

NEWS RELEASE

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Acupuncture Found to Trigger Physiological Response that May Guard against Deadly Bacterial Infections

NEWARK, N.J.—Acupuncture is commonly used to relieve pain, nausea and stress, but it may also protect against deadly bacterial infections, according to a study by Luis Ulloa and colleagues at Rutgers New Jersey Medical School.

Severe sepsis is an overwhelming systemic inflammation that causes lethal multiple organ failure and can develop in several clinical situations, including bacterial infection, trauma and cancer. Severe sepsis is the leading cause of death in intensive care units, killing 250,000 patients every year in the United States. With no drugs approved for sepsis by the federal Food and Drug Administration, new therapeutic approaches are urgently needed.

Studies in mice have shown that electrical stimulation of the Vagus nerve—the long cranial nerve that runs from the brain to the abdomen—protects against septic shock. Stimulation triggers a complex series of signals that dampen the production of inflammatory proteins by immune cells in the spleen. Although promising, this approach requires surgical exposure of the nerve and is thus not feasible in critically ill patients. Vagus nerve stimulation is also used to relieve epilepsy, but this requires implantation of a pace maker-like device.

Ulloa and colleagues now find that electroacupuncture provides an alternative way to tickle this critical nerve in mice. By transmitting short electrical pulses through acupuncture needles placed just below the knee, they stimulated the Vagus nerve and rescued mice from lethal sepsis. In this setting, however, Vagus nerve stimulation caused the adrenal gland to release dopamine, which then inhibited inflammatory protein production by immune cells in the blood. Treating mice with agents that stimulate dopamine receptors mimicked the protective effect of electroacupuncture in septic mice, including those with impaired adrenal function. This is good news given that poor adrenal function often goes hand in hand with clinical sepsis.

Although electroacupuncture may have limitations in clinical sepsis, these studies will help us to understand the pros and cons of electroacupuncture in certain patient populations and to develop new pharmacological strategies for treating sepsis.

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Founded in 1954, **Rutgers New Jersey Medical School** is the oldest school of medicine in the state. Today it is part of Rutgers, The State University of New Jersey and graduates approximately 170 physicians a year. Dedicated to excellence in education, research, clinical care and community outreach, the medical school comprises 22 academic departments and works with several healthcare partners, including its principal teaching hospital, The University Hospital. Its faculty consists of numerous world-renowned scientists and many of the region's "top doctors." New Jersey Medical School hosts more than 50 centers and institutes, including the Public Health Research Institute Center, the Global Tuberculosis Institute and the Neurological Institute of New Jersey. For more information please visit: njms.rutgers.edu

