(isoforms with more repeats give stronger signals) introduces measurement bias, which can be minimized by applying the WHO/IFCC SRM-2B 5-point calibrator.[5]

The International Federation of Clinical Chemistry and Laboratory Medicine proposed that ELISA using a specific monoclonal antibody against the single epitope present on kringle IV type 9 (mAb40) should be the reference method for measuring Lp(a), as it uses antibodies that recognize just a single copy of apo(a) per particle of Lp(a).[5]

Lp(a) results have traditionally been reported as mass units (mg/dL) describing total lipoprotein mass, which corresponds to apo(a), apolipoprotein B-100, cholesterol, phospholipids, cholesterol esters, and triglycerides. This is metrologically incorrect, because antibody-based immunoassays measure the protein component of Lp(a), not lipid or carbohydrate content. Nanomoles per liter (nmol/L) are the most suitable unit of measurement for Lp(a) and should not be converted to mg/dL or vice versa, as all the conversion factors are inherently isoform-dependent.

Geographic studies analyzing familial clustering of Lp(a) elevation could shed light on variations in the prevalence of Lp(a) concentrations $>$ 180 mg/dL.

This working group believes that scientific societies should join forces to create a protocol standardizing Lp(a) testing criteria, ordering practices, and availability in laboratory services portfolios.

In conclusion, Lp(a) tests are underused in hospitals in southern Spain. We detected a significant prevalence of Lp(a) elevation and a lack of standardization in ordering practices and testing methods.

FUNDING

None

AUTHORS' CONTRIBUTIONS

T. Arrobas Velilla: writing of manuscript and liaison with participating hospitals to collect data. J. Fabiani de la Iglesia: creation of database for statistical analysis. S. Martín Pérez: creation of figures and interpretation of results. L. Calbo Caballos and J.J. Gómez Barrado: writing and editing of manuscript. A. León Justel: review of manuscript.

CONFLICTS OF INTEREST

No conflicts of interest to declare.

APPENDIX. SUPPLEMENTARY DATA

Supplementary data associated with this article can be found in the online version, at https://doi.org/10.1016/j.rec.2022.05.001

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Available online 21 May 2022

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https://doi.org/10.1016/j.rec.2022.05.001
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Fabry cardiomyopathy: parametric mapping adds even more

Miocardiopatía de Fabry: el mapeo paramétrico aporta aún más

To the Editor,

Cardiac magnetic resonance, and particularly the more recently developed sequences of parametric mapping, play an important role in the differential diagnosis of ventricular hypertrophy. This usefulness is highlighted in the recently published case by Oliveira et al.,[1] in which they present a patient with severe myocardial hypertrophy and inferolateral late enhancement, a typical, though not specific, area for cardiac involvement in Fabry disease. The finding of reduced native T_1 values in the septum strongly indicated the diagnosis, which was confirmed with laboratory tests and genetic study.

Beyond the clinical situations such as the above, T_1 mapping is useful in another aspect of Fabry disease, that we believe should be highlighted: the early detection of cardiac involvement. This is of particular interest in patients who are carriers of a pathogenic variant who have not developed a clear phenotype.

By way of example of this clinical use, we present the case of a 30-year-old man who attended the familial heart disease clinic for screening for Fabry disease. He was from a large family of carriers of the pathogenic variant p.Arg301Gln of the gene for galactosidase A. Both his 63-year-old mother and his 39-year-old brother were on treatment for renal and cardiac disease (figure 1, family tree).

