THE CENTRAL PATTERN OF TRACHEOBRONCHIAL COUGH IS AFFECTED BY LUNG VOLUME FEEDBACK IN CATS

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We examined the changes in cough motor pattern induced by volume feedback during the cough expiration in 9 male cats (3.79 ± 0.21 kg) under pentobarbital sodium anesthesia. Cough stimulation was conducted *via* one of two openings in the Y-shape tracheal cannula sealed by a plug with a small port containing the stimulator. The ventilator was connected to the other port of cannula for ventilator “controlled“ cough. The ventilator plug was placed in the port of cannula just prior to the cough stimulation and disconnected immediately following the last cough. Stimulation trials were conducted in pre- and post-ventilatory control, and under closed-loop ventilator condition. Ventilator controlled cough trials were performed either with tidal volume (inspiratory resistance followed by expiratory occlusion) or with typical (average) cough inspiratory volume delivered during the time of approximately 140% of inspiratory phase duration (expiratory occlusion).

Inspiratory resistance followed by expiratory occlusion increased cough inspiratory and expiratory efforts and prolonged several time intervals (phases) related to EMG activation during cough. Expiratory occlusion (at regular cough volume) decreased number of coughs, increased amplitudes of abdominal EMG, inspiratory and expiratory esophageal pressure during cough and significantly prolonged cough temporal features. Correlation analysis supported major changes in cough expiratory effort and timing due to the occlusion.

The present results clearly demonstrate that the motor pattern of tracheobronchial cough is modulated by alterations in lung volume feedback during the expiratory phase of cough.

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