Asthma, hypersensitivity pneumonitis and cough

0039
GABA-ergic solitary tract nucleus neurons contribute to control of cough in cat

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Twenty-four anesthetized spontaneously breathing cats were used for testing the effects of GABA, GABA-A receptor agonist Muscimol and GABA-B receptor agonist Baclofen in the solitary tract nucleus on the mechanically induced tracheobronchial cough. Ventrolateral subnucleus rostral to the obex (rNTS) and commissural subnucleus caudal to the obex (cNTS) were the primary targets. The electromyograms (EMGs) of diaphragm (DIA) and abdominal muscles (ABD), blood pressure and esophageal pressure (EP) were recorded and analyzed.

Bilateral microinjections of 1 mM GABA (66.1±3.7 nl total dose, 6 cats), 1 mM Baclofen (64.2±4.3 nl, 6 cats) and unilateral microinjections of 0.5 mM Muscimol (33.2±1.2 nl, 6 cats) in the rNTS reduced cough number, amplitudes of ABD EMG and expiratory EP during cough. GABA and Muscimol also decreased the amplitudes of cough-related DIA EMG and inspiratory EP.

Unilateral microinjections of 0.5 mM Muscimol (37.5±13.7, 6 cats) and the bilateral microinjections of 1 mM Baclofen (62.28 ± 1.11 nl, 5 cats) into the region of the cNTS had no significant effect on cough. GABA in the cNTS (65.53 ± 2.63 nl, 7 cats) reduced the cough number.

The region of the rNTS is employed in the control of coughing. GABA-ergic inhibition mediated by both A and B type of receptors in the rNTS contribute to reduction of cough. GABA(A) receptors are dominant in control of cough inspiratory efforts in the NTS. Our data are consistent with the fact that the structures of cNTS have limited effect on cough in cats.

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