

Skin Cholesterol Measurement In Children: A Pilot Study.

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A rapid non-invasive skin cholesterol assay has been shown to predict the presence of angiographic coronary artery disease (CAD) and to be related to myocardial infarction history in adults.

In a pilot study examining this methodology in children, skin cholesterol levels were determined using the Cholesterol 1,2,3 system (IMI, Inc) in 25 children with hypercholesterolemia (HC) and 25 age and gender matched controls (C). The children (24F, 26 M) ranged in age from 5 – 17 years. The HC children had higher serum total cholesterol (6.36 ± 1.10 vs 3.90 ± 0.57), LDL cholesterol (4.58 ± 1.15 vs 2.11 ± 0.46) and ApoB (1.17 ± 0.29 vs 0.66 ± 0.11) than the controls. There were no differences in BMI, systolic or diastolic blood pressure, HDL cholesterol, Apolipoprotein A1 or triglyceride levels between the two groups. As children with a family history of premature (<55 y in men & < 60 y in women) CAD in first degree relatives were excluded from the control group, HC children were much more likely to have a family history of premature CAD (8/25 in a parent, 7/25 in a grandparent compared to 2/25 in a grandparent of C children). Furthermore, 13/25 HC children had an elevated Lp(a) (an independent risk factor for CAD) compared to 5/25 in the control group.

Within day precision was assessed in 48 individuals by comparing the skin cholesterol (SC) level obtained from the left and right palm. The range was 75-174 (median 118) and the mean CV was 15.5%. There was no indication of a gender difference, and the levels did not vary with age. No reactions to the solutions used were noted. The median SC in the HC group was 126 (range 82-145) compared to 112 (range 77-175) in C. As in studies in adults, SC was not related to any component of the lipid profile. Although there was a tendency for those in the highest quartile for SC level to have a family history of premature CAD (6/12, 4/12, 4/12 and 3/12 for the 4th, 3rd, 2nd and 1st quartile respectively), these group differences did not reach statistical significance.

In summary, skin cholesterol levels can be measured reliably in children, and these levels do not vary with age or gender. Future studies, with larger numbers will determine if there is a significant association between early atherosclerosis development or family history and skin cholesterol.