Fat wasting: impaired energy balance or abnormal fat metabolism?

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Among patients with COPD and normal body mass index, approximately 10% suffer from selective wasting of fat-free mass. Nevertheless, in most cachectic patients with advanced COPD parallel loss of both muscle and fat mass occurs. Although several studies suggested that there is a link between COPD-related wasting, impaired energy balance and systemic inflammation, pathomechanisms of wasting, including wasting of adipose tissue remain largely unexplored.

Current evidence indicates that a) Adipose tissue loss is common in underweight patients with COPD; b) Hypermetabolism might be linked to wasting in COPD-related cachexia, nevertheless little information is available on the triggers of the hypermetabolic state and/or potential strategies leading to its reversal; c) Mild-to-moderate COPD does not enhance adipose tissue inflammation, and although AT in very severe hypoxaemic (cachectic) COPD patients displays signs of activation of certain inflammatory pathways, there is no upregulation of macrophage-related inflammatory or proapoptotic markers.

Summary of gaps: Majority of studies - cross sectional data in stable COPD, no detailed data on adipose tissue inflammation during COPD exacerbations, no gender studies; paucity of experimental research or intervention studies.

Research needed in the future: Future studies are needed to explore: a) Possible role of adipose tissue macrophages in the systemic inflammatory response (studies on adipocyte versus stromovascular fraction); b) Gender differences in adipose tissue inflammation; c) Effects of COPD exacerbations on adipose tissue inflammation and adipose tissue metabolism.

Literature


