Posterior nasal neurectomy in Hiroshima

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Sensory irritation to nasal mucosa is perceived by inferior turbinate sensory nerves derived from the trigeminal nerve. The stimulation of nasal mucosa is reflected by organs such as the superior salivary nucleus via the central nerve ganglion. There are parasympathetic preganglionic cells in this ganglion, and they send parasympathetic preganglionic nerve fibers to the pterygopalatine ganglion and submandibular ganglion on the same side. In severe perennial allergic rhinitis patients, the thresholds of nerve reflection are greatly decreased, resulting in sneezing and itchiness. Rhinorrhea symptoms result from exacerbated nasal secretions due to the excitement of the cholinergic efferent parasympathetic nerve. Posterior nasal neurectomy (PNN) is a surgery invented in Japan. A PNN improves the nasal symptoms of allergic rhinitis patients by identifying the sphenopalatine artery in the posterior part of the nasal cavity and amputating the afferent and efferent nerve fibers accompanying the artery.

We demonstrated previously that the PNN procedure can lead to an inhibited orchestration of allergic inflammatory responses. Histological examinations showed that the number of inflammatory cells is markedly reduced in the lamina propria, and the empty space they leave is filled by collagen fibers. The epithelial layer is covered with stratified columnar cells. The changes in cytokine levels in nasal lavage after PNN were remarkable. The levels of interleukin (IL)-5 and eotaxin were significantly decreased after PNN (Ogawa et al. ANL 2007).

Here we provide the surgical protocol for a PNN as performed at our department, and we report the effectiveness of PNN performed for severe allergic rhinitis patients at our department within the past 3 years following our analysis of the changes in symptoms and drug scores from before to after the surgery and the changes in the nitric oxide concentration in the nasal cavity.