P015 Apolipoprotein B48, insulin resistance, dyslipidemia and visceral fat in overweight pre-pubertal children

M.M.U. Nzekwu[1], G.D.C. Ball[2], M.M. Jetha[2] and S.D. Proctor[1]

[1]Alberta Institute For Human Nutrition and [2]Department of Pediatrics, University of Alberta, Edmonton, Alberta, Canada

Clinical studies in adults indicate there is a positive and significant association between insulin resistance, dyslipidemia, fasting intestinally-derived lipoproteins [via apolipoprotein B48 (apo-B48)] and visceral fat. All of which contribute to increased cardiovascular disease risk. Since little is known about postprandial dyslipidemia in obese children, we sought to compare fasting levels of apo-B48 with HOMA-IR score, classic lipid profile and visceral fat. Pre-pubertal, overweight boys and girls were recruited from the wider-Edmonton area (Alberta). Body composition was determined using both dual-energy X-ray absorptiometry and magnetic resonance imaging (MRI). Fasting apo-B48 was quantified in plasma using an adapted SDS-PAGE immunoblotting technique and insulin, glucose, total cholesterol (TC), triglyceride (TG), LDL and HDL were determined by calorimetric assay. In this overweight sample we have observed elevated fasting apo-B48 concentrations, greater than the normal adult range. In addition, apo-B48 was significantly related to HOMA-IR and TG levels. While apo-B48 was positively correlated with TC and LDL and negatively associated with HDL, these relationships did not achieve significance. Our ongoing MRI analysis reveals a strong relationship between apo-B48 and visceral fat volume. To our knowledge this is the first study to report apo-B48 concentrations in overweight pre-pubertal children. Based on these preliminary findings, evidence suggests that apo-B48 may help to accurately assess metabolic syndrome-associated risks in an overweight pediatric population.