Short Communication

Clinical Profile Associated With Hipertriglyceridemia

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Summary

High levels of plasma triglycerides (TG) are a risk factor for cardiovascular diseases often associated with abnormalities in other lipids or lipoproteins. The objective has been to determine the prevalence and factors associated with hypertriglyceridemia (HTG) and with low HDLc.

Patients included in the clinical register have been analyzed and their data, metabolic and anthropometric have been collected from them. Factors significantly associated with low HDLc and HTG were the female gender, overweight with an increase in the body mass index, tobacco consumption, type 2 diabetes, low-alcohol consumption and a low exercise rate. Among them, two types of association of factors may be identified with the anthropometric variables (especially in men) and the metabolic variables (type 2 diabetes and metabolic syndrome).

Hypertriglyceridemia & low HDLc association is very frequent and it is related to overweight-obesity and other metabolic disorders, such as mellitus diabetes with or without metabolic syndrome. In this context, TG lowering treatment is more strongly suggested to be recommended to decrease the residual risk of atherosclerotic cardiovascular disease

INTRODUCTION

Dyslipidemias are considered one of the key and co-responsible risk factors for a large part of cardiovascular diseases, which are the processes that determine cardiovascular morbidity and mortality.

The lipid risk factor cLDL has the biggest impact [1]. Indeed, all efforts to reduce and control the total cholesterol and LDL cholesterol (LDLc), by the intervention in lifestyle and, if it were necessary, using drugs, have led to a reduction in the cardiovascular morbidity and mortality, so among patients in primary prevention as in secondary prevention [1].

However, despite an optimal treatment of dyslipidemia associated with cholesterol metabolism, and specifically the use of lipid-lowering drugs for LDLc, for example with statins, the cardiovascular risk remains high [2-4]. This is the concept of residual risk, whose elimination is considered a challenge for the future.

One of the elements that contribute to the residual cardiovascular risk is the "non- LDLc-dependent" dyslipidemia, an Atherogenic dyslipidaemia basically related to the hypertriglyceridemia and / or low levels of high density lipoprotein cholesterol (HDLc) [3,5,6].

This risk is modifiable with the intensification of habits related to lifestyle, and with apharmacological strategy associated with the lipid-lowering therapy, whose objective were to reduce triglycerides or to increase HDLc.

Therefore, the diagnosis and the recognitionof no-dependent-LDLcdyslipidemia is crucial to properly deal the vascular risk and additionally, to reduce it. Hence the importance of dyslipidemia is related with triglycerides, alone or accompanied by changes in the concentration of HDLc whose anti-atherogenic effect is sufficiently known.

The hipertriglyceridemia (HTG) are highly complex processes, which are often associated with other metabolic disorders in the context of a metabolic syndrome, and particularly, to a decrease in HDLc levels [7-10].

The main objectives of this research have been:

A). To know the different clinical characteristics of hipertriglyceridemias that are accompanied by a decrease in HDLc, in relation to those that occur isolated; more specifically, the prevalence of the association and the factors associated with HTG which is accompanied by low HDLc.

B). Setting the distintives features of patients with hypertriglyceridemia when this disorder occurs in the context of a metabolic syndrome with cardiovascular risk. More specifically, getting to know the characteristics and usefulness of the hipertriglyceridemic waist phenotype: the hipertriglyceridemia associated with anthropometric data of visceral obesity.

PATIENTS AND METHODS

The data presented in this paper comes from a clinical record of hipertriglyceridemias to obtain big data in dyslipidaemias. This is an epidemiological, prospective, observational study, not controlled, national multicenter, 12-month follow up, which was held in the Lipid Units of Spanish Hospitals. The present study is a substudy of the general register, and has been conducted and specifically designed to meet both the above objectives.

The study brings together the standards of the good clinical practice. Patients have signed an informed consent for their inclusion in the study, which has been developed following the usual conditions of the clinical practice.

The inclusion criteria about patients were: both sexes and all ages, preserved general status, informed consent, and to have been referred to a Lipid Unit with an analytical data exceeding 200 mg/dl of triglycerides. They were exclusion criteria: the inability to collaborate in the study or serious illnesses that might condition the short-term prognosis.

The variables studied were: the laboratory parameters (lipid profile, blood glucose, glycosylated hemoglobin), the anthropometric parameters (weight, height, body mass index, waist circumference), the blood pressure (systolic and diastolic), the metabolic comorbidities, the lesions in target organs, the lifestyle (diet, exercise, alcohol) the type of hipertriglyceridemia, the cardiovascular and lipid-lowering treatments, the personal history of cardiovascular events (coronary heart disease, cerebrovascular and/or peripheral arterial disease) and the family history.

