Hyposmia and the paradox of dopamine in Parkinson's disease

Hoogland P, Huisman E
Dept of Anatomy, VUmc, Amsterdam

Hyposmia is one of the most prevalent symptoms of Parkinson's disease. It may occur even before the motor symptoms start. In order to determine whether the olfactory dysfunctions, just like the motor symptoms, are associated with a loss of dopamine, the number of dopaminergic cells in the olfactory bulb of Parkinson patients was studied using tyrosine hydroxylase immunohistochemistry. The quantitative analysis reveals that the total number of tyrosine hydroxylase immunoreactive neurons in the olfactory bulb is twice as high in Parkinson patients compared to age and gender-matched controls.
Since dopamine is known to inhibit olfactory transmission in the olfactory glomeruli, we suggest that the increase of dopaminergic neurons in the olfactory bulb is responsible for the hyposmia in Parkinson patients. The increase of dopamine in the olfactory bulb explains why olfaction does not improve with L-dopa therapy.

P. Hoogland, Dept of Anatomy VUmc, van der Boechorststraat 7 1081 BT Amsterdam, The Netherlands, e-mail pvjm.hoogland@vumc.nl

Sessie 20