

The way of "Adipocentric thinking" in the Pathophysiology of Disease

The worldwide epidemics of obesity and related disorders such as type-2 diabetes mellitus, hypertension, atherosclerosis, metabolic syndrome and sleep apnea as well as obesity related cancer have focused attention on adipobiology. Human body comprises two types of adipose tissue namely brown and white adipose tissue (WAT). Brown adipose tissue is specialized for heat production by non-shivering thermogenesis whereas white adipose tissue serves as the main energy reservoir. However, understanding of the physiology of WAT changed over the past decade by definition of its secretory products which are collectively termed adipokines. As Trayhurn stated in detail "they are highly diverse in terms of physiological function including classical cytokines [e.g. tumour necrosis factor-alpha (TNF-alpha), interleukin (IL-6)], growth factors [e.g. transforming growth factor-beta (TGF-beta)], satiety hormone (leptin) and proteins of the alternative complement pathway (adipsin); they also include proteins involved in the regulation of blood pressure (angiotensinogen), vascular hemostasis [e.g. plasminogen activator inhibitor-1 (PAI-1)], lipid metabolism (e.g. retinol binding protein, cholesteryl ester transfer protein), glucose homeostasis (e.g. adiponectin) and angiogenesis (e.g. vascular endothelial growth factor)" (1). Endocrine effects of adipocyte-secreted substances has been suggested to be the pathophysiologic link between health and disease in many disorders. Most of these adipocyte-derived secretory products were extensively studied in the pathophysiology of various diseases (2-6).

Evidence suggest that adipokines may also contribute to pathophysiology of several diseases as paracrine mediators besides endocrine action. The pathophysiologic link between adipocyte penumbra and the disease includes mesenteric fat and Crohn's disease, mammary gland-associated adipose tissue and breast cancer, periaortic fat (tunica adiposa) and atherosclerosis, periprostatic adipose tissue and prostate cancer, and infrapatellar fat pad and osteoarthritis. Obese state is characterized by a chronic low-grade inflammation. Furthermore, the site of inflammation induced by adipokines

may be local or systemic (i.e. paracrine or endocrine). In this issue Chaldakov et al., (7) discussed paracrine importance of adipose tissue and brought about cultivation of an "adipocentric thinking" which places adipose tissue-generated inflammation at the very heart of pathophysiologic basis of disease. They state that maintaining the balance between pro-inflammatory and anti-inflammatory adipokines requires yin-and-yang model of adipocyte secretion. Furthermore, they discuss adipoparacrinology of atherosclerosis, breast and prostate cancer. Again, an emerging field coming with emerging hope.

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