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Neurotransmitters related to the acupuncture inhibitory effect on hypertension

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All antihypertensive medications have adverse side effects. However, physicians are reluctant to recommend acupuncture, owing to its controversial reports in treating hypertension and the unclear physiological mechanisms. Recently, according to the results of our data over 60 years animal experiments, we conducted a clinical trial and showed that EA at certain acupoints reduced high blood pressure in 70% patients with mild to moderate hypertension, and the effect was of slow onset and long-lasting. In animal experiments, we demonstrated that EA inhibited cardiovascular sympathoexcitatory neurons through activation of neurons in the hypothalamic arcuate nucleus, the ventrolateral PAG (vlPAG) in the midbrain and the nuclei raphe in the medulla, which in turn, inhibited the activity of premotor sympathetic neurons in the rostral ventrolateral medullar (rVLM) to reduce blood pressure. The arcuate also projects to the rVLM and contains endorphin. The neurotransmitters glutamate, acetylcholine, opioids, GABA, nociceptin, serotonin and endo-cannabinoids all participate in the EA hypotensive response, their importance varies between nuclei. The long-lasting inhibition of EA is related to opioids and GABA in the rVLM, neural circuitry between the arcuate and vlPAG, and prolongation of the increase in preproenkephalin mRNA and enkephalin expression in the rVLM and arcuate. The inhibition of sympathetic activity, renin, angiotensin and aldosterone are quite important. Thus, a number of mechanisms underlying the EA effect on hypertension have been suggested.

Biography

Peng Li was graduated from Shanghai First Medical College (now called Shanghai Medical College of Fudan University) in 1955. He has worked in Department of Physiology from 1955 to 1999. He was the Chair of the department for 10 years. From 1983 to 1984 he went to University of Birmingham, UK to learn Electrophysiology. He has studied over 60 years about acupuncture's effect on cardiovascular diseases. Presently he is working in the School of Medicine at UC Irvine, supported by NIH grants. He has examined the underlying mechanisms of acupuncture with several animal models. He is licensed to perform acupuncture in California and investigate the effects of EA in hypertensive patients. He has published over 153 articles and organized five international symposiums.

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