Joshua A Cuoco et al., Brain Disord Ther 2016, 5:3(Suppl)
http://dx.doi.org/10.4172/2168-975X.C1.012

The Cholinergic anti-inflammatory Pathway: Potential neuro immune modulation with osteopathic manipulative treatment

Joshua A Cuoco, Charles N Fennie and George K Cheriyan
New York Institute of Technology, USA

Inflammation is a complex biologic response to gross traumatic injury, endogenous ligands (e.g., cell death signals within a slowly degenerating tissue), or exogenous ligands (e.g., bacterial toxins within an acute microbial infection). The inflammatory response is necessary for reestablishing organismal homeostasis. It must be meticulously monitored and tightly regulated as over- or under activation of the inflammatory response can cause morbidity and even mortality. Emerging evidence has begun to depict the molecular mechanisms by which inflammation is regulated via the nervous system; that is, inflammation is controlled by neuro immunologic circuitry operating in a reflexive continuum. Known as the inflammatory reflex arc, this pathway exhibits an afferent and efferent arc: both of which derive from vagal nerve fibers. The afferent arc is comprised of vagal receptors detecting specific ligands indicating injury. An activated afferent arc will initiate the efferent arc, the cholinergic anti-inflammatory pathway, which regulates immunologically-mediated inflammation. Suboccipital decompression by osteopathic manipulative treatment has been demonstrated to enhance vagal output. Considering this association, we postulate that suboccipital decompression may stimulate the efferent branch of this vagal-mediated reflex, the cholinergic anti-inflammatory pathway, thereby suppressing pro-inflammatory cytokine concentrations. In this poster, we discuss the molecular mechanisms of the vagal-mediated inflammatory reflex arc emphasizing the possibility of suppressing inflammation with osteopathic manipulative treatment.

Biography

Joshua A Cuoco completed his MS from Johns Hopkins University. He is currently a second-year medical student at NYIT-COM. He studies the anatomic and functional neuronal diversity in the brain during brain development and in brain pathologies. He has published several papers in the field of neuroscience.

jcuoco@nyit.edu

Notes: