

Circulating Oxidized LDL and Insulin Resistance among Obese School Students

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Abstract : Circulating oxidized LDL (ox-LDL) is associated with obesity, insulin resistance (HOMA), metabolic syndrome, and cardiovascular disease in adults. Little is known about relations in children. Aim: To assess association of ox-LDL with fat distribution and insulin resistance in a group of obese Egyptian children. Methods: Study is cross-sectional consisting of 68 obese children, with a mean age of 9.96 ± 1.32 . Each underwent a complete physical examination; blood pressure (SBP, DBP) and anthropometric measurements (weight, height, BMI; waist, hip circumferences, waist/hip ratio), biochemical tests of fasting blood glucose (FBS), insulin levels; lipid profile (TC, LDL, HDL, TG) and ox-LDL; calculated HOMA. Sample was classified according to waist/hip ratio into: group I with and group II without central obesity. Results: ox-LDL showed significant positive correlation with LDL and TC in all groups of obesity. After adjustment for age and sex, significant positive correlation was detected between ox-LDL with SBP, DBP, TC, LDL, insulin, and HOMA in group II and with TC and FBS in group I. Insignificant association was detected between ox-LDL and other anthropometric parameters including BMI in any group of obese children ($p > 0.05$). Conclusions: ox-LDL, as a marker of oxidative stress is not correlated with BMI among all studied obese children (aged 6-12 years). Increased oxidative stress has causal effects on insulin resistance in obese children without central obesity and on fasting blood sugar in those with central obesity. These findings emphasize the importance of obesity during childhood and suggest that the metabolic complications of obesity and body fat distribution are detectable early in life.

Keywords : ox-LDL, obesity, insulin resistance, children

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