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Plasma substance P levels in patients with persistent cough

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Abstract

Background: Substance P (SP) is involved in the pathogenesis of cough in animal models. However, few studies in humans have been reported and the roles of SP in clinical cough remain obscure.

Objectives: To clarify the relevance of plasma levels of SP in patients with persistent cough.

Methods: We studied 82 patients with cough persisting for at least 3 weeks and 15 healthy controls. Patients were classified as having asthmatic cough (cough-variant asthma and cough-predominant asthma; n = 61) or nonasthmatic cough (n = 21; postinfectious cough, n = 6; gastroesophageal reflux disease, n = 5; idiopathic cough, n = 5, and others, n = 5). Correlations were evaluated between plasma SP levels as measured with ELISA and methacholine airway hyperresponsiveness (airway sensitivity and airway reactivity), capsaicin cough sensitivity, sputum eosinophil and neutrophil counts, and pulmonary function.

Results: Plasma SP levels were significantly elevated in patients with both asthmatic and nonasthmatic cough compared with controls [31.1 pg/ml (range 18.0-52.2) and 30.0 pg/ml (range 15.1-50.3) vs. 15.4 pg/ml (range 11.3-23.7); p = 0.003 and p = 0.038, respectively] but did not differ between the two patient groups (p = 0.90). Plasma SP levels correlated with airway sensitivity (threshold dose of methacholine) in the patients with asthmatic cough (r = -0.37, p = 0.005) but not with airway reactivity, cough sensitivity, FEV1 values, or sputum eosinophil and neutrophil counts in either group.

Conclusions: Increased levels of SP in plasma are associated with persistent cough in humans and might be related to airway sensitivity in asthmatic cough.

Related information