Early immune disorders induced by childhood obesity

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Childhood obesity and the developing Immune System

- Childhood is an important time for immune system development
- Increased immune-mediated co-morbidities associated with childhood obesity observed
- These co-morbidities include:
  - Diabetes Mellitus
  - Asthma
  - Multiple Sclerosis
- There are preliminary reports of suboptimal vaccine response associated with obesity

Inflammation in Childhood Obesity

- Increased hsCRP concentration
- Increased pro-inflammatory cytokines
  - TNF-α/IL-6/IL-1β
- Increased Monocyte Chemoattractant Protein
  - Key protein for regulation of monocyte migration
- Decreased levels of insulin sensitizing adipokine, Adiponectin

Altered Immune Cell Populations

- Increased Monocyte concentrations
  - Activated populations that correspond to higher cardiovascular risk in adults
- Reduced Invariant Natural Killer T cells
  - This cell population is thought to play a pivotal role in metabolic regulation
- Macrophage infiltration into adipose tissue