TNF as an exposure or risk marker among French coal miners in three different regions.

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Several studies have revealed the crucial role of the Tumor Necrosis Factor-α (TNF) in both the fibrosis induced by silica containing dusts and in the transition from coal workers simple pneumoconiosis (CWSP) to progressive massive fibrosis (PMF). The primary aim of this effort was to study the link between the prevalence of coal worker pneumoconiosis (CWP) and TNF released by peripheral blood monocytes. Study population was composed of 474 subjects divided in two sub-populations: (a) active workers from Lorraine, Provence and Nord-Pas de Calais mines, and (b) retired miners from Nord -Pas de Calais. Eight epidemiological groups of active and ex-miners (smokers and non-smokers) have been selected according to their occupational and pneumoconiotic status. Blood monocytes were tested for TNF production in the culture medium after 18 h incubation either spontaneously or in response to stimulations (LPS 3ng/ml and silica 0.5 mg/ml).

TNF levels were significantly different between active miners from the 3 regions. Retired miners showed a significant increase in silica-induced TNF release for PMF miners compared to CWSP and non-pneumoconiotic miners. Similar results were observed for non-stimulated TNF levels, but only between non-pneumoconiotic and PMF groups. When referring to the profusion classification, an overall increase in silica and non-stimulated TNF release levels was found along with increased radiological symptoms.

In addition, a very low, homogeneous expression of TNF was observed in the group of active miners from Provence. This results is to compare with the absence of pneumoconiosis in this area.

THE INFLUENCE OF THE BODY MASS INDEX IN RELATION TO CHRONIC NON-SPECIFIC RESPIRATORY DISEASES ON LONG-TERM MORTALITY IN DUTCH COAL MINERS.

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Introduction Several studies established an association between body mass index (BMI: weight/height^2) and survival in patients with chronic obstructive pulmonary disease. Limited data are available regarding this association in healthy subjects or patients with moderate respiratory disease. In this study we investigated the relationship between BMI, survival time and primary cause of death in coal miners, a group specifically at risk for respiratory disease.

Methods 3790 Coalworkers underwent the following assessments in the period 1952-1963: body weight, height, spirometry and chest radiography. Furthermore cumulative dust exposure, smoking behaviour and medical history were revealed from the files of the General Mining Fund. In 1993 specific death causes were obtained until end of follow up (31/12/1991) from the Central Bureau of Statistics according to the International Classification of Diseases.

Statistics Median survival time (y), overall standardized mortality rates (SMRs in %) and 95% confidence intervals (CI) were calculated, stratified by BMI and FEV_1. In addition the SMRs for chronic non-specific respiratory diseases (CNSRD) and pneumoconioses were calculated separately.

Results (mean (CI))

BMI (kg/m^2)	< 20 (n=126)	20<x<24 (n=1888)	24<x<29 (n=1114)	>30 n=205
survival (y)	17.7	21.8	22.9	20.2
-FEV_1<70%	15.9	19.4	20.7	18.9
-FEV_1>70%	27.0	28.1	28.4	22.5
SMR overall	171 (141-206)	119 (113-126)	107 (101-114)	131 (112-151)
SMR CNSRD	601 (402-863)	272 (239-308)	163 (137-194)	180 (108-281)

Conclusions The results show an increased SMR due to CNSRD in Dutch coalminers especially in the under- and normalweight group. Median survival time is also significantly lower in the underweight subjects, particularly in those with airflow obstruction.

