

特異的気道過敏症の病態生理

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1997 Fiscal Year Final Research Report Summary

Pathophysiology of specific bronchial hyperresponsiveness

Research Project

Project/Area Number

07670662

Research Category

Grant-in-Aid for Scientific Research (C)

Allocation Type

Single-year Grants

Section

一般

Research Field

Respiratory organ internal medicine

Research Institution

Kanazawa University

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Keywords

Specific bronchial hyperresponsiveness / Alcohol-induced asthma / ultrasonically nebulized distilled water / beta-blockers / Autonomic nerve system / Neuropeptides / Lipid mediators / Guinea pigs

Research Abstract

1. Alcohol-induced bronchoconstriction in guinea pigs

- (1) Acetaldehyde, a metabolite of ethanol, causes bronchoconstriction but ethanol does not.
- (2) The acetaldehyde-induced bronchoconstriction is mediated via histamine release.
- (3) A low dose of acetaldehyde, which does not cause bronchoconstriction, enhances non-specific bronchial responsiveness.
- (4) Thromboxane A2 is involved in the acetaldehyde-induced non-specific bronchial hyperresponsiveness.

2. A guinea pig model of propranolol-induced bronchoconstriction and the role of autonomic nerve system, chemical mediators and neuropeptides

- (1) An inhalation of propranolol causes bronchoconstriction when it is inhaled 20 minutes after an aerosolized antigen provocation in passively sensitized guinea pigs.

This is the first animal model of propranolol-induced bronchoconstriction.

- (2) Parasympathetic or alpha-adrenergic nerve activity is not involved in this response.
- (3) Neuropeptides such as substance P and neurokinin A do not take a part in this response.
- (4) Lipid mediators, especially thromboxane A2, have an important role in this response.

3. A guinea-pig model of ultrasonically nebulized distilled water (UNDW) -induced bronchoconstriction and the role of autonomic nerve system, chemical mediators and neuropeptides

- (1) An inhalation of UNDW produces acute bronchoconstriction when it is inhaled 20 minutes after an aerosolized antigen provocation in passively sensitized guinea pigs.

This is the first animal model of UNDW-induced bronchoconstriction.

- (2) Parasympathetic nerve activity is not involved in this response.
- (3) Histamine and substance P, but not neurokinin A, take a large part in this response.
- (4) Thromboxane A2 does not have a role in this response.

4. Conclusion

From these results, it is suggested that allergic airway response, or allergic airway inflammatory process, is important in development of specific bronchial responsiveness. Furthermore, the mechanism of specific bronchial hyperresponsiveness may be different each other, suggesting heterogeneity of contributing factors between several specific bronchial hyperresponsiveness in asthma. ▲ Less

Research Products (25 results)

All Other

All Publications (25 results)

[Publications] Fujimura M, et al: "Involvement of PAF in postallergic propranolol-induced bronchoconstriction in guinea-pigs" Eur Respir J. 9(10). 2064-2069 (1996) ▼

[Publications] Fujimura M, et al: "Role of sensory neuropeptides in post-allergic propranolol-induced bronchoconstriction in guinea pigs vivo." Clin Exp Allergy. 26(12). 1428-1435 (1996) ▼

[Publications] Fujimura M, et al: "Peptide leukotrienes mediate acetaldehyde-induced bronchial hyper-responsiveness in guinea" Clin Exp Allergy. 27(1). 104-109 (1997) ▼

[Publications] Fujimura M, et al: "Role of leukotrienes in post-allergic propranolol-induced bronchoconstriction in guinea pigs" Clin Exp Allergy. 27. 1219-1226 (1997) ▼

[Publications] Fujimura M, et al: "A guinea-pig model of ultrasonically nebulized distilled water-induced bronchoconstriction." Eur Respir J. 10. 2237-2242 (1997) ▼

[Publications] Fujimura M, et al: "Role of tachykinins in distilled water-induced bronchoconstriction in guinea-pigs." Clin Exp Allergy. (in press). (1998) ▼

[Publications] 藤村 政樹: "喘息の治療と受容体拮抗薬. In Medical Topics Series 気道アレルギー'96" メディカルレビュー社東京, 9 (1996) ▼

[Publications] 明茂 治、藤村 政樹: "アルコール喘息: In 気道アレルギー'97、牧野荘平、石川孝監修1997" メディカルレビュー社東京, 11 (1997) ▼

[Publications] Myou S, Fujimura M, Matsuda T.: "Aerosolized acetaldehyde, but not ethanol, induces histamine-mediated bronchoconstriction in guinea pigs" Clin Exp Allergy. 24 (2). 140-143 (1994) ▼

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- [Publications] Myou S, Fujimura M, Nishi K, Watanabe K, Matsuda M, Ohka T, Matsuda T.: "Inhibitory effect of a selective thromboxane synthetase inhibitor, OKY-046, on acetaldehyde-induced bronchoconstriction in asthmatic patients." *Chest*. 106. 1414-1418 (1994) ▼
- [Publications] Myou S, Fujimura M, Nishi K, Ohka T, Matsuda T.: "Inhibitory effect of terfenadine, a selective H1-histamine antagonist, on alcoholic beverage-induced bronchoconstriction in asthmatic patients." *Eur Respir J*. 8 (4). 619-623 (1995) ▼
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