

Statin Treatment in Children and Adolescents with Elevated LDL-c in Patient with Normoglycaemia and Dysglycaemia

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Background:

The obesity prevalence surge in children and adolescents is associated with dysglycaemia, dyslipidaemia and long-term cardiovascular complications. The use of lipid-lowering medications [1] has been recommended following lifestyle modifications. We aim to investigate the demographic, and changes in LDL-c, in these young patients, in the presence and absence of dysglycaemia.

Methods:

Complete lipid profiles of patients (≤ 19 years old) with hyperlipidaemia who are prescribed statin therapy was extracted based on International Classification of Diseases (ICD) Codes (n=150). Patients with familial hypercholesterolemia (n=20), or prescribed Omega-3 supplements (n=61), were excluded. The remaining patients (n=69) were further sub-grouped per sex and diabetes status. Median (IQR) LDL-c levels were calculated with Wilcoxon matched-pairs signed rank test for Pre- and Post-statin therapy (6 months) initiation was analysed using GraphPad PRISM 9 with statistical significance set at the ≤ 0.05 level.

Results:

Within the study population (n=69 patients) receiving statin therapy (females = 51.43%), mean age was 15.97 ± 3.02 years (minimum = 6 years; maximum = 19 years). Sub-grouped per diabetes status; normoglycaemic (NGT; n=15 [21.7%]), Pre-Diabetes (Pre-Dia; n=10 [14.5%]), type 1 diabetes (T1DM; n=33 [47.8%]), type 2 diabetes (T2DM; n=8 [11.6%]), MODY (n=2, 3.0%) and secondary diabetes (n=1; 1.4%). Median (IQR) LDL-c levels for all patient groups were significantly decreased compared to baseline; p-value 0.01 - <0.0001 .

Conclusion:

All patients receiving statin therapy, independent of their diabetes status, showed a significant decrease in LDL-c levels post-statin therapy. The data further highlights the importance of identifying young patients where lifestyle modifications alone is not effective particularly in the presence of obesity and and/or diabetes. This indicates that early detection, diagnosis, and timely intervention in the management of dyslipidemia, is cornerstone in avoiding long-term cardiovascular disease in young patients.

Table 1.

	Patient Groups	Pre-statin therapy	Post-statin therapy (6 months)	Change in Statin (Δ LDL-c mmol/L)	P-value
LDL-c Level (mmol/L)	All Patients	4.60(3.92, 5.19)	3.52(3.00, 4.42)	1.08	<0.0001
	NGT	5.00(4.11,5.46)	4.00(3.22,5.00)	1.00	0.001
	Pre-Dia	4.57(3.96,4.96)	3.88(2.94,4.67)	0.69	0.002
	All NGT + Pre-Dia	4.84(4.08,5.18)	4.00(3.22,4.99)	0.84	<0.0001
	T1DM	4.56(3.85,5.53)	3.36(2.99,4.43)	1.20	<0.0001
	T2DM	3.89(3.38,4.71)	3.53(2.14,4.22)	0.36	0.008
	All Dia	4.46(3.72,5.30)	3.38(2.95,4.22)	1.08	<0.0001

Table 1. LDL-c changes in children and adolescents with hyperlipidaemia. Patients (n= 61) were assessed Pre- and Post-lipid lowering (statin) therapy. Median (IQR) LDL-c levels were calculated with statistical significance (≤ 0.05 level).

References:

1. Miller, M.L., C.C. Wright, and B. Browne, *Lipid-lowering medications for children and adolescents*. J Clin Lipidol, 2015. 9(5 Suppl): p. S67-76.