106. Mineral dusts

P1051

The frequency and factors for occurrence of asbestos-related diseases in the rural of Sivas localised on central Anatolia (cross sectional epidemiologic study)

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Objective: To determine the rate and affecting factors of asbestos-related diseases (ARD) in the villages close to ophiolitic units in the rural of Sivas, central Anatolia in Turkey.

Methods: Volunteers (age>35, >20 years resident) from villages close to ophiolitic units and from villages >20 km distant to ophiolitic units as control group were included. Chest X-rays and questionnaire for demographical data and respiratory symptoms were performed. A geological map was used to measure the distance between ophiolitic units and villages. Samples were taken from houses and soil sources and analyzed for asbestos with X-ray diffraction.

Results: 2987 volunteers (1148 male, 1839 female) from 48 villages close to ophiolitic units and 157 (91 male, 66 female) volunteers from 6 villages far to ophiolitic units were included. Mean age of study and control groups were 55.2 and 57.3 respectively. 292 patients (3 malignant mesothelioma, 289 pleural plaque) with ARD were identified from villages close to ophiolitic units. No ARD was identified in control group. Factors affecting ARD risk were male sex (OR:3.1,p=0.00), advanced age (OR:1.05 for every year of age,p=0.00), residency close to ophiolitic units (for each 1 km 12% increase) and, decrease in BMI (for each 1 unit 3.6% increase) in multivariate logistic regression analysis. Serpentine was found in samples of villages close to ophiolitic units, no asbestos was found in control villages.

Conclusion: ARD rate is high in residents close to ophiolitic units in rural Sivas. Factors associated with ARD development were advanced age, male sex and living close to ophiolitic units.

P1052

The impact of residential proximity to ophiolitic units in the development of asbestos related diseases

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Aim: To determine the relation between risk of asbest related diseases (ARD) and the proximity of birthplaces to ophiolitic units (OU) which contains serpentin in province of Sivas, Turkey.

Method: Records between 2000 and 2010 of mesothelioma, pleural plaque (PP), prostate cancer and breast cancer patients from cancer registry were reviewed. Samples were obtained from indoor plasters and source of plasters. Birthplaces of patients were marked on a map with OU modified from geological map (mesothelioma: red square, PP: black star and OU: green areas).



The distance between residental area of birthplace of the patients and OU were measured

Result: Birthplaces of 100 mesothelioma, 133 PP, 161 prostate cancer and 139 breast cancer patients were included. Samples of plasters and soil were identified as 95% serpentine. Mean distance to OU of patients with ARD and control cases were 5.9 and 15.5 kilometers.



Logistic regression analysis after age adjustment between groups showed that risk for ARD increased with decrease of distance to OU (Odds ratio: 1.72 for every 5 km decrease)

Conclusion: The proximity of birthplace to OU increases the risk of ARD.

P1053

CO-diffusion capacity in asbestos-exposed workers with or without abnormal chest X-ray findings

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Background: Exposure to asbestos can cause a restrictive lung disorder with impaired pulmonary gas exchange. It is controversial, whether lung function impairments occur in the absence of radiological abnormalities

Aim: To assess CO-diffusion capacity in asbestos-exposed workers according to radiological findings

Methods: Medical surveillance of 63 male workers formerly asbestos-exposed included a comprehensive medical and occupational history. All subjects underwent spirometry and bodyplethysmography according to ATS/ERS quality standards. CO-diffusion capacity (DLco) was measured according to MacIntyre et al. 2005. Results are reported as% predicted. Subjects were classified according to chest X-ray findings.

Results: Exposure varied widely across workers (2-420 fiber-years). Asbestosis (ILO≥1/1, ±pleural fibrosis) was found in 4 workers, 18 had pleural fibrosis and 41 had normal chest X-ray findings. Pulmonary gas exchange was reduced in all three groups: DLco 51% (95%-CI 24%, 78%), 73% (95%-CI 65%, 81%) and 84% (95%-CI 79%, 89%), respectively. DLco was below the lower limit of normal in 37 cases. Mean DLco of never smokers (n=12), ex smokers (n=24), and smokers (n=5), all with normal chest X-ray, was 85% (95%-CI 77%, 93%), 84% (95%-CI 76%, 91%), and 84% (95%-CI 70%, 99%), respectively. We found no statistical association between DLco and fiber-years.

Conclusions: We detected significantly impaired gas exchange in all three groups of workers formerly exposed to asbestos in the order asbestosis > pleural fibrosis > none. There was no relation to smoking habits. DLco was shown to be a sensitive method to detect early impairment of lung function in asbestos workers.

