

Elevated MCP-1, TNF- α , Monocyte Concentration, and Dyslipidemia in Obese Mexican-American Children

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ABSTRACT

Background: Obesity is an independent risk factor for chronic disease. The prevalence of obesity is especially high among Mexican-American children. Peripheral blood monocytes contribute to systemic inflammation and may mediate the relationship between obesity and chronic disease. Obesity affects monocytes and the circulating levels of cytokines/chemokines that influence monocyte behavior. *Purpose:* investigate alterations in blood monocytes and plasma cytokines/chemokine levels among healthy weight (zBMI \leq 85th percentile; N=66), overweight (zBMI=85th-95th percentile; N=23), and obese (zBMI \geq 95th percentile; N=39) Mexican-American children. *Methods:* Blood samples were analyzed for total monocyte concentration, pro-inflammatory monocyte concentration, and classic monocyte concentration via flow cytometry. Serum MCP-1, Fractalkine, IL-8, and TNF- α were measured using a Milliplex MagPix assay. Serum cholesterol, HDL, triglycerides, and glucose were measured using an enzymatic reagent kit. *Results:* Total monocyte concentration (P=0.012), classic monocyte concentration (P=0.045), MCP-1 (P=0.015), and TNF- α (P=0.002) were significantly greater in obese children compared to healthy weight children. Also, overweight and obese children had elevated triglycerides (P=0.001) and reduced HDL (P=0.033) compared to healthy weight children. *Conclusion:* Elevations in circulating monocytes, MCP-1, and TNF- α have been implicated in the development of obesity-related chronic disease in adults. Childhood obesity alters monocytes and circulating chemokines, putting children at a greater risk of developing obesity-related chronic diseases in adulthood. Further characterization of early immune alterations in childhood obesity may provide additional clinical insight into the assessment of obesity-related disease risk.