BOUNDARIES BETWEEN SMALL OPACITY PROFUSION CATEGORIES IN THE ILO CLASSIFICATION OF RADIOGRAPHS OF PNEUMOCONIOSES

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Physicians who report that they use the International Labour Office's (ILO) Classification of Radiographs of Pneumoconioses often differ markedly in their characterizations of the same chest films. Particularly troublesome is the lack of concordance regarding the profusion of small opacities, despite the existence of standard radiographs that define the appearances characteristic of the central sub-categories of the 4 main profusion categories. An effort has therefore been made to find radiographs that illustrate the 3 implied boundary points between main categories. The hypothesis is that use of such "boundary standards" would reduce variability between readers. Available for study were duplicate classifications using the ILO scheme by each of 39 physicians, from 10 countries, of 120 chest films of persons known to have been occupationally exposed to mineral dusts. The 9360 data were generated under controlled conditions in an ongoing trial of an unrelated possible change to the ILO standard films. Analysis of the 120 film-specific sets of results identified 4 fairly peaked and symmetrical distributions about main category boundaries, as shown below.

	Categ. 0		1			2			3	
#	0/0	0/1	1/0	1/1	1/2	2/1	2/2	2/3	3/2	3/3
1	24	15	29	8	1	1				
2			2	21	15	18	19	3		
3	1		3	18	19	23	11	3		
4						1	19	17	18	23

36% of the repeated classifications of these films recorded within-reader switches across main category boundaries. Film quality assessments were all at least "acceptable"; 80% noted "good." The ratios of records of predominant shapes of small opacities (rounded:irregular) were (21:33), (72:6), (1:77), (77:1) for films 1 to 4; pleural abnormalities were recorded on 0, 1, 57 and 2 occasions, respectively. We think that these 4 films are suitable potential boundary standards, and we are studying whether their use would reduce reader variability and improve correlations with miners' exposures to respirable dust.

PERSISTENCE AND INCIDENCE OF RESPIRATORY SYMPTOMS OVER FIVE YEARS: UNDERGROUND COAL MINING, CIGARETTE SMOKING, AND METHACHOLINE RESPONSIVENESS