P1054

Pleural plaques and lung function in asbestos-exposed workers free from pulmonary fibrosis

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Background: Relationships between parietal pleural plaques and lung function impairment still remain controversial.

Aims: This study analyses the relationships between isolated pleural plaques and

lung function, among subjects occupationally exposed to asbestos. **Methods:** The study population consisted of 2,743 subjects included in a large-

scale pilot screening program for asbestos-related diseases in four regions of France between 2003 and 2005. All had been occupationally exposed to asbestos, and were free of interstitial disease on high resolution chest computed tomography (HRCT). The asbestos exposure was assessed with calculation of an individual cumulative exposure index (CEI) taking into account all job periods for each subject. Each included subject benefited from pulmonary function tests (PFT) and HRCT was interpreted by a panel of expert radiologists in thoracic imaging. In both univariate and multivariate analysis, variables were adjusted on tobacco status, body mass index (BMI), CEI to asbestos and the center where PFT were made

Results: Isolated pleural plaques were associated with a significant decrease of TLC (p=0.049), FVC (p=0.001) and FEV1 (p=0.003). On the other hand, no significant relationship was observed between pleural plaques and FEV1/FVC ratio, FEF25-75% and RV. A significant correlation was found between the extent of pleural plaques and the reduction of FVC (p trend=0.0089) and TLC (p trend=0.0046). By contrast, thickness of pleural plaques was not related to any functional impairment.

Conclusions: Our results are in favor of a relationship between isolated parietal and/or dipahragmatic pleural plaques and a trend to restrictive pattern.

P1055

Respiratory morbidity of children exposed to crocidolite at Wittenoom, Western Australia

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Little is known about the general respiratory health of people exposed to asbestos in childhood. This study investigated respiratory symptoms and lung function in subjects who lived in an asbestos mining town (Wittenoom) as children. Lung function (spirometry), chest x-ray, and respiratory symptom data from former Wittenoom children who participated in an Asbestos Review Program (ARP) were assessed. Symptom frequencies and predicted FVC, FEV1 and FEV1/FVC were calculated. Predictors of increased symptoms and poor lung function were assessed using linear and logistic regression. 386 individuals of the ARP had been children when living in Wittenoom. Of these, 8 had developed mesothelioma, 2 lung cancer, 14 radiographic asbestosis and 3 diffuse pleural thickening. These participants were excluded from the analyses. The median age of arrival was 2.3 (IQR 0.6 - 6.0) years and the median duration of residence was 24 (12 - 48) months. The mean age at assessment was 48.5 (SD 9.3) years. About 25% were past smokers and 22.7% still smoked at the time of the assessment. Reported symptoms included; cough (15.7%), phlegm (11.6%), dyspnea (18.3%), wheeze ever (20.1%) and asthma ever (20.8%). The main predictor for increased symptoms was current smoking. Mean (SD) predicted FVC, FEV1 and FEV1/FVC were 90.6% (21.4), 90.1% (20.4) and 79.5% (2.1), respectively. Age at time of test, age at 1st exposure and cumulative asbestos exposure were associated with both reduced FVC and FEV1. Age at time of test, being male and asthma were associated with decreased FEV1/FVC. Asbestos exposure as a child is associated with sub-clinical restrictive lung function decrements even in the absence of radiographic abnormalities

P1056

The sociodemographic and clinical characteristics of Turkish workers with pneumoconiosis

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Pneumoconiosis is an irreversible, preventable disease caused by dust inhalation. Although in other countries, by precautions the incidence decreased to 0,3-5%, it is still 10-15% in our country in pneumoconiosis causing occupations. We aimed to describe the characteristics of our 208 pneumoconiosis workers admitted to Istanbul Occupational Disease Hospital. Patient files between 01st Jan 2008 and 31st Dec 2010 are used for the descriptive study. All of the patients were male with 38,82±13 years of age. The most common workplace was Gaziosmanpasa with 27 cases. The mostly seen works were denim sandblasting, dental technicians, coal mining and casting (%50,5,%12,%6,7,%4,8). The most exposure material was silicium (86,5%). Mean exposure time was 9,9±8,9 years. Profusion according to the ILO classification was in the table. In 37 cases, there was an A opacity and B opacity in 28. The mean FEV1% was 67,27±23,3, FVC%73,78±20,86, FEV1/FVC%85,1±16 and KcO 102,74±28,1. The period between exposure and

Radiographic profusion

	n	%	
1/0,1/1,1/2	35	16,8	
2/0,2/1,2/2,2/3	80	38,5	
3/0,3/1,3/2,3/3,3/+	79	38	
Total	194	93,3	

symptoms were calculated as 10,48±8,7 years. Patients were mostly referred by a social security center, secondly by Sureyyapasa training hospital and thirdly, admitted by themselves. The most common symptoms were breathlessness, cough and exertional dyspnea. The exposure time in a workday is very important but in our files there were no data showing this, so we planned to rearrange our patient files. Generally each paper in the literature discusses only one type of occupation causing pneumoconiosis. To our knowledge this is the first study concerning nearly all occupations causing the disease.

