liver, and the potential causes of elevated triglyceride in Japanese subjects with an extremely high level of fasting triglyceride (≥1000 mg/dL) among 70,368 subjects whose serum triglyceride was measured for any reason at Kanazawa University Hospital from April 2004 to March 2014.

RESULTS: We identified 215 (0.31%) subjects (mean age, 46 years; male, 170, mean body mass index, 25 kg/m^2) with severe hypertriglyceridemia. Among them, 4 (1.9%) subjects were classified as type I, 97 (45.1%) subjects were type IV, and 114 (53.0%) subjects were type V hyperlipidemia, according to Fredrickson's classification. Among 215 subjects, 116 subjects (54.0%) drank alcohol, 58 (27.0%) showed heavy intake (≥60 g/d), and 64 (29.8%) subjects had diabetes. In total, 59 (27.4%) subjects had transient severe hypertriglyceridemia caused by corticosteroids (N = 19), antidepressant (N = 18), L-asparaginase and steroids for acute lymphoid leukemia (N = 15), hormone replacement therapy for breast cancer (N = 9), β-blocker (N = 5), hypothyroidism (N = 4), pregnancy (N = 4), and panhypopituitarism (N = 2). As many as 119 (55.3%) subjects exhibited fatty liver. Moreover, 12 (5.6%) and 17 (7.9%) subjects had a history of pancreatitis and coronary artery disease, respectively.

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CONCLUSIONS: A variety of situations can cause severe hypertriglyceridemia. We suggest that potential secondary causes should be carefully assessed for such patients.

Introduction

The criteria for clinical diagnosis of elevated triglyceride (TG) levels under fasting conditions in the United States recently changed in 2010 based on accumulating evidence that severe hypertriglyceridemia (HTG) seems to be a risk for pancreatitis, rather than coronary artery disease (CAD).[1] According to those criteria, severe HTG is characterized by serum TG levels ≥1000 mg/dL, caused by primary and secondary factors. However, little data exist regarding the clinical characteristics of Japanese patients with severe HTG.[2] We therefore investigated clinical characteristics of Japanese patients with severe HTG, including serum lipid levels, the presence of CAD, history of pancreatitis, the presence of fatty liver, and the potential causes of elevated TG.

Methods

Study subjects

We retrospectively investigated the subjects with serum fasting TG concentrations ≥1000 mg/dL among 70,368 subjects measured serum TG for any reasons at Kanazawa University Hospital from April 2004 to March 2014. We have reviewed a baseline examination that included a medical history review, physical examination, and a blood draw. We added a portion of examinations if that information is lacking after the initial record review. Most of the study subjects were inpatients referred to our hospital, making it possible to assess the fasting initial blood samplings. The characteristics of the study subjects were listed in Table 1.

Clinical evaluations

We assessed if the subjects consumed alcohol regularly by a medical interview and defined a heavy drinker as ≥60 g/day of alcohol intake as previously described.[3] Hypertension was defined as systolic blood pressure of at least 140 mm Hg, diastolic blood pressure of at least 90 mm Hg, or use of antihypertensive medication. The presence of diabetes was defined as previously described by the Japan Diabetes Society,[4] or the use of diabetes medication. Body mass index (BMI) was defined as body weight in kilograms divided by the square of height measured in meters. CAD was defined by the presence of

Table 1 Characteristics of the subjects with severe hypertriglyceridemia (>1000 mg/dL)

	Types of hyperlipidemia (Fredrickson's classification)			
Variable	All (N = 215)	Type I (N = 4)	Type IV (N = 97)	Type V (N = 114)
Age (y)	46 ± 16	51 ± 13	46 ± 17	46 ± 16
Men, N (%)	170 (79.1)	2 (50.0)	80 (82.5)	87 (76.3)
BMI (kg/m^2)	25 ± 4	25 ± 3	25 ± 4	25 ± 4
Mild obesity BMI ≥25, N (%)	87 (40.5)	2 (50.0)	41 (42.3)	44 (38.6)
Severe obesity BMI ≥30, N (%)	18 (8.4)	0	6 (6.2)	12 (10.5)
TC (mg/dL)	286 ± 105	411 ± 64	297 ± 118	267 ± 73
TG (mg/dL)	1463 ± 662	2807 ± 1384	1411 ± 696	1444 ± 523
HDL-C (mg/dL)	39 ± 11	23 ± 3	41 ± 11	38 ± 10
GOT (mg/dL)	47 ± 72	17 ± 7	50 ± 57	47 ± 83
GPT (mg/dL)	49 ± 51	20 ± 12	50 ± 47	49 ± 55
γ-GTP (mg/dL)	168 ± 326	27 ± 8	185 ± 247	160 ± 386
Alcohol intake, N (%)	116 (54.0)	3 (75.0)	57 (58.8)	59 (51.8)
Heavy alcohol intake >60 g, N (%)	58 (27.0)	0 (0)	32 (33.0)	26 (22.8)
Hypertension, N (%)	96 (44.7)	0 (0)	44 (45.4)	52 (45.6)
Diabetes, N (%)	64 (29.8)	0 (0)	48 (49.5)	16 (14.0)
Smoking, N (%)	117 (54.4)	2 (50.0)	56 (57.7)	61(53.5)
CAD, N (%)	17 (7.9)	0 (0)	4 (4.1)	13 (11.4)
Pancreatitis, N (%)	12 (5.6)	4 (100)	4 (4.1)	8 (7.0)
Fatty liver, N (%)	119 (55.3)	0 (0)	55 (56.7)	64 (56.1)

BMI, body mass index; CAD, coronary artery disease; GOT, glutamic oxaloacetic transaminase; GPT, glutamic-pyruvic transaminase; γ-GTP, γ-glutamyl transpeptidase; HDL-C, high-density lipoprotein cholesterol; TC, total cholesterol; TG, triglyceride.