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Grain-dust-induced airway disease

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Keywords

Critical illness, dopamine, renal failure

Context

Chronic exposure to grain dust can cause irreversible and progressive airway disease. Endotoxin present in organic dust causes airway inflammation. In this study, the authors evaluated the role of endotoxin in the development of chronic dust-induced airway disease using endotoxin-sensitive and hyporesponsive mice.

Significant findings

After an 8 week exposure to corn dust extract and a 4 week recovery period, only the endotoxin-sensitive mice showed significant airway hyperreactivity to subsequent methacholine challenge. A significant increase in the total number of inflammatory cells, tumor necrosis factor- α , interleukin-6, macrophage inflammatory protein-2, and airway modeling, as shown by enhanced deposition of collagen III in the subepithelial area, was noted only in the endotoxin-sensitive mice. These later changes are similar to those seen in symptomatic agricultural workers and asthmatics.

Comments

The results of this study suggest that endotoxin plays a significant role in the pathogenesis airway disease induced by inhaled organic dust(s). Particulate matter may be associated with endotoxin and this may induce the release of cytokines, which contribute to airway disease. As the results, especially the lung histology, were very similar to those seen in asthmatics, this model could be used for further

studies in the pathobiology of chronic airway disease. This study also suggests that neutrophils have an important role in the development of inhaled grain dust induced airway disease. This animal model could be used to test potential drugs for asthma.

Methods

Corn dust extract, endotoxin assay using *Limulus* amoebocyte lysate assay, lung histochemistry, lung lavage

Additional information

References

1. George CLS, Jin H, Wohlford-Lename CL, O'Neill ME, Phipps JC, O'Shaughnessy P, Kline JN, Thorne PS, Schwartz DA: Endotoxin responsiveness and subchronic grain dust-induced airway disease. *Am J Physiol Lung Cell Mol Physiol* . 2001, 280: L203-L213.