P1057

WITHDRAWN

P1058

Respiratory symptoms, lung function impairment, and sensitization to metals in construction workers exposed to ashes, cement and ash-cement mixtures Dragan Mijakoski¹, Jovanka Karadzinska-Bislimovska², Saso Stoleski², Jordan Minov², Mimoza Marsenic¹, Aneta Atanasovska¹. ¹Allergy Center, Institute for Occupational Health of RM, WHO CC, GA2LEN CC, Skopje, Macedonia, The Former Yugoslav Republic of; ²Dpt for Functional Cardiorespiratory Diagnostics, Institute for Occupational Health of RM, WHO CC, GA2LEN CC, Skopje, Macedonia, The Former Yugoslav Republic of

Objective: To evaluate the prevalence of respiratory symptoms, lung function impairment, and sensitization to metals in construction workers exposed to ashes, cement and ash-cement mixtures.

Methods: We performed a cross-sectional study including 45 construction workers exposed to ashes, cement and ash-cement mixtures (mean age 43.1±8.4 yrs, mean job duration 19.5±7.1 yrs). In addition, 50 office workers (mean age 42.2±10.5 yrs, mean job duration 18.7±9.2 yrs) were examined as a control. Evaluation of examined subjects included completion of questionnaire on respiratory symptoms, lung function testing, histamine challenge test (PC20 ≤ 8 mg/mL), and patch testing.

Results: Compared with office workers, construction workers had more frequently respiratory symptoms (cough, phlegm, wheezing, and shortness of breath) in the last 12 months (40.0% vs. 16.0%, P <0.05). The difference was significant for cough (42.2% vs. 16.0%, P <0.05). Lung function testing showed that construction workers had significantly lower%FEV1 and significantly lower%FVC1/FVC. Significant association was registered between respiratory symptoms and BHR in both construction and office workers. Patch testing to chromium, cobalt and nickel was positive in 22.2%, 15.6%, and 8.9% of all construction workers, respectively. **Conclusion:** Our data emphasize important role of specific occupational hazards in the development of respiratory symptoms, lung function impairment, and sensitization to metals in construction workers exposed to ashes, cement and ash-cement mixtures.

P1059

Tobacco use in Sussex asbestos workers

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Introduction: Asbestos related lung disease is likely to increase. Smoking, apart

from being the major risk factor for lung cancer, may be a co-factor in the development of asbestos in lung disease. The Health and Safety Executive report mentions the high rate of smokers in asbestos related industry [1]. We reviewed our local population of asbestos workers to explore that.

Methods: Between 1994 and 2007, 268 workers were seen for clinical assessment, spirometry, health safety advice and smoking cessation. A retrospective analysis of records, spirometry, smoking habits, effect of smoking cessation advice, was undertaken.

Results: 268 subjects were seen, 65 on multiple occasions. 214 (79%) were involved with asbestos handling or removal. 42 (16%) worked in supervisory or managerial capacities. 12 (5%) were laboratory analysts.Current smoking rates for handlers was 67% (144/214), mnagerial group 36%, and analysts 33% (p=0.015). Ex smoking rates were 11% for removers, 38% for the supervisory and managerial group and 8% for analysts. Non-smoking rates were 22% for handlers and removers, 46% for supervisors and managers and 58% for analysts.The rate of decline in FEV1 for current smoking handlers/asbestos removers was 52.8 ml per year, and for supervisors 22.3 ml per year (p=0.0023). The mean FEV1 decline in non-smokers and ex-smokers was 37.5 ml/year.

Conclusions: Workers with highest asbestos exposure are significantly more likely to be current smokers and to have greater decline in FEV1, conferring greater disease risk [2]. Smoking behaviour has not changed since 1983. Consultant advice on cessation was ineffective for the group most at risk. **References:**

References:

[1] HSE asbestos related database 2007.

[2] HSE Executive report, mesothelioma deaths Great Britain, 1981-2005.

