BRAIN/NEURAL MECHANISMS REGULATE IgE PRODUCTION.

Helen G Durkin*+, Maja Nowakowski*+, Tamar Smith-Norowitz**, Seto M Chice*, Mark Stewart++, Martin H Bluth*, Matthew Pincus*, Rauno Joks+, Vahe Amassian++.
Departments of Pathology*, Medicine+, Pediatrics**, Physiology and Pharmacology++, SUNY Downstate HSU.

It is well known that human and rodent IgE responses require CD4+ T cells, IL-4 and IL-13. We discovered that humans/rodents require two distinct T cell subsets (CD4+, CD8+CD60+CD45RO+[humans]; CD8+ AsialoGM1+[rodents]) and 6 cytokines (IL-2,4,10,12, IFNs alpha/gamma) for the memory responses of allergy. Magnetic/electrical stimulation of human/rodent left, but not right, temporo-occipito-parietal cortex increased serum substance P levels (humans) and blood CD4+ and CD8+CD45RO- T cells (humans,rodents), with strong suppression of CD8+CD60+CD45RO+/CD8+ AsialoGM1+ T cells and ongoing IgE responses. No suppression occurred if rodents were recently thymectomized or had spinal cords sectioned at T1/T2. Memory IgE responses also were suppressed by substance P (rodents), and oral minocycline (humans/rodents). No treatments suppressed IgM, IgG or IgA. Taken together, the results suggest that lateralized cerebral cortical functions can regulate an epsilon specific pathway resulting in increased release of substance P into thymus, increased export of T cells from thymus, followed by suppression of epsilon helper T cells and IgE production.