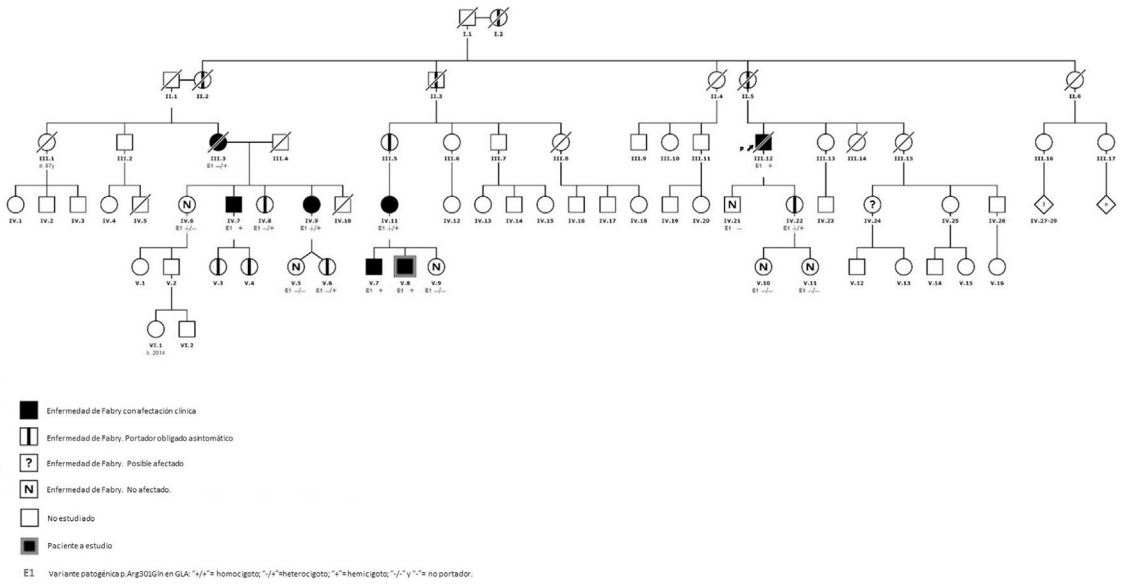

Figure 1. Family tree. GLA, alpha-galactosidase.

He was a healthy, sporty individual, with no findings of note on history or targeted physical examination. Baseline electrocardiogram and echocardiogram were normal (ruled out ventricular hypertrophy).

Genetic study revealed that the patient was a heterozygotic carrier of the familial variant p.Arg301Gln. Blood tests showed a reduced activity of alpha-galactosidase and an increase in serum concentrations of globotriaosylsphingosine (lyso-Gb3, 4.79 ng/mL; normal, < 1.4 ng/mL). Renal function was normal, although with 24-hour urine microalbumin levels toward the upper limit of normal (29.8 mg/24 h; normal, 0-30 mg/24 h).

The phenotype study was continued with cardiac magnetic resonance that showed morphological findings in line with the echocardiogram, with no ventricular hypertrophy (interventricular septum of 9 mm) and preserved biventricular function (figure 2A). Late enhancement study was negative (figure 2B). On the T_1 mapping sequence the native T_1 value was 805 ms, lower than the local reference values (904-1040 ms) and compatible with incipient heart involvement from Fabry disease (figure 2C).

In summary, this was a young man who was a carrier of the pathogenic variant p.Arg301Gln for Fabry disease, with raised plasma LysoGb3 levels, findings of incipient cardiac involvement (reduced native T_1) and possible renal involvement (microalbuminuria at the upper limit of normal). Furthermore, he was from a family with a phenotype of early clinical presentation. Considering all of this information, it was decided to offer specific treatment, and the patient was started on migalastat.

Parametric mapping sequences improve the capacity of cardiac magnetic resonance to characterize the myocardium and allow the detection of insipient or diffuse tissue abnormalities, without the administration of contrast.

In Fabry disease, there is an intracellular accumulation of glycosphingolipids that lead to hypertrophy and finally apoptosis and fibrosis. In the early phases, even without observable hypertrophy, mapping sequences show a reduced native T_1 associated with the lipid accumulation.[2] In the intermediate phases, there is ventricular hypertrophy, and in the more advanced phases, fibrosis, identified on the basis of pseudonormalized or increased native T_1 values, as well as late gadolinium enhancement in the affected area, typically the inferolateral segments. In this phase, an increase in T_2 values has also been described, probably in relation to a degree of chronic inflammation.[3,4]

Therefore, in addition to the differential diagnosis in cases of hypertrophy, parametric mapping sequences can be useful in the early diagnosis of cardiac involvement in Fabry disease, as this is the earliest known imaging parameter affected. This, together with the rest of the clinical and laboratory parameters, the characteristics of the genetic variant, and the family history, allows identification of patients in the early phase who may benefit from a closer follow-up or potential specific treatment in cases such as the one presented here.[4]