P1060

Airborne concentration of asbestos fibers in residences covered by asbestos-cement corrugated roofing sheets

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The health hazard of long-term living under non-protected, asbestos-containing corrugated roofing sheets (CRS) is still debatable. Although the fibres are bound in hard Portland cement mass (asbestos-cement composite), the weathering processes could develop a loose and brittle surface layer which might allow fiber loss with consequent air dispersion. The objective of the present study, therefore, was to measure indoor airborne concentration of asbestos fibres in low-income residences of large urban areas in Brazil which have been covered by unprotected CRS for at least 15 years. Secondarily, we aimed to perform these measurements in different outdoor environments in the same cities to obtain an index of the background asbestos exposure. All samples were analyzed according to the International Standard ISO 10312, 1995 using direct-transfer Transmission Electron Microscopy (TEM). Sampled residences have been roofed with unprotected CSR for a long period (> 20 yrs in 31/35 (88.5%)) and the level of deterioration was subjectively considered as moderate-to-advanced in (28/35 (80%). TEM analysis found only 1 chrysotile fiber \geq 5 mm in 1 out of these 35 residences (0.00083 fb/ml). Analysis of the outdoor samples either in the neighborhood or in remote areas showed airborne fibre concentration levels similar to previously described in large urbanized cities around the world (0.00042 to 0.00084 fb/ml). These data indicate that indoor exposure to asbestos in residences which have long been covered by unprotected asbestos-cement CRS is similar to background exposure in urbanized areas. Supported by: Supported by: CNPq/MCT, Brazil, FUNAPE (GO), Brazilian

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P1061

Cement dust exposure, respiratory symptoms and exhaled nitric oxide: A cross-sectional study

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Background: Cement dust is associated with chronic respiratory symptoms, but only few studies have attempted to investigate the mechanisms involved in airway inflammation.

Aim: To explore whether cement dust exposure is associated with increase in chronic respiratory symptoms and ${\rm Fe}_{\rm NO}$ concentration among cement factory workers in Tanzania.

Methods: The exposed group comprised 171 cement production workers while 98 workers from a beverage factory served as controls. Personal total dust samples were collected from the breathing zone of workers in the cement factory (n=130) and the beverage factory (n=16). The information on chronic respiratory symptoms was collected by a questionnaire, and Fe_{NO} concentrations were measured by a NIOX MINO monitor among 117 exposed and 24 controls.

Results: Geometric means of total dust exposure among control and exposed workers were 0.6 mg/m³ and 5.0 mg/m³, respectively (p<0.001). The exposed workers and controls had similar age and smoking habits. The prevalence of

chronic respiratory symptoms was higher among exposed compared to controls; Wheezing (18% vs. 15.3%) Work related shortness of breath (15.8% vs. 6.1%), dyspnoea (13.5% vs.9.2%), chronic sputum production (8.4 vs.1%) and chronic cough (6.4% vs. 1.0%).

Exposed workers had higher mean Fe_{NO} concentrations (26.0 ppm) than controls (20.0 ppm), but the difference was not significant.

Conclusion: Higher prevalence of chronic respiratory symptoms and Fe_{NO} concentrations among exposed workers indicate an association between cement dust and airway inflammation.

P1062

Does selection bias explain increases in pneumoconiosis observed in United States coal miners?

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Background: Radiographic surveillance among U.S. coal miners showed declining tenure-specific disease prevalence until 2000, when abnormalities consistent with coal workers' pneumoconiosis (CWP) and progressive massive fibrosis (PMF) began to increase. Some have suggested the increase may be due to selection bias in the surveillance programs.

Methods: For the period 2006-2009, results from the routine health surveillance program (in which costs of radiographs are paid by industry) were compared with results of a government-funded enhanced surveillance program utilizing a mobile examination unit stationed in mining regions. Observed disease prevalence was stratified by region and by mining tenure, and compared between participants in the two programs.

Results: Overall, participants in the routine and enhanced surveillance programs were similar for participation rate, mining location (surface/underground), gender, and race/ethnicity. Participants in the enhanced program were older (47.1 vs 36.4 yr), had longer tenure (21.8 vs 11.4 yr), and higher prevalence of abnormal radiographs (3.9% vs 1.9%) compared to the routine program. However, among miners with at least 20 years of mining, rates of both CWP (6.1% vs 7.0%) and PMF (1.1% vs 0.9%) were similar for participants in the enhanced and routine surveillance programs, respectively.

Conclusions: Tenure-specific prevalences in the routine and enhanced surveillance programs were similar, indicating that selection bias does not explain the recent increases in CWP and PMF among U.S. miners. Previous reports have implicated increased lung deposition of respirable dust and silica as explanations for the ongoing pneumoconiosis problem.

