

Safety In Mines Research Advisory Committee

Project Summary : SIMHEALTH 617

Project Title:	PULMONARY TUBERCULOSIS IN RELATION TO LUNG FUNCTION LOSS.
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Author(s):	Dr G J Churchyard Dr E Hnizo. Prof. N White.	Agency:	Aurum Health Research, Welkom, South Africa. National Institute of Occupational Safety and Health, Morgantown, West Virginia, USA. University of Cape Town, Cape Town, South Africa.
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Report Date:	25.6.2001	Related Projects:	
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Category:		Applied Research	
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Summary

Pulmonary tuberculosis (TB) has been associated with obstructive airways disease. The incidence of TB is high among gold miners, due to the high prevalence of Human immunodeficiency virus (HIV) and silicosis in the workforce.

A study was undertaken among Black South African gold miners to determine the longitudinal loss of lung function following an episode of pulmonary TB, after controlling for other exposure variables, in comparison to miners of the same age who had not had TB during the study period. The association between pulmonary TB and respiratory symptoms was also assessed.

The study was conducted in a single gold mining company in the Free State Province of South Africa. There were 185 miners in each group. There was no significant difference between the 2 groups with respect to age, duration of employment and baseline lung functions. Miners who had had TB had significantly more silicosis (18.4% versus 10.8%) and were more likely to be current or ex-smokers (82.7% versus 61.6%) than miners who had not had TB.

Miners who had had an episode of TB compared to miners who had not had TB had a 40 ml per year greater loss of both the forced vital capacity (FVC) and the volume exhaled in the first second of a forced vital capacity manoeuvre (FEV1). Among miners who had had TB during the study period the following characteristics at baseline were associated with a greater annual loss of FEV1; sputum smear positive status, self presentation compared to detection by the

radiological screening programme, extensive radiological disease and bronchiectasis. The radiological presence of extensive post TB scarring and bronchiectasis at the end of TB treatment was also associated with a greater annual loss of FEV1. At the time of follow-up lung function testing miners who had had TB, compared to those who had not had TB, had more than a two fold greater risk of having respiratory symptoms of cough, breathlessness and wheezing and a ten fold greater risk of having restrictive lung disease, but were not at greater risk of having obstructive lung disease.

Conclusion and recommendations

TB is an important cause of loss of lung function in this workforce (Figure). Strategies to detect TB earlier or reduce susceptibility to TB by intensifying HIV and dust control programmes are required. TB preventive therapy would reduce the incidence of TB among susceptible miners and may lead to improved lung health in these miners by preventing deterioration in lung function associated with having an episode of pulmonary TB.

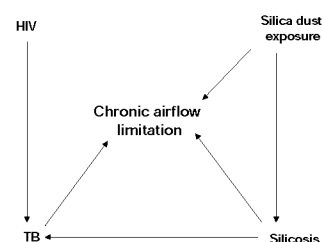


Figure. Association between TB, silicosis, HIV

and chronic airflow limitation.