

Chapter 19

ARE ATOPIC SYMPTOMS ASSOCIATED WITH INCREASED AIRWAY RESPONSIVENESS IN COAL MINERS?

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Nonspecific airway hyperresponsiveness is a central feature of chronic obstructive pulmonary disease and has been associated with atopy in the presence of environmental exposures such as smoking. Coal miners may develop emphysema and lung function decrements related to their dust exposure. To investigate the roles of airway responsiveness and atopy in these effects, we evaluated the relationships among smoking, a history of hay fever or seasonal rhinitis, and airway responsiveness (AR) in a group of underground bituminous coal miners and nonmining controls. All subjects had a normal baseline percent predicted FEV₁. Increased airway responsiveness was defined as a 15% or greater decrease in FEV₁ following methacholine inhalation.

85 miners (45%) and 99 controls (46%) were current smokers, 59 miners (31%) and 55 controls (26%) were lifetime nonsmokers; former smokers were excluded from further analysis. Overall, 25% of 144 miners included in this analysis had increased AR, as opposed to 29% of 155 controls. Thirty-seven percent of both miners and controls had a history of seasonal rhinitis. Significantly fewer miners (15%) had a history of hay fever compared to controls (25%, $p < 0.05$).

Figure 1 shows the prevalence of increased airway responsiveness in miners and controls in association with hay fever. In both smoking and non smoking miners the presence of a hay fever history was significantly ($p < 0.05$) associated with a higher prevalence of increased AR. Little effect was seen in smoking ($p = 0.827$) and nonsmoking ($p = 0.940$) controls. Figure 2 shows a similar higher prevalence of increased AR associated with

symptoms of seasonal rhinitis in the mining group. This was significant ($p < 0.01$) only in the smoking miners. No effect was noted in the controls.

These data suggest that the association of a history of hay fever or seasonal rhinitis symptoms with increased airway responsiveness may be more common in coal mining, compared to non-dusty occupations. Although the implication of these data are unclear, further study of miners with a history of hay fever or seasonal rhinitis is warranted.

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RESPIRABLE DUST

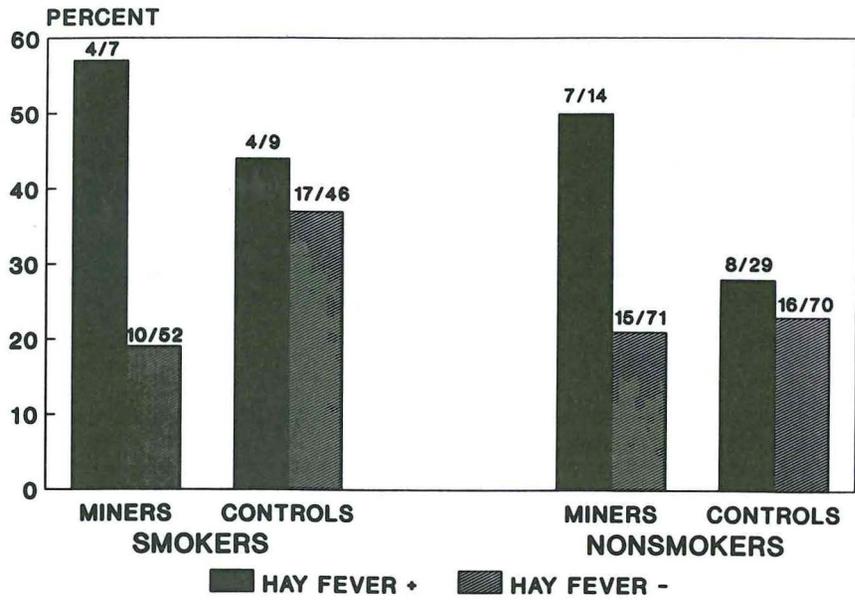


Figure 1.

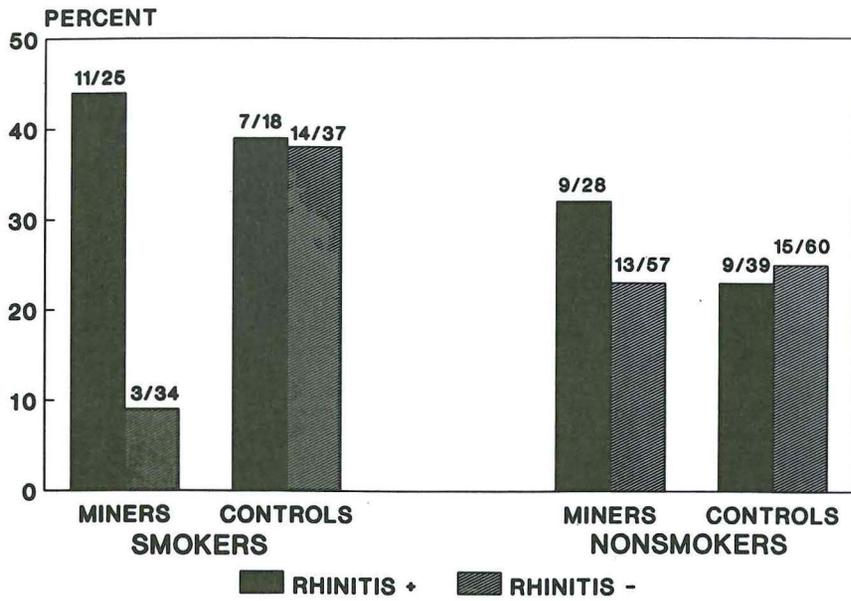
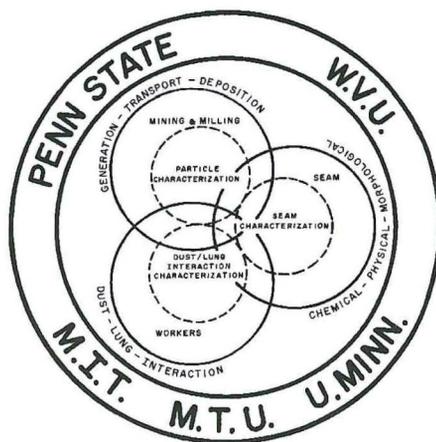


Figure 2.

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