



## Differences in Lipoprotein (a) Levels Among Children Diagnosed with a Primary Hypercholesterolemia Being Treated at a Pediatric Lipid Clinic

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**Introduction:** The American Academy of Pediatrics (AAP) recommends universal lipid screening in all children beginning at nine years of age. Although not a routine component of the lipid profile, lipoprotein (a) (Lp(a)) is an independent risk factor for atherosclerotic cardiovascular disease (ASCVD). Plasma Lp(a) levels are genetically determined and are a product of the Lp (a) gene. The Lp(a) gene is fully expressed at a young age, typically by five years of age, and remains relatively unchanged into adulthood. Limited numbers of studies have examined Lp(a) levels in children and adolescents diagnosed with a primary hypercholesterolemia.

**Objectives:** 1) To determine the frequency of Lp(a) excess, defined as  $\geq 30$  mg/dL, among patients diagnosed with a primary hypercholesterolemia (i.e., Familial Hypercholesterolemia (FH), Familial Combined Hyperlipidemia (FCH), Polygenic Hypercholesterolemia (PH)); and 2) To determine differences in the frequency of Lp (a) excess among these children.

**Methods:** We reviewed data on patients from the Ascension St. John Children's Center Pediatric Lipid Clinic database who were referred for dyslipidemia evaluation and treatment between 8/1/2012 and 12/31/2019 and had baseline Lp (a) assessed. FH was diagnosed using the Dutch Lipid Score. PH was diagnosed as an elevated LDL-C level not associated with a monogenic mutation or a secondary cause. FCH was diagnosed as an elevated LDL-C in combination with any triglyceride elevation. Data were analyzed using the chi-squared test, analysis of variance and the Kruskal-Wallis test.

**Results:** We included 120 patients, mean age  $12.1 \pm 2.0$  years, 78% (93) white and 52% (62) male. The prevalence of Lp(a) excess was 44% (53). Table 1 shows the prevalence of Lp(a) excess by type of hypercholesterolemia and the median Lp(a) and mean LDL-C levels in those with excess.

	PH	FH	FCH	p-value
% with Lp(a) excess	60%	37%	34%	0.04
Median Lp(A) (range)	92.6 (38-400)	124.9 (40-269)	54.9 (35-120)	0.02
Mean LDL-C $\pm$ s.d.	142.2 $\pm$ 24.4	226.0 $\pm$ 88.0	146.3 $\pm$ 31.8	p<0.001 for PH vs. FH and p=0.001 for FH vs. FCH

**Conclusion:** Lp (a) excess is prevalent among children diagnosed with a primary hypercholesterolemia. An Lp (a) excess is an ASCVD risk factor and should be considered to determine the baseline LDL-C level at which a lipid-lowering agent be initiated.