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Influence of Nasal Fontanel Receptors on the Regulation of Tracheobronchal Vagal Tone

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Aim. To test the hypothesis according that the receptors located in the nasal fontanels influence the regulation of the tracheobronchial tree vagus tone.
Methods. Changes in respiratory parameters (forced expiratory volume in the first second- FEV1 and total resistance- Rt) occurring consequentially to light mechanical nasal stimulation were determined in healthy volunteer, non-smokers using spirometric and body plethysmographic measurements. The parameters were measured before and at 15 and 60 min after mechanical stimulation with cotton pledge.
Results. In subjects in whom the middle nasal meatus was stimulated by a cotton pledge soaked in saline, FEV1 decreased (p=0.01) and Rt increased (p=0.03). In subjects in whom the middle nasal meatus was stimulated by a cotton pledge soaked in 5% cocaine solution, no change was observed. In the control group of subjects, in whom the inferior nasal concha was stimulated by a cotton pledge soaked in saline, only a statistically significant decrease for FEV1 (p=0.04) was found.
Conclusion. There is a reflex communication between the nasal fontanel receptors and lungs, which is regulating the tracheobronchial vagal tone and resistance in lung airways. Further studies of this important physiologic relation are needed.

Key words: bronchoconstriction; lung volume measurements; nasal cavity; nasal mucosa; lung comliance; pulmonary ventilation; respiratory function tests; trachea; vagus nerve