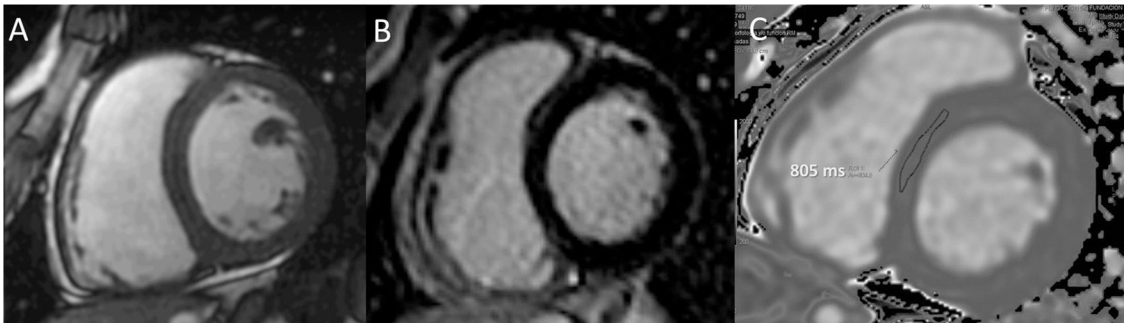

Figure 1. Cardiac magnetic resonance. A: morphological sequence on short axis view with normal myocardial thickness. B: late enhancement sequence with no gadolinium retention. C: precontrast T_1 mapping sequence; reduced native T_1.

No written informed consent was obtained for the publication of this case, as no images or identifying patient data are presented.

FUNDING

None.

AUTHORS' CONTRIBUTIONS

V. Ruiz Pizarro wrote the first draft of the manuscript and created the figures. J. Álvarez Rubio, T. Ripoll-Vera, and M.J. Soleto Roncero provided comments on subsequent modifications and reviewed the final version.

CONFLICTS OF INTEREST

J. Álvarez Rubio declares having received fees for presentations from Amicus Therapeutics and Shire. The rest of the authors have no conflicts of interest regarding this article.

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Available online 05 June 2022

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https://doi.org/10.1016/j.rec.2022.03.010
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Which patients could benefit from the use of bempedoic acid in clinical practice?

¿Qué pacientes pueden beneficiarse del ácido bempedoico en la práctica clínica?

To the Editor,

Control of low-density lipoprotein cholesterol (LDL-C) is essential for reducing the risk of cardiovascular complications. Unfortunately, most patients, especially those at high risk (eg, patients with ischemic heart disease), have insufficiently controlled lipid levels.[1,2] Although one of the main reasons for nonachievement of LDL-C goals is insufficient use of lipid-lowering treatments, with data showing very low prescribing rates for combination therapy (high-intensity statins and ezetimibe) and proprotein convertase subtilisin/kexin type 9 (PCSK9) inhibitors,[1,2] data from the DA VINCI study indicates that a significant proportion of patients on optimal lipid-lowering therapy do not achieve their goals.[2] New drugs are thus needed for clinical practice settings. Bempedoic acid is a new, first-in-class, oral lipid-lowering drug that reduces intracellular cholesterol by inhibiting adenosine triphosphate citrate lyase, an enzyme in the cholesterol biosynthesis pathway.[3] Determining how many patients might benefit from the addition of bempedoic acid in clinical practice is important. A recent publication providing practical guidance on the use of bempedoic acid according to cardiovascular risk in patients with dyslipidemia offers useful insights into which patients stand to benefit most.[3]

To estimate the proportion of patients who could derive the greatest benefit from treatment with bempedoic acid, a Spanish study analyzed LDL-C control levels in patients 12 months after an acute coronary syndrome. The patients (n = 6364) were from 20 cardiology departments at secondary and tertiary care hospitals in Spain. (Informed consent was not required as the data were population-based.) The patients had a mean age of 73.3 ± 10.6 years and 61.5% were men. LDL-C levels were > 70 mg/dL (the target cutoff at the time) in 44.1% of patients and > 100 mg/dL in 16.1% (28% had a level between 70 and 100 mg/dL).[4] The lipid-lowering treatments being used in the subgroup of patients with LDL-C > 70 mg/dL 12 months after the acute coronary syndrome are summarized in table 1.

Table 1
Lipid-lowering treatments in patients with LDL-C > 70 mg/dL 12 months after an acute coronary syndrome

	Patients with LDL-C > 70 mg/dL (n = 2806, 44.1%)	All patients (n = 6364, 100%)
No statins	396 (14.12)	396 (6.2)
High-intensity statins	1372 (48.9)	1372 (21.6)
High-intensity statins + ezetimibe	1036 (36.9)	1036 (16.3)
High-intensity statins + PCSK9 inhibitors	1 (0.04)	1 (0.01)
High-intensity statins + ezetimibe + PCSK9 inhibitors	1 (0.04)	1 (0.01)

LDL-C, low-density lipoprotein cholesterol; PCSK9, proprotein convertase subtilisin/kexin type 9.
Data are shown as No. (%) of patients.