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Al VIII-a Congres Internațional al Societății de Pediatrie din Republica Moldova
„PEDIATRIA – SPECIALITATE MULTIDISCIPLINARĂ”
06-08 iunie 2024

SHOULD LIPOPROTEIN (A) BE MEASURED IN THE PEDIATRIC POPULATION?

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Background. Atherosclerotic cardiovascular disease (CVD), a leading cause of death globally, has origins in childhood. Lipoprotein (a) [Lp(a)] is associated with premature CVD, but its impact on cardiovascular health during childhood is less understood

Aim. We aimed for an update about Lp(a) through the prism of the latest on testing, treatment, and guideline recommendations.

Material and Methods. Recommendations regarding Lp(a) were studied and presented from the guidelines: American College of Cardiology/American Heart Association (ACC/AHA) guidelines, Canadian Cardiovascular Society (CCS) guidelines, European Atherosclerotic Society (EAS) consensus statement, National Lipid Association (NLA) scientific statement.

Results. Lp(a) levels are genetically determined, with little to no influence from environmental or lifestyle factors, and adult levels are reached in childhood, typically by 5 years of age. But, there is no generalized consensus on Lp(a) risk thresholds: ≥50 mg/dL (≥125 nmol/L) is an accepted target in ACC/AHA guidelines; ≥50 mg/dL (≥100 nmol/L) is an accepted target in the CCS guidelines; <30 mg/dL (or<75nmol/L) is considered normal, 30-50 mg/dL (50-125 nmol/L) intermediate, and >50 mg/dL (>125 nmol/L) abnormal in the EAS consensus statement, and>50 mg/dL (>100 nmol/L) is accepted as a risk-enhancing cutoff in the NLA scientific statement. New lines of therapy targeting Lp(a) gene translation are being developed.

Recommendations for Lp(a) screening in youth :

I. Primary care providers

Targeted Lp(a) screening of all children i2 y of age in whom:

- One or both biologic parents are known to have hypercholesterolemia or are receiving lipid-lowering medications
- A parent or sibling known to have an elevated Lp(a)†
- Who have a family history of premature CVD (men <55 y of age; women <65 y of age
- Whose family history is unknown (eg, children who were adopted)

II. Specialty/subspecialty providers

Targeted Lp(a) screening as above of all children ≥2 y of age + with moderate-high risk factors and risk conditions:

Moderate risk

Risk factors
- Hypertension that does not require drug therapy
- BMI at the i95th percentile, <97th percentile
- HDL-C <40 mg/dL

Risk conditions
- Kawasaki disease with regressed coronary aneurysms
- Chronic inflammatory disease (systemic lupus erythematosus, juvenile rheumatoid arthritis)
- HIV infection
- Nephrotic syndrome

High risk

Risk Factors
- Hypertension that requires drug therapy (blood pressure ≥ 99th percentile + 5 mm Hg)
- Current cigarette smoker
- BMI at the ≥97th percentile

Risk conditions
- T1DM and T2DM
- Chronic kidney disease/end-stage renal disease/postrenal transplant
- Postorthotopic heart transplant
- Kawasaki disease with current aneurysms FH†
- An unknown cause of ischemic stroke

BMI, body mass index; HDL-C, high-density lipoprotein-cholesterol; T1DM, type 1 diabetes; T2DM, type 2 diabetes.
*Expert Panel on Integrated Guidelines for Cardiovascular Health and Risk Reduction in Children and Adolescents: summary report. Pediatrics 2011;128:S213-56.
†Wilson DP, Jacobson TA, Jones PH, et al. Use of Lipoprotein(a) in clinical practice: A biomarker whose time has come. A scientific statement from the National Lipid Association. J Clin Lipidol 2019;13:374-92.

Conclusion. In conclusion, over the years, Lp(a) has become more prominent in most guidelines around the world: 2022 EAS consensus statement - Lp(a) level measured at least once in all adults and in youth with a history of ischemic stroke or a family history of premature ASCVD or elevated Lp(a) level and no other known risk factors; 2021 CCS dyslipidemia guideline - Measure once in a person's lifetime as part of initial lipid screening; 2019 NLA scientific statement on Lp(a) - Measure in individuals with premature ASCVD, LDL-C level≥190 mg/dL, men<55 years of age, and women <65 years of age. Use Lp(a) level>50 mg/dL (>100 nmol/L) as an increased risk; less-than-expected LDL-C-lowering response, despite good adherence; recurrent or progressive ASCVD despite optimal lipid-lowering therapy; calcific valvular aortic stenosis; and family history of elevated Lp(a) levels; 2019 ESC/EAS dyslipidemia guideline - A relative indication for Lp(a) level measurement is family history of premature ASCVD; favors statin initiation in primary prevention in patients with intermediate or borderline ASCVD; 2018 multisociety cholesterol guideline - Recommends measurement in individuals with a family history of premature ASCVD.Therefore, we believe that Lp(a) can help to identify children at an increased lifetime risk for ASCVD, with early intervention for the pediatric population affected.

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