

For this reason, we re-assayed the patient's blood sample using a new capillary electrophoresis method (CAPILLARYS 2 Flex Piercing) for HbA_{1c}. As shown in Fig. 1, despite being unable to measure HbA_{1c} using this method (as was the case with VARIANT II), the peak corresponding to the haemoglobin variant was detectable on electrophoresis and, above all, differed from that corresponding to HbA_{1c}.

In conclusion, we present here a case of haemoglobin Hope migrating at the level of the HbA_{1c} peak when using a classical ion-exchange HPLC method, leading to an erroneous HbA_{1c} value. In contrast, capillary electrophoresis was able to distinguish HbA_{1c} from haemoglobin Hope. To the best of our knowledge, this is the first report of capillary electrophoresis measurement of HbA_{1c} in a patient displaying haemoglobin Hope in the heterozygous state. While capillary electrophoresis was able to detect the unusual haemoglobin Hope variant, it did not permit assessment of HbA_{1c}. However, other methods have been reported to be unaffected by the presence of haemoglobin Hope and could be used as alternatives in this context [4,5]. Finally, this case serves as a reminder that biologists and physicians need to be aware of the limitations of available techniques that measure HbA_{1c}, especially in the presence of haemoglobin variants.

Disclosure of interest

The authors declare that they have no conflicts of interest concerning this article.

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Severe hypertriglyceridaemia in patients treated with lipid-modifying agents

Hypertriglycéridémie sévère chez des patients sous traitement hypolipémiant

Keywords: Hypertriglyceridaemia; Cardiovascular disease; Antilipaeamic agents; Europe

Mots clés : Hypertriglycéridémie ; Maladies cardiovasculaires ; Hypolipémiants ; Europe

1. Background

Few studies have been conducted among patients with severe hypertriglyceridaemia (shTG), and real-life management of this lipid disorder is not well established and remains poorly documented [1].

2. Objective

The demographic and medical characteristics of patients with treated but uncontrolled shTG, supervised by general practitioners from five European countries, were identified, and the therapies prescribed for their lipid disorders were analyzed.

3. Methods and findings

Data were extracted from the Cegedim Strategic Data Longitudinal Patient Databases (LPDs) from Belgium, France, Germany and Italy, and from The Health Improvement Network (THIN) database in the United Kingdom. LPD and THIN databases are electronic medical records. Currently, 2.9 million patients are registered with practices in THIN, 1.6 million in LPD France, 0.8 million in LPD Italy, 0.7 million in LPD Germany and 0.3 million in LPD Belgium. The study population comprised 303,290 patients, aged 18 years and over, with at

least one prescription for lipid-modifying therapy such as statins, fibrates, nicotinic acid, ezetimibe and fixed combinations, and at least one triglyceride (TG) measurement, in 2007. The most recent prescriptions for lipid-modifying therapy and most recent TG measurements were extracted for the analyses. Patients with shTG were defined as follows: TG greater than 15 mmol/L [2] and TG/total cholesterol ratio (g/L) greater than 2.5. Patients with total cholesterol less than 5 mmol/L ($n = 12$) were excluded for suspicion of unreliable entry of plasma lipid concentrations. Diabetes was identified from a prescription for an antidiabetic drug or from a specific diagnosis of diabetes. SAS 9.1 software (SAS Institute Inc., Cary, NC, USA) was used for all statistical analyses. Descriptive data were presented as percentages or as means with standard deviations (SD). For comparisons between patients with shTG and all others, Wilcoxon's rank-sum or chi-square tests were performed. Results were considered significant if two-sided P values were less than 0.05.

Of the 303 290 registered patients treated with lipid-modifying therapy, 231 (0.076%) had shTG. Table 1 summarizes the study population with and without shTG. ShTG was more prevalent in younger patients, in males, and in diabetic and obese patients, and also appeared to be associated with a lower proportion of patients with a history of coronary heart disease (CHD), although the difference disappeared after stratification for age (Table 1).

Although fibrates were used much more frequently in patients with shTG than in other patients treated for lipid disorders (23% vs 5%, respectively; $P < 0.0001$), statins and/or ezetimibe were the treatments most frequently used in shTG patients (69.3%).

Table 1
Comparison of patients' characteristics from the five countries combined.

	shTG ($n = 231$)	No shTG ($n = 303,059$)	P
Age in years (m, SD)	52.0 (11.2)	66.4 (11.4)	<0.0001
Age < 60 (%)	75.8	26.3	
Age \geq 60 (%)	24.2	73.7	
Gender ^a (%)			<0.0001
Male	78.8	54.5	
Female	21.2	45.5	
BMI ^b (%)			0.0001
< 25 kg/m ²	14.3	23.4	
25–29 kg/m ²	33.3	40.8	
\geq 30 kg/m ²	52.4	35.8	
Diabetes ^c (%)	55.7	32.1	<0.0001
Stroke ^c (%)	5.2	11.5	0.003
Peripheral arterial disease ^c (%)	5.2	6.2	0.5
History of coronary heart disease ^c (%)			
All patients	23.0	30.2	0.02
Patients aged < 60 years	19.0	19.2	0.9
Patients aged \geq 60 years	35.7	34.1	0.8

m, SD: mean, standard deviation; shTG: severe hypertriglyceridaemia; BMI: body mass index.

^a 18 missing values.

^b 116 172 missing values, 84 for patients with shTG.

^c 59 missing values, one for a patient with shTG.

Among patients with shTG, therapy was similar across the five countries (data not shown, $P = 0.3$).

4. Discussion

Our present data suggest that shTG disorders occur mostly in young adults. Also, beyond the known association of diabetes and obesity, shTG does not appear to be related to prior coronary events in patients treated with lipid-modifying therapy. The difference between the two groups could be due to either survival bias or unexplained improvement of shTG with ageing. Unexpectedly, the majority of patients with shTG (58%) were statin-treated. Moreover, fixed combinations of statins and ezetimibe accounted for 11% of all therapies prescribed to these patients. However, such a choice is not adequate, as fibrates are more effective in reducing TG concentrations (by 30% to >50%). Statin plus fibrate combinations were used in only 6% of cases, whereas the recent Action to Control Cardiovascular Risk in Diabetes (ACCORD) study has shown a trend towards benefit with the association of fenofibrate and simvastatin only in the subgroup of patients with hypertriglyceridaemia and low high-density lipoprotein (HDL) cholesterol [3].

Considered altogether, our present data confirm the rarity of shTG, and reveal a discrepancy between current European practices and the usual recommendations, a finding applicable to all countries [4,5].

Disclosure of interest

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