CLINICAL STUDIES OF PATIENTS WITH PNEUMOCONIOSIS IN WHOM A SPUTUM TEST DETECTED NONTUBERCULOUS MYCOBACTERIA

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RATIONALE: When a sputum test detects nontuberculous mycobacteria (NTM), it is sometimes difficult to evaluate whether they should be treated as a disease. We study some factors leading to careful follow-up or the start of treatment in NTM-positive patients. *METHODS*: Review of bacteriologic findings and patient backgrounds in 256 patients with pneumoconiosis followed up in our institution for more than 1 year between April 1998 and December 2000. These patients were divided into 3 groups: Group A in which results of sputum tests met the bacteriologic criteria for the diagnosis of NTM pulmonary disease recommended by the American Thoracic Society, Group B in which results of the tests did not meet that criteria among NTM-positive patients, and Group C in which NTM was not detected. *RESULTS*: *Mycobacterium avium* or *Mycobacterium intracellulare* was detected in 7 (87.5%) of Group A (8 patients) and in 14 (16.9%) of Group B (83 patients) (odds ratio 5.19 [95% CI 3.01-8.94], p=0.000006). Arc welding was included in previous jobs in 2 (25.0%) of Group A and in 1 (1.20%) of Group B (odds ratio 20.8 [95% CI 2.11-205], p=0.0003), and in 2 (25.0%) of Group A and in 7 (4.24%) of Group C (165 patients) (odds ratio 5.89 [95% CI 1.45-23.9], p=0.01). *CONCLUSIONS*: It is possible that detection of *Mycobacterium avium* or *Mycobacterium intracellulare* in sputum and a previous job of arc welding may be the factors leading to careful follow-up, suggesting the start of treatment is needed.

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LEVELS OF RESPIRABLE COAL MINE DUST UKRAINIAN COAL MINES

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Introduction: Levels of respirable coal mine dust have not been routinely measured in Ukrainian coal mines. Total dust levels have been reported to be 50-600 mg/m^3. This abstract reports the results of a joint US-Ukrainian effort to measure respirable dust levels in Ukrainian mines during active production. **Methods:** Personal and area samples were obtained from two Ukrainian coal mines using standard techniques established by the U.S. Mine Safety and Health Administration (MSHA). Samples were taken throughout an entire shift upwind, downwind, and at the level of the longwall combine operator, as well as intake and return tunnels. Filter cassettes were shipped back to the United States for analysis by MSHA. Samples were analyzed for the fraction of respirable silica. **Results:** Mean respirable dust levels were more than nearly 4 times the US Permissible Exposure Limit (PEL) with a range of just below the US PEL to more than 10 times the US PEL.

	Quartz (ug/m3)	Respirable Dust (mg/m3)	Fraction of U.S. PEL* [Resp]/PEL
Mean	242	5.31	3.69
Range	34-1167	1.66-18.2	0.83-11.6

*US PEL = 2 mg/m3 except when there is > 5% quartz in sample, then PEL = 10 divided by the %quartz.

Conclusion: Coal mine dust levels in Ukrainian coal mines are significantly higher than the US PEL. This was due in part to high concentrations of quartz found in these mines. Prolonged exposure at these levels could cause significant rates of pneumoconiosis.

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UTILITY OF RAPID (TWO-MINUTE) EXHALED BREATH CONDENSA COLLECTIONS FOR AMMONIA AND pH MEASUREMENTS

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Exhaled breath condensate (EBC) assays are becoming increasingly central tc clinical studies of lung diseases, providing evidence of inflammation and alte lung redox environment. In preparation for large studies outside of the hospit environment (school, home and workplace), we wished to determine if EBC c could be performed in as little as two minutes and retain adequate reproducibi regards to exhaled ammonia (NH_3) and pH. Five subjects performed six sequ to-back EBC collections, performing relaxed tidal breathing through an RTub collection system (Respiratory Research, Inc. USA). Ammonia was assayed i spectrophotometrically (Sigma Diagnostics) and pH measured using a micro p after deaeration with Argon. The first three collections were for two minutes last three for seven minutes each. During 2-minute collections, the range of s volumes was 250-350 uL. During 7-minute collections, the range was 800-12 mean intrasubject Coefficient of Variation (CV) for 2-minute collections for [11.6% and for pH was 4.1%. For 7-minute collections, the mean intrasubject [NH_3] was 15.8% and for pH was 5.3%. Ammonia concentrations in EBC w significantly higher in the 7 minute collections compared to 2 minute collectic [NH_3] for 2 min = 417 ± 155 uM vs 619 ± 182 uM for the 7-minute collection was an insignificant trend toward slightly higher pH in the longer collections (units) as would be expected from the longer opportunity to absorb gas phase N conclude that 2-minute EBC collections are reproducible in regards to pH and assays, and perhaps may have a benefit over longer collections.

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EFFECT OF CARBON BLACK EXPOSURE UPON SPIROMETRY

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Carbon black is widely used as a pigment and filler. It is produced by cc vapor phase pyrolysis of oil. Data was collected as part of the N. A industry-wide periodic medical surveillance. Participants included American carbon black production facility workers from 22 plants. MET Standardized spirometry and written questionnaire with revi completeness by a project interviewer were performed. Items i occupational and smoking history. A job-exposure matrix was constru each plant, assigning exposures from 1960-2000 according to ma category based upon industrial hygiene data (1979, 1995, and 2000 "triangulation method", including the measured air levels, a formal change questionnaire, and a systematic survey of plant expert about levels over the yrs. Linear regression analysis was performed to inv the effects of cumulative and recent carbon black exposure (separa inhalable, respirable, and total dust estimates). Analysis was limited to RESULTS: Average tenure in the industry was 14 yrs. Average cum exposures were 48.4, 16.1, and 4.7 mgm-years/m3 for inhalable, tot respirable dust. In the overall model, adjusted for smoking stati coefficient for FEV1 was -.002 liter/mg-year/m3 total dust, and -0.000 0.0087 for inhalable and respirable dust respectively. No consistent effe FVC was noted. No significant effects of recent exposure were noted levels are considerably lower than in the past). CONCL: A very sm statistically significant, effect upon FEV1 of long-term, high cum exposures was observed among N.American carbon black production w

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ASBESTOS LUNG CONTENT AMONG SV-40 POSITIVE MESOTHELIOM PATIENTS.

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Infection with the virus SV-40 has been associated with occurrer malignant mesothelioma, ependymoma, and certain other tumors. 20 su with malignant mesothelioma and evidence of SV-40 infection were eva by limited record review and lung tissue analysis for asbestos RESULTS: by definition, all 20 had positive polymerase chain reaction in tissue for SV-40. Average lung tissue fiber contents were: chrysotile amosite 1.23, crocidolite 0.31 per gram of dry lung. Median fiber concen was < 1x 10^6 for each measure. Occupational histories suggesting long or high level asbestos exposure were infrequent. CONCLUSIONS: Pulm asbestos fiber content of SV-40 positive mesothelioma patients was rela low in comparison to published mesothelioma series, suggesting that may play a causative role or a facilitative role.

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ABSTRACTS

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