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Metabolic syndrome and its worldwide epidemics: How hepatic inflammation and hepatic dysmetabolism consort to determine obesity, NAFLD and insulin resistance

The last 30 years have registered a progressive and dramatic increase in the incidence of obesity in both developed and developing countries. Metabolic syndrome represents one of the most commonly diagnosed conditions associated with obesity, and it has been identified as predisposing to major cardiovascular complications as well as various forms of cancer including liver, colon and breast cancer among others. Currently, 35.5 to 45% of the adult population, also adolescents and children, are affected by obesity and clinical parameters typical of metabolic syndrome with some marked differences in terms of age of onset and race, ethnicity and gender predisposition. According to the latest releases from the WHO, it is estimated that approximately one billion people worldwide are obese and near 500 million are diabetic, or at risk of developing diabetes. The underlying causes of increased obesity incidence are not completely understood, it is presently difficult to establish short- and long-term health guidelines and therapeutic approaches that can help containing the progression and possibly reversing the uptrend of obesity, metabolic syndrome, and their complications. The term 'metabolic syndrome' encompasses several clinical and hematic metabolic factors that altogether raise significantly the risk for heart disease, stroke, diabetes and the particular forms of cancer mentioned above. Liver steatosis, with or without inflammation (steatohepatitis) and progression to NAFLD is considered pathognomonic of metabolic syndrome, and represents the most common clinical manifestation of the disease. While the etiology of metabolic syndrome is most likely multi-facet, the condition is characterized by a major lipid dysmetabolism within liver and adipose tissue as well as systemically, connotations that it shares with T2DM. Inflammation is a key component of both pathologies, in that enhanced levels of inflammatory cytokines have been observed in the circulation and within specific organs, in which they may impair insulin responsiveness and systemic glucose homeostasis. Altogether, metabolic syndrome, NAFLD, obesity and insulin resistance pose major financial and health burdens on the affected individuals, and the medical and productive systems of the various countries. The predisposition to the various associated complications and the financial costs relative to their treatments argue for the necessity to better understand the causes responsible for the onset of metabolic syndrome and its complications and to identify more effective therapeutic and dietary approaches.

Biography

Andrea M P Romani completed his Medical Degree from University of Siena, Italy and his PhD from University of Turin, Italy. After completing his Post-doctoral studies under Dr. Scarpa, he joined the Faculty in Department of Physiology and Biophysics at Case Western Reserve University, where he is currently an Associate Professor. He has published over 90 peer reviewed articles in high profile journals together with numerous invited reviews and book chapters on "The role of mammalian magnesium homeostasis in health and disease". He is currently serving as an Editorial Board Member and Reviewer for numerous international journals.

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