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Plasma lipid profiles and risk of cardiovascular disease in occupational lead exposure in Abeokuta, Nigeria

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Abstract

In order to investigate the effects of lead exposure on risk of cardiovascular disease during occupational exposure to this metal, plasma cholesterol and its fractions as high-density lipoprotein (HDL), low-density lipoprotein (LDL) and triglyceride were determined in various artisans in Abeokuta, Nigeria who have been shown to be occupationally exposed to lead and these were related to blood lead levels. Increased risk of cardiovascular disease was observed in the artisans. Total cholesterol in the artisans was between 1.5 and 2.0 times higher in the artisans than that present in controls while LDL cholesterol was between 1.6 and 2.4 times higher in the artisans when compared with control subjects [$p < 0.001$]. HDL cholesterol and triglyceride levels were not affected [$p > 0.05$]. A significant positive correlation was observed between blood lead and total cholesterol on one hand [$r = 0.372$; $p = 3.0 \times 10^{-5}$] and blood lead and LDL cholesterol on the other hand [$r = 0.283$; $p = 0.001$]. LDL/HDL cholesterol ratio was also higher in the artisans when compared with control. Blood pressure (systolic and diastolic) and other anthropometric parameters were not significantly different between the artisans and the control subjects [$p > 0.05$]. Results suggest that lead exposure increases cholesterol synthesis and transport to peripheral tissues whereas reverse cholesterol transport to the liver is not affected.