

MOTOR RESPONSES DURING MUTUAL NASAL AND TRACHEOBRONCHIAL MECHANICAL STIMULATION

M. Veterník, M. Šimera, J. Jakuš, I. Poliaček

Institute of Medical Biophysics, Jessenius Faculty of Medicine, Comenius University, Martin, Slovakia, veternik@jfmed.uniba.sk

The modulation of coughing by nasal mechanical stimulation and the possible interactions of cough and sneeze produced mechanically and simultaneously were observed on 12 cats of both sexes anesthetized with sodium pentobarbital.

The number of responses, the amplitudes of diaphragm, abdominal, and styloglossus muscles integrated EMGs and of inspiratory and expiratory esophageal pressure during coughs and sneezes, and number of temporal characteristics during reflexes were analyzed.

The amplitude of styloglossus activity during sneeze expulsion was 16-fold of that during cough. Inspiratory phase as well as the duration of diaphragm activity during sneeze were by about 30% longer than those during coughing (both $p < 0.05$). The responses during combined stimulations were classified as either sneeze or cough (no hybrid responses occurred) and their expiratory efforts were stronger than those in control reflexes (all $p < 0.05$).

Mechanosensitive nasal afferents have limited effects on the tracheobronchial cough response (when no sneeze responses occurred). Execution of both coughs and sneezes results in improved airway defense. Stable temporal features and discriminability of coughs and sneezes during combined stimuli suggest significantly distinct neuronal circuits generating their motor patterns.

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