Nutrition, Metabolism & Cardiovascular Diseases (2019) **29**, 316–317

Available online at www.sciencedirect.com

Nutrition, Metabolism & Cardiovascular Diseases

journal homepage: www.elsevier.com/locate/nmcd

LETTER TO THE EDITOR

Severe hypercholesterolaemia in a paediatric patient with congenital analbuminaemia

To the editor:

A 9-year-old girl who was just diagnosed with congenital analbuminaemia on the basis of the ALB gene c.920delT mutation came to our attention because of severe hyperlipidaemia (total cholesterol = 475 mg/dl, triglycerides = 113 mg/dl, HDL-cholesterol = 85 mg/dl, estimated LDL-cholesterol = 367.4 mg/dl, apolipoprotein A1 = 178 mg/dl, apolipoprotein B = 200 mg/dl, lipoprotein (a) = 196.44 mg/dl).

She was born at term from unrelated heterozygous parents and had no family history of early cardiovascular events nor atherosclerotic cardiovascular disease. At physical examination, she showed no xanthelasma nor tendon xanthomas and even the corneal arcus was missing. She was of normal weight and not exposed to second-hand smoke, having non-smoking parents.

Depending on the patient's age and clinical features, we first recommended a lipid-lowering treatment with pravastatin 20 mg. After eight weeks of treatment, the patient's lipid profile improved (total cholesterol = −20.2%; triglycerides = −41.6%; HDL-cholesterol = unchanged; estimated LDL-cholesterol = −18.3% vs baseline) and the tolerability was adequate. However, she did not reach the target cholesterol levels, and the Lp(a) value increased to 248 mg/dl. Therefore, we strengthened the daily dose of pravastatin to 40 mg. At eight-week follow-up, the results were extremely satisfying (total cholesterol = −30.9%; triglycerides = −27.4%; HDL-cholesterol = −1.2%; estimated LDL-cholesterol = −37.9% vs baseline). The tolerability parameters were unchanged, and the therapy had no side effects in the following 3 years.

Analbuminaemia is an autosomal recessive disorder in which subjects have low or no concentration of serum albumin [1]. Albumin is the main fatty acid-binding protein in extracellular fluids and its decrease was historically supposed to cause an increase in apo B-containing lipoproteins in the plasma [2]. Nevertheless, the causal link between this affection and dyslipidaemia remains unclear [3,4], and there is no accepted strategy for safely treating both hypercholesterolaemia and analbuminaemia to eventually decrease the atherosclerotic risk [5–8]. The long-term cholesterol-lowering treatment with atorvastatin described elsewhere resulted in the appearance of peripheral oedema [5], although it does not seem to present this problem in the short term [9]. At the same time, patients with analbuminaemia treated with simvastatin had a 3- to 5-fold increase in creatine kinase, thus suggesting that caution is advisable in the use of this drug [10].

This is the first time, however, that the lipid-lowering treatment of a paediatric patient affected with this pathology is described and documented. According to our findings, pravastatin is effective in the management of this type of patient, and it may be safely used to reduce long-term cardiovascular risk.

Funding sources

Funding was provided by the University of Bologna.

Conflicts of interest

The authors have no conflicts of interest to declare.

Author contribution

F.F and A.F.G.C. wrote the letter; S.D., S.P., F.B. and C.Bi. clinically managed the patient; C.Bo. critically revised the letter and all authors finally approved the letter.

References

[1] Koot BG, Houwen R, Pot DJ, Nauta J. Congenital analbuminaemia: biochemical and clinical implications. A case report and literature review. Eur J Pediatr 2004 Nov;163(11):664–70.

[2] Hirano T, Furukawa S, Kurokawa M, Ebara T, Dixon JL, Nagano S. Intracellular apoprotein B degradation is suppressed by decreased albumin concentration in Hep G2 cells. Kidney Int 1995 Feb;47(2):421–31.

https://doi.org/10.1016/j.numecd.2018.11.005

[3] Maugeais C, Braschi S, Ouguerram K, Maugeais P, Mahot P, Jacotot B, et al. Lipoprotein kinetics in patients with analbuminemia. Evidence for the role of serum albumin in controlling lipoprotein metabolism. Arterioscler Thromb Vasc Biol 1997 Jul;17(7):1369–75.
[4] Rosipal S, Debreová M, Rosipal R. A speculation about hypercholesterolemia in congenital analbuminemia. Am J Med 2006 Feb;119(2):181–2.
[5] Del Ben M, Angelico F, Loffredo L, Violi F. Treatment of a patient with congenital analbuminemia with atorvastatin and albumin infusion. World J Clin Cases 2013 Apr 16;1(1):44–8. https://doi.org/10.12998/wjcc.v1.i1.44.
[6] Boman H, Hermodson M, Hammond CA, Motulsky AG. Analbuminemia in an American Indian girl. Clin Genet 1976 May;9(5):513–26.
[7] Reynaud JP, Sagniez M, Rousseau A, Nicolas G. Etude biologique d'un cas d'analbuminie [French] Sem Hop Paris 1983;59:124–8.
[8] Platt HS, Barron N, Giles AF, Midgley JE, Wilkins TA. Thyroid-function indices in an analbuminemic subject being treated with thyroxin for hypothyroidism. Clin Chem 1985 Feb;31(2):341–2.
[9] Del Ben M, Burattin M, Arca M, Ceci F, Violi F, Angelico F. Treatment of severe hypercholesterolemia with atorvastatin in congenital analbuminemia. Am J Med 2004 Nov 15;117(10):803–4.
[10] Burgess LJ, Marais AD. The use of simvastatin in analbuminaemia. Cardiovasc Drugs Ther 2001 Nov;15(6):555–8.

S. D'Addato, F. Fogacci*, A.F.G. Cicero, S. Palmisano
Atherosclerosis and Metabolic Disease Research Unit Medical and Surgical Sciences Department, University of Bologna, Bologna, Italy

F. Baronio, C. Biagi
Department of Pediatrics, University of Bologna, Bologna, Italy

C. Borghi
Atherosclerosis and Metabolic Disease Research Unit Medical and Surgical Sciences Department, University of Bologna, Bologna, Italy

*Corresponding author. Medical and Surgical Sciences Department, Sant'Orsola-Malpighi University Hospital, Dyslipidemia and Atherosclerosis Research Group, U.O. Medicina Interna Borghi, Via Albertoni, 15, 40138, Bologna, Italy. Fax: +39 051391320.
E-mail address: federicafogacci@gmail.com (F. Fogacci)

31 May 2018

Handling Editor: D. Noto