Early immune disorders induced by childhood obesity

E Carolan, AH Hogan, D O’Shea
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