

Whole-body periodic acceleration modifies experimental asthma in sheep.

全身周期性加速度減緩羊的實驗性哮喘

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Rationale: Nitric oxide is released from vascular endothelium in response to increased pulsatile shear stress. Nitric oxide inhibits mast cell activation and is anti-inflammatory and therefore might be protective in asthma.

Objectives: We determined if a noninvasive motion platform that imparts periodic sinusoidal inertial forces to the whole body along the spinal axis (pGz) causing release of endothelial nitric oxide modulates experimental asthma in sheep.

Methods: Allergic sheep were untreated (control) or were treated with pGz alone or after receiving intravenously the nitric oxide synthase inhibitor Nw-nitro-L-arginine methyl ester (L-NAME) before aerosol challenge with *Ascaris suum*, and the effect on antigen-induced airway responses was determined. Bronchoalveolar lavage cells obtained 6 h after antigen challenge were analyzed for nuclear factor-kB (NF-kB) activity in the respective groups.

Results: pGz treatment for 1 h before antigen challenge reduced the early airway response and blocked the late airway response but did not prevent the antigen-induced airway hyperresponsiveness 24 h after challenge. Administration of L-NAME before pGz completely reversed this protection, whereas L-NAME alone did not affect the antigen-induced responses. NF-kB activity was 1.9- and 1.8-fold higher in the control and L-NAME + pGz groups, respectively, compared with pGz-treated animals. Extending the pGz treatment to twice daily for 3 d and then 1 h before antigen challenge blocked the early and late airway responses, the 24-h airway hyperresponsiveness, and the airway inflammatory cell response.

Conclusion: Whole-body pGz modulates allergen-induced airway responses in allergic sheep.

結論：全身周期性加速度治療緩和過敏羊因過敏原所引起的呼吸道過敏反應。