

Short Communication

The role of acute stress in the enhancement of immunity mechanism by acupuncture

Tsun-Cheng Kuo^{1*} and Feng-Ming Ho²

Abstract

¹Department of Cosmetic Science,
Chia-Nan University of Pharmacy and
Science, 60, Erh-Jen Rd.,
Sec. 1, Jen-Te, Tainan (zip code 717),
Taiwan

²Taoyuan General Hospital, 1492,
Chung-Shan Road, Taoyuan City,
Taoyuan (zip code 330), Taiwan

*Corresponding Author's E-mail:
fhktseng@gmail.com
Phone: 886-6-266-4911 ext 2400;
Fax: 886-6-266-7324

From the researches in the past decade, we have found that acupuncture can effectively enhance the immunity. For the efficacy of acupuncture in enhancement of immunity, we introduce an aspect, in which human body considers the acupuncture as an acute stress to react the trigger of mechanism for enhancement of immunity. Facing the adversity, the body can enhance the immunity by over-mobilization to prepare for following greater harms. Acupuncture sometimes will result in a wound and the needles may stir deep nerve in twirling. The body will interpret the enormous wound. The trauma is a very important acute stress, which will trigger the anti-bacterial mechanism. Acupuncture is an acute stress since they have the same mechanism. The acute stress will enhance immunity through autonomic nervous system (ANS) and acupuncture does the same way. Both acute stress and acupuncture can activate the ANS axis and modulate immunity system throughout the limbic system, including the extended amygdale.

Keywords: Acupuncture, Acute stress, Immunity, Adversity, Wound

INTRODUCTION

Over tens of thousands years, the microorganisms have evolved trying to invade into a living body as a host body. At the same time, however, the organisms, including human beings, have also developed their own ways to resist the bacterial invasion. Therefore, the bacterial invasion is an important and acute stress for an organism. To confront stress of the bacterial invasion, the organism will enhance immunity. Until today, the evolution has helped many organisms to react the acute stress by the enhancement of immunity whether there is an invasion of bacterial pathogens or not (Radek, 2010). From the researches in the past decade, we have found that acupuncture can effectively enhance the immunity (Johnston et al., 2011; Karst et al., 2010; Li et al., 2012). For the efficacy of acupuncture in enhancement of immunity, we introduce an aspect, in which human body considers the acupuncture as an acute stress to react the trigger of

mechanism for enhancement of immunity. Facing the adversity, the body can enhance the immunity by over-mobilization to prepare for following greater harms. The endpoint of acute stress has association with the different characteristics of the stress response: the activation of the autonomic nervous system (ANS) and the hypothalamus pituitary adrenal (HPA) axis. Stress responses include three pathways: adrenergic stimulation through catecholamines, the activation of the HPA axis through catecholamines, and cholinergic stimulation through acetylcholine. Through the activation of adrenergic receptors, acute stress-induced sympathetic adrenomedullary (SAM) system stimulation may cause the increase of the number and function of immunoregulatory cells, which can improve the defense capabilities.

Substance P is involved in the stress-induced changes

in various levels of cytokines and macrophage reactions. Acute stress may result in the increase of the number of circulating natural killer cells (NK) by promoting their release from different reservoirs. A brief exposure to stress increases the number of circulating CD8 suppressor/cytotoxic T cells. There is a rising trend of chemotaxis in the acute stress response.

DISCUSSION

Acupuncture sometimes will result in a wound and the needles may stir deep nerve in twirling. The body will interpret the enormous wound. The trauma is a very important acute stress, which will trigger the anti-bacterial mechanism. Neuroendocrine and inflammatory pathway will be activated after trauma, burns or surgery and finally lead to multiple changes and modifications of metabolism and endocrine after the activation of HPA and sympathetic nervous system (SNS) of the autonomic nervous system. The level of the physiological stress response is proportional to the degree of injury. In addition, some hormones and neurotransmitters, such as cortisol, insulin, catecholamines, and acetylcholine, will be activated to reduce the tissue damage as well as provide anti-bacterial activity and help heal the wounds. Acupuncture is an acute stress since they have the same mechanism. The acute stress will enhance immunity through ANS and acupuncture does the same way (Lin and Chen, 2011). Both acute stress and acupuncture can activate the ANS axis and modulate immunity system throughout the limbic system, including the extended amygdala.

However, some papers argued that the effect of acupuncture on immunization is insignificant (Karst et al., 2010). That is like a pressure in the body's immune system, which does not necessarily increase. Due to the difference caused by the individual subjective cognitions on stress, the results are in great variance. So if the acupuncture is an acute stress for human body, then we can understand why acupuncture is found to be a great variance in the enhancement of immunity.

CONCLUSION

The acute stress is considered to enhance the immunity reaction from the host, but prolonged pressure will result

in the suppression of bad endocrine media of nerves in the immune reaction, and it is easy to be infected. Because long-term acupuncture treatment may lead to chronological psychology and physiological pressure, and may be harmful to some patients, it is necessary to establish a system for assessing the cause of chronological stress by acupuncture. If acupuncture takes advantage of acute stress to enhance immunity, we should conduct researches on how to make the patients feel more acute stress in acupuncture treatment, such as increasing the nervousness stress of patients or even delivering electrical shock to patients and putting patients in a high-temperature environment. These extra stresses may enhance the efficacy of acupuncture.

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