Perivascular adipose tissue as a window to the coronaries

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Adipose tissue is considered a “biochemical factory”, synthesizing and secreting a wide range of adipocytokines with endocrine and paracrine effects on the vascular wall. Indeed, it is believed that dysfunctional adipose tissue in obesity and insulin resistance, exerts proinflammatory effects on the vascular wall, inducing atherogenesis. However, we have recently demonstrated that adipose tissue in humans, behaves as a recipient of communication signals from the cardiovascular system, and responds by secreting adipokines or cytokines able to act back onto the vascular wall altering vascular disease pathogenesis. Actually, perivascular adipose tissue hosts “defence mechanisms” against vascular oxidation and inflammation, and its cross-talk with the vascular wall is considered part of physiological vascular homeostasis. This dynamic cross-talk between adipose tissue and the vascular wall has been used recently as a model system to a) identify novel therapeutic targets in the prevention and treatment of coronary atherosclerosis and b) develop novel imaging biomarkers enabling the non-invasive early detection of vascular disease in humans. These novel concepts will be discussed in this lecture.