The laboratory tests were conducted by the standardized lipid units. The tests included, as noted above, a full lipid profile (total cholesterol, HDLc, triglycerides and LDLc, the last one calculated by the Friedewald formula when triglyceride levels were less than 400 mg/dl).

The record includes 1524 patients, attended in Lipid Units of specialized care, with triglyceride levels higher than 200 mg/dl (in the first determination made in the Unit). Consecutively these patients were included in the study consecutively, excluding those with a short life expectancy, diagnosed of neoplasia or unable to cooperate in the study.

We studied and analyzed the different variables in the group of patients with hipertriglyceridemia (HTG) and low HDLc (lHDL), in comparison with those others with normal triglycerides (nTG) and normal HDL (nHDL). It was considered as a criterion of low HDLc, a level below 40 mg/dl in men and below 50 mg/dl in women.

They were considered diagnostic criteria for the metabolic syndrome the ones identified by NCEP-ATP III and IDF. According to the modified NCEP-ATP III criteria for the presence of at least three of the following parameters (or their treatment): waist circumference ≥ 102 cm (men) or ≥ 88 cm (women); systolic blood pressure ≥ 130 mmHg or diastolic blood pressure ≥ 85 mmHg; plasma glucose ≥ 100 mg / dl; plasma triglycerides ≥ 150 mg / dl; HDLc ≤ 40 mg / dL (men) or ≤ 50 mg / dL (women), or treatment for such risk factors.

The criteria according to the IDF definition of the metabolic syndrome were: abdominal obesity (waist circumference ≥ 94 cm in men and ≥ 80 cm in women), plus at least two of the following criteria: triglycerides ≥ 150 mg / dl (or specific lipid lowering treatment), HDLc ≤ 40 mg / dl (men) or ≤ 50 mg / dl (women) (or specific treatment), systolic blood pressure ≥ 130 mmHg or diastolic ≥ 85 mmHg (or antihypertensive therapy), and a fasting glucose ≥ 100 mg /dl.

The statistical treatment of the data was performed with the support of SPSS version 15.0 (Chicago, Illinois, USA) and the SAS version 9.1.3 program. For the continuous variables they were used: mean, standard deviation, median and extreme values.

For categorical variables: percentage in its category. For variables of asymmetric distribution: medians and percentiles. The qualitative variables were expressed as a percentage (%) of cases. The comparison between groups was performed using the chi-square test. The comparison of means was performed by the test Student t test or the Mann-Whitney according to the normal distribution of variables. The statistical significance level of 0.05 was considered.

RESULTS AND CONCLUSIONS

The clinical record of hipertriglyceridemias include a total of 1.524 patients. The evaluable patients at baseline were 1394 (91.5 %). The evaluable patients for the study of the association of hypertriglyceridemia with low HDLc were 1349 (88.5 %). Of them all, low HDLc was found in 60, 86 % (821) and normal HDLc in 39.14 % (528).

The HTG- low HDLc association is very prevalent and distinctive in some particular conditions. The factors significantly associated with the presence of low HDLc, coincident with HTG were found to be: the female gender, overweight with increased BMI, smoking, type 2 diabetes, reduced alcohol consumption, and lower rates of exercise.

Of all the factors, we can identify two types of partnerships: with anthropometric variables (especially in men) [11] and with metabolic variables (diabetes mellitus and/or metabolic syndrome) [12-15]. Individuals with a combination HTG + low HDLc have a significantly higher level of TG and a lower level of HDLc than those with only HTG levels (Figures 1,2). From the point of vew of the therapeutic management these patients are individuals in which a treatment with fibrates and less often statins, is more often required.

There were no significant differences in the prevalence of cardiovascular disease between both groups. Neither with regard to the involvement of target organs.

The total number of patients evaluable for the present study with metabolic syndrome and hipertriglyceridemia was 1369. The increase in the waist circumference was measured in all patients, according to the ATP III or IDF criteria for the metabolic syndrome.

