

E-BABE-Adiponectin Axis and Ischemic Stroke

Ming-Hsiu, Wu

Chi Mei Medical Center, Liouying, Tainan, Taiwan

Adiponectin (APN) axis is composed of Adiponectin and its receptors (ARs). Adiponectin, an adipokine which weights 30 kDa, is almost exclusively secreted by adipocytes. It exists as oligomeric multimers and a globular fragment (gAd). Adiponectin receptors is composed of type 1 and 2, and is responsible for adiponectin signaling.

Physiologically, adiponectin is mainly involved in insulin sensitivity and regulation of metabolism of glucose and lipids. Obesity decreased its circulating level for increased oxidative stress in accumulated fat.

Adiponectin exerts multiple protective mechanisms against cerebral ischemic injury including eNOS-dependent mechanism, anti-inflammation, anti-apoptosis, anti-oxidation, anti-apoptosis, and promotion of angiogenesis.

The results of recent meta-analysis studies about adiponectin and risk of stroke are inconsistent. Two studies reported no association of circulating adiponectin levels and risk of stroke, while another reported hyperadiponectinemia increased risk of ischemic stroke. Results from studies in assessing circulating adiponectin levels and the risk of stroke mortality are conflicting and inconsistent in its relationship with functional outcome.

Although many laboratory studies reported beneficial effects of adiponectin in the protection against cerebral ischemic injury, some in vitro evidence showed that activation of AR1 might render neurons vulnerable to ischemic death. Our study showed adiponectin was protective against cerebral ischemic injury through down-regulation of AR1 expression and up-regulation of AR2 expression and p38-mediated anti-apoptosis.

Finally, we believe that, with better understandings of adiponectin axis in cerebral ischemia basically and ischemic stroke clinically, adiponectin has the great potential to be applied in the future care and treatment of ischemic stroke.