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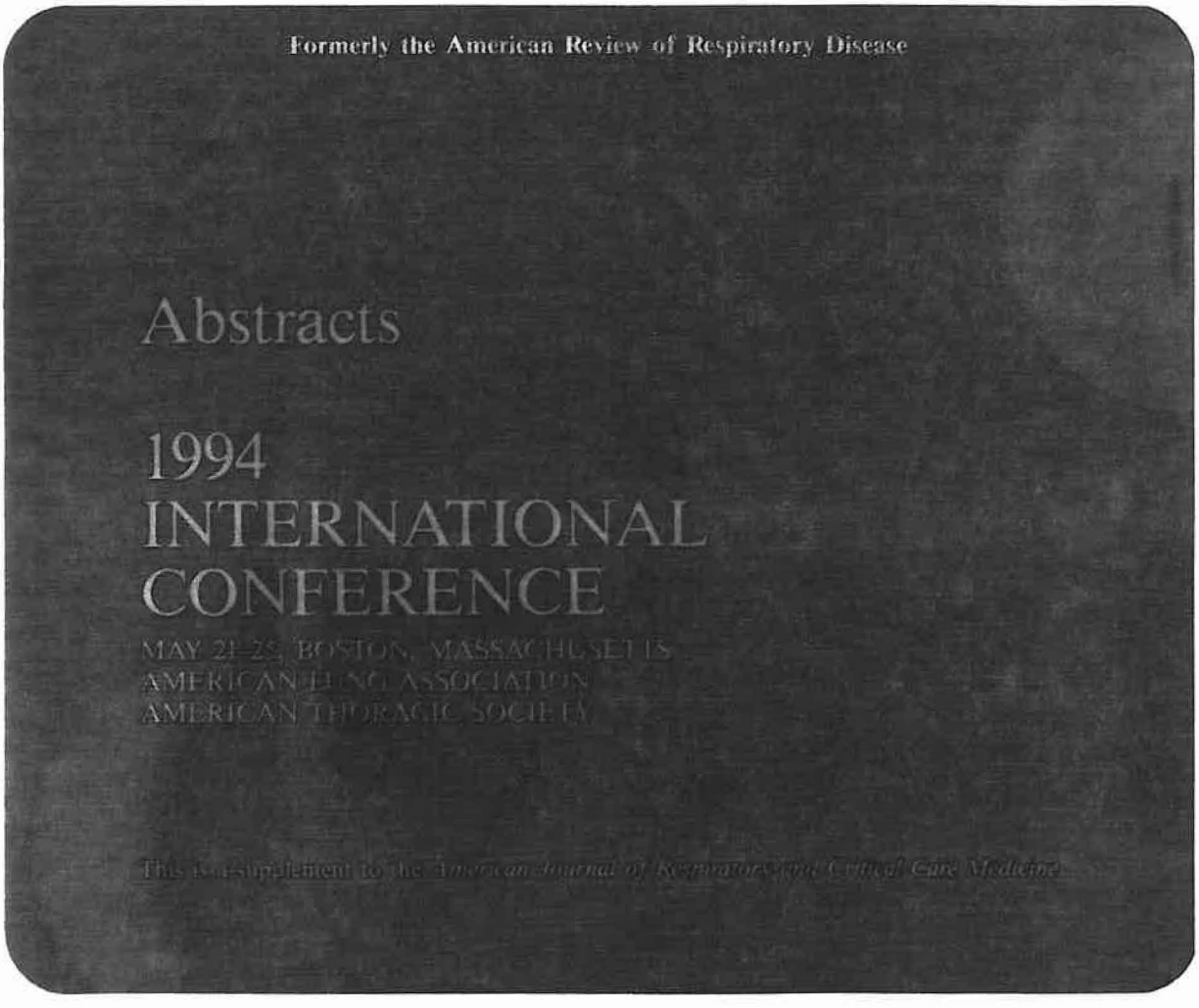
Longitudinal studies in underground coal miners have documented accelerated declines in FEV1 and development of radiographic changes of simple and complicated pneumoconiosis in relation to work tenure and other indicators of exposure to the mine environment. Respiratory symptoms have also been associated with coal mine work, although incidence in cohorts has not often been reported. We evaluated five respiratory tract symptoms (chronic cough, chronic phlegm, dyspnea, persistent wheeze, and attacks of dyspnea with wheeze), occupational and smoking histories, and airways responsiveness to methacholine from a prospective study of central Appalachian underground bituminous coal miners (M) and nonmining regional controls (C). Of 428 workers who attended the initial health survey, 350 or 82% (174 M, 176 C) completed the final survey after a mean 5.1 (range 4.1 to 7.3) years. Miners were younger than controls (37.3 vs 40.6 yrs), but were similar for smoking status, responder status, and followup duration. For four of the symptoms, miners reported both more incidence and persistence than controls over five years. However attacks of dyspnea with wheeze were similar in M and C. Among the miners, a higher proportion of those who developed cough, dyspnea, or attacks of dyspnea/wheeze worked at the coal cutting face. Phlegm and persistent wheeze developed more among M than C, but no association with coalface work was observed. Five year incidence and persistence of the four symptoms were also associated with initial cigarette smoking; persistence of dyspnea/wheezing attacks was similar in smokers (N = 102) and nonsmokers (N=157). Methacholine responders at first survey (N = 96) reported a greater incidence of dyspnea/wheeze attacks and more persistence of phlegm than nonresponders. In this cohort, progression of respiratory symptoms over five years in the coal miners appears consistent with a dust-related effect, and in smokers, with tobacco smoke exposure. Initial methacholine responsiveness also affected symptom evolution.

(Supported in part by Grant G1135142, US Bureau of Mines, Generic Mineral Technology Center for Respirable Dust)

AMERICAN JOURNAL OF

Respiratory and Critical Care Medicine

Volume 149 • Number 4 • April 1994
(part 2 of 2 parts)



AN OFFICIAL JOURNAL OF THE AMERICAN THORACIC SOCIETY
MEDICAL SECTION OF THE AMERICAN LUNG ASSOCIATION