Among patients with hipertriglyceridemia, the prevalence of waist hipertriglyceridemia was close to 50% and 80% respectively, according to the anthropometric ATP III and IDF criteria were used (Figure 3).
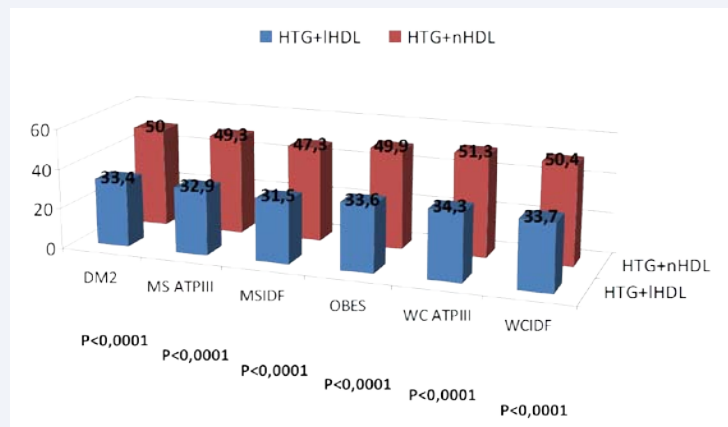
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Figure 1 HDLc (mg/dL) in relation with hipertrygliceridemia (HTG) & low HDL (lHDL). nHDL :normal HDL. DM2: diabetes mellitus type 2. MS: metabolicsyndrome. OBES: obesity WC: waist circumference with criteria of abdominal obesity.
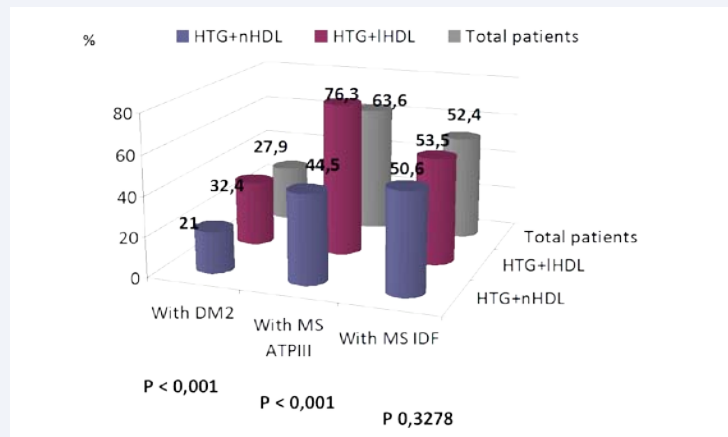

Figure 2 Clinical associations of Hipertrygliceridemia (HTG) & low HDL (lHDL) or normal HDL (nHDL). DM2: diabetes mellitus type 2. MS: metabolic syndrome.
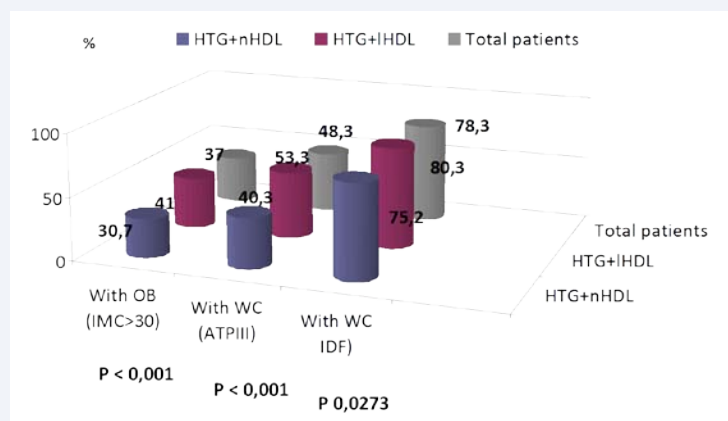

Figure 3 Anthropometric associations of hipertrygliceridemia (HTG) & low HDL (lHDL) or normal HDL (nHDL). OB: Obesity. BMI: Body Mass Index. WC: waist circumference with criteria of abdominal obesity.

The prevalence of metabolic syndrome in these patients was close to 97 % (ATPIII criteria) and to 63 % (IDF criteria) [12]. The prevalance of hypertension and type 2 diabetes was significantly higher in the patients with a hipertrygliceridemic waist.

However, the association with cardiovascular disease did not depend on the existence of hipertriglyceridemic waist phenotype, but on the existence (or not) of a metabolic síndrome [15,16].

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In conclusion, in this substudy we can conclude that the combination of HTG & low HDLc is very common (approximately 60% of cases) and it is mainly associated with overweight - obesity and with metabolic disorders (diabetes mellitus, and /or metabolic syndrome), as well with anthropometric parameters, by comparing with isolate hipertrygliceridemia.

Hypertriglyceridemic waist phenotype was associated with the presence of metabolic syndrome. In fact, the hypertriglyceridemic waist phenotype can be used in routine clinical practice as a marker of metabolic alterations.

So, the hipertrygliceridemia & low HDL syndrome is an independent and singular clinical process, and seems to a clinical characteristic that could be a marker of high cardiometabolic risk by a cluster of metabolic cardiovascular risk factors.

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