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Istvan Berczi, Neurochem Neuropharm 2017, 3:2(Suppl)
DOI: 10.4172/2469-9780-C1-004

7th Global Experts Meeting on

NEUROPHARMACOLOGY

July 31-August 02, 2017 | Milan, Italy

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Initial studies on neuroimmune biology

The first paper on neuroimmune biology was published in 1978, describing that hypophysectomized (HYPX) rats are immune-deficient. Additional experiments revealed that Prolactin (PRL) and Growth Hormone (GH) restore the immune competence of HYPX animals. Replacement doses were effective in reconstitution. Other pituitary hormones were inactive. The antibody response and delayed type hypersensitivity to dinitro-chorobenzene of rats were inhibited by HYPX. An autoimmune disease of rats, Adjuvant Arthritis was also inhibited by HYPX. PRL and GH stimulated c-myc and DNA synthesis in the bone marrow. The bone marrow was found to be pituitary dependent. Eventually it was detected that the entire growth and lactogenic hormone family (PRL has 3 isomers, GH 3 isomers and placental lactogens are a multitude of hormones). Placental lactogens regulate fetal development. Indeed this GLH axis is very powerful and support not only immune function but has a developmental role. The HPA axis is also heterogeneous, so far 3 forms of ACTH are known to exist. We might ask why only adaptive immunity is regulated by such powerful mechanisms. Adaptive immunity is clearly important. It provides antibodies and killer/regulatory T cells for immunity and inflammatory reactions. We observed that long surviving HYPX rats have residual prolactin in their blood. If this PRL is neutralized by antibodies the rats die within 6 weeks. These animals have an intact innate immune system but this kind of immunity does not defend life, you need to have adaptive immunity for survival.

Biography

István Berczi graduated in 1962 in Budapest as Doctor of Veterinary Medicine, and was then Research Fellow in the Veterinary Medical Research Institute of the Hungarian Academy of Sciences (1962-67). He moved to Montreal as Post-Doctoral Fellow of Selye (1967-68). He obtained PhD in Immunology (1972) and since 1991 he is Professor of the Department of Immunology at the Faculty of Medicine, University of Manitoba, and Winnipeg, Canada. His main research field is the connections between hormonal regulation and immune regulation. He published 191 papers and book chapters, 8 books and 75 abstracts. Many of his discoveries (antibodies against endotoxins, tumor infiltrating lymphocytes, drug-antibody conjugates, bromocryptine, glandular Kallikrein) gained clinical applications.

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