ATHEROSCLEROSIS IN MONOGENIC FAMILIAL HYPERCHOLESTEROLAEMIA VERSUS POLYGENIC HYPERCHOLESTEROLAEMIA

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Introduction: The aim of this study was to assess the degree of atherosclerosis in monogenic Familial Hypercholesterolaemia (FH) patients versus individuals with a clinical diagnosis of FH but with no detectable mutation (ie with polygenic hypercholesterolaemia).

Method: Carotid Intima Media Thickness (cIMT) was measured by B-mode ultrasound in the common carotid artery, bifurcation and internal carotid artery in 86 individuals (53 females and 33 male) with a clinical diagnosis of FH (LDL-C mean+SD: 5.8±1.3 mmol/l). 56 patients had monogenic FH with a mutation in the *LDLR* or *APOB* gene and 30 patients had no mutation and had a score in the top two quartiles of a six LDL-C-raising SNPs gene score.

Results: The monogenic patients were younger than polygenic individuals (50±14 years vs 57±12 years, p=0.03). There was no significant difference in total cholesterol level, LDL-C and HDL-C between the two groups. Triglyceride level was significantly higher in the polygenic compared to the monogenic group (1.6±0.7 mmol/l vs 1.2±0.5 mmol/l, p=0.01]. After adjustment for age and gender, the mean of all the cIMT measurements was significantly higher in monogenic than polygenic patients [0.74 mm (0.7-0.79) vs 0.66 mm (0.61-0.72), p=0.039].

Conclusion: The severity of atherosclerosis as measured by cIMT is higher in monogenic FH individuals than the polygenic group. While LDL-C levels need to be reduced in both groups, the greater degree of carotid atherosclerosis supports aggressive management of their LDL-C levels with potent statins and other LDL-C lowering modalities in combination.