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Evidence for the control of immune activities by the central nervous system

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It had been traditionally considered that the central nervous system and immunity are two mutual independent systems. As a neuroscientist, I believe the brain controls all the activities in the body, either directly or indirectly. There should be a hierarchy of centers in the brain. Not knowing where they are located, it occurred to me that the best strategy should be to study the final output center. We therefore injected IL-1β into the lateral ventricle of the brain of male Sprague-Dawley rats. We first studied the Fos-immunoreactive neurons in the paraventricular nucleus of the hypothalamus. Having located the Fos-immunoreactive neurons, we performed double immunostaing of Fos and oxytocin, which was known to be present in the paraventricular nucleus. It turned out to be that there was prominent double immunostaining, which gave a reason why a male should have oxytocin in his body. For the brain to control immunity there should be a feedback system. Where the receptors of various immune activities; and what are the links that eventually feed back to the CNS? It was a much greater challenge to us. What we could do was "try and error". We were lucky to find that there was strong expression of interleukin-1 receptor type 1 in the rat carotid body. Later we further found IL-6 receptor alpha in the glomus cells of rat carotid body. Which came as a surprise to me, because the carotid body is a structure that is known to detect the O_2 partial pressure level in the blood and send via glossopharyngeal nerve to the respiratory center in the medulla oblongata. Apparently, the carotid body also serves as an immune signal detector and feed back to the medulla oblongata.

Recent Publications

1. Yang H, Wang L, Gong J (1997) Evidence for hypothalamic paraventricular nucleis as an integrative center for neuroimmunomodulation. Neuroimmunomodulation 4:120-127.
2. Wang X, Wang B R, Duan X L, Zhang P, Ding Y Q, Jia Y, Jiao X Y, Ju G (2002) Strong expression of interleukin-1 receptor type I in the rat carotid body. J Histochem Cytochem. 50:1677-1684.
3. Wang X, Zhang X J, Xu Z, Li X, Li G L, Ju G, Wang B R (2006) Morphological evidence for existence of IL-6 receptor alpha in the glomus cells of rat carotid body. Anat Rec A. Discov Mol Cell Evol Biol. 288:292-296.

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