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POSTER PRESENTATION Open Access

Increased methacholine sensitivity after eucapnic voluntary hyperpnea

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Background

Eucapnic voluntary hyperpnea (EVH) and methacholine inhalation test (MIT) are commonly used to evaluate airway responsiveness in athletes. EVH and MIT are frequently administered consecutively. However, it has been suggested that EVH could influence airway responsiveness to methacholine.

Objective/purpose

To evaluate the effects of EVH on the methacholine response in athletes with and without airway hyperresponsiveness (AHR) compared to control subjects.

Methods

Two MITs (one single and one preceded by EVH) were conducted in random order in 10 athletes with AHR (PC20 ≤ 16 mg/mL), 16 athletes without AHR (PC20 >16 mg/mL), and 11 control subjects.

Findings

In athletes with AHR, the PC20 (expressed as the mean of double concentrations (DC) ± standard error) was 0.7 ± 1.2 DC lower when MIT followed EVH ($p = 0.015$), while there was no significant difference in athletes without AHR (-0.4 ± 0.8 DC) nor in control subjects (0.4 ± 0.7 DC). When grouping subjects based on the EVH response, those with a positive response (FEV1 fall ≥ 10%) had a mean PC20 0.8 ± 1.1 DC lower when MIT followed EVH ($p = 0.0008$) while in those with no response to EVH (FEV1 fall <10%), airway responsiveness was not influenced by this test (0.05 ± 0.76 DC).

Deliverables

EVH slightly increases the response to the subsequent MIT in athletes with AHR to methacholine or with a positive response to EVH, but not in those without AHR, nor in control subjects. These two challenges should, therefore, be conducted in two different sessions.

Relevance

This research is in accordance with AllerGen's mission because, by bringing to light the importance of proceeding with the bronchial challenges in two different sessions, it ensures reliable test results. These findings are going to be submitted to a scientific journal for publication.

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