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Luis Ulloa

Rutgers New Jersey Medical School, USA

Design of biosimilars to overcome the limitations of neuromodulation of the inflammation

Sepsis remains a leading cause of death in hospitalized patients, despite the efficacy of the new antibiotics and the major advances in modern hospitals. These mortality rates remain high because new antibiotics are efficiently controlling the infection, but they do not control inflammation. Sepsis is one of the most lethal examples of inflammation as the overzealous systemic inflammation becomes more dangerous than the infection itself. Currently, most of the therapies are largely supportive and there is no effective treatment for severe sepsis. We reported that electrical vagal stimulation controls inflammation and improves survival in experimental models of sepsis. But, the clinical implications of this mechanism were limited by the surgical procedure required for electrical nerve stimulation. We recently reported that neuronal stimulation with transdermal neurostimulation prevented systemic inflammation and improved survival in experimental sepsis. Neurostimulation inhibited the production of inflammatory factors by inducing the production of dopamine from the adrenal medulla. From a pharmacological perspective, dopamine inhibited macrophage's activation via D1-like dopaminergic receptor. Clinically, neural stimulation through neurostimulation is a promising strategy to control inflammation, but its efficacy is questioned due to the placebo effect. We also studied the effects of transdermal nerve stimulation with electroacupuncture in anesthetized patients during surgery, analyzing blood samples collected under general anesthesia to avoid any placebo effect. Electroacupuncture during surgery reduced the postoperative use of analgesics, physiological stress, hyperglycemia and inflammatory responses to trauma.

Biography

Luis Ulloa has completed his Postdoctoral studies from Memorial Sloan Kettering Cancer Center. He is currently an Associate Professor at Rutgers New Jersey Medical School, USA. He has published more than 75 papers in renowned journals and serves as an Editorial Board Member of prestigious scientific journals.

Luis.Ulloa@Rutgers.edu