P1063

Epidemiologic and clinicopathologic analysis of malignant mesothelioma for last 10 years in Korea

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This study estimated the magnitude of malignant mesothelioma (MM) in Korea and its clinicopathologic features. We collected 479 cases through the Korea malignant mesothelioma surveillance system (KMMS) from 2001 to 2010. Using the clinical information, epidemiologic survey and pathological evaluations, the patients' age, sex, occupation history, tumor sites, specimen type, and histopathologic subtype were analyzed. Patients were 323 men (67%) and 156 women (33%). The average age was 60 years. The incidence of MM cases through KMMS was 0.79 per million. Among 152 cases with available occupational history, 56 (37%) were related with asbestos exposure occupation. The distribution of sites was pleura (72%), peritoneum (26%), and pericardium (2%). 67 patients were received a radical operation and others were diagnosed by ohter pathologic examination. The pathologic subtypes were epithelioid (62%), biphasic (12%), sarcomatoid (9%), and desmoplastic (3%) in order. We could estimate the accuracy rate (68%) of reporting cases of MM after comparing the data of Health Insurance Institute with the pathologic review of those cases in the university hospital. According to this rate, about 100 cases of MM could be occurred every year in Korea. The number of MM patients and the relation rate with occupational asbestos exposure were relatively low. The peak time of asbestos usage in Korea was 1995, so the incidence of MM is expected to increase continuously by 2030s. The KMMS supplemented by an active surveillance system using death certificate data, cancer registry data, and central surveillance system by the government support could be helpful to understand the more exact status of MM of Korea.

P1064

Pulmonary asbestos fiber in an urban population in Spain

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Introduction: In this study, asbestos fibers in lung are characterized and quantified for the first time in an exposed and an unexposed Spanish population.

Material and methods: We studied samples from 47 autopsy specimens (25 unexposed subjects from Barcelona with no lung disease, and 22 asbestos-exposed subjects from El Ferrol), and 32 resected surgical specimens from lung cancer patients in Barcelona.

After eliminating organic material, the inorganic residue was analyzed by optic microscopy and electron microscopy. Results are expressed as the number of asbestos fibers or asbestos bodies per gram of dry lung tissue. To identify the type of fibers found, 38 samples were analyzed by scanning electron microscopy and energy dispersive x-ray analysis.

Results: 100% of the fibers identified were amphiboles (crocidolite 45%, anthophyllite 22%, tremolite 16%, amosite 15%, and actinolite 3%). Among the total analyzed, 46% of asbestos fibers had a length of $>5 \,\mu\text{m}$ and diameter of $<0.2 \,\mu\text{m}$. A good correlation was found between optic microscopy and electron microscopy (r: 0.77, p < 0.0001) in the determination of asbestos fiber and asbestos body counts. There were no significant differences in asbestos fiber or body counts between patients with non-malignant conditions (asbestosis and plaques) and those with malignant disease (lung cancer and mesothelioma).

Conclusions: This study provides the first available data on the type of asbestos content in lung in the Spanish population. The exclusive retention of amphiboles was worthy of note and suggests elimination of chrysotiles following inhalation. Optic and electron microscopy were both reliable methods for pulmonary asbestos determination in our laboratory.

P1065

Serum cytokine spectrum in workers with occupational salt dust exposure in underground conditions

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Background: Cytokines are humoral part of the cell-cell interactions in the immune response, hematopoiesis, inflammation development. The aim of the study was to assess the level of cytokines in workers with occupational salt dust exposure employed in underground conditions.

Methods: We studied 49 workers with occupational salt dust exposure with mean age 39,7±7,0 years, length of work in underground conditions - 9,7±5,5 years. The control group included 17 healthy men (46,9±8,3 years) without occupational hazards. Serum levels of IL-1 β , IL-2, TNF- α , INF- γ in both groups were measured by ELISA.

Results: The concentration of all studied cytokines in serum of workers with occupational salt dust exposure engaged in underground working conditions was lower vs the control group. We revealed a significant decrease in INF- γ values (p = 0.0226) (4.30 [0.30, 12.8] pg/ml protiv11, 8 [3.80, 19.8] pg/ml). In our opinion, decreased cytokine values in workers engaged in underground working conditions could possibly relate from the reduced activation of T-lymphocytes and NK-cells **Conclusions:** Low bacterial and viral antigens exposure of underground workers, daily respiratory tract clearance during the work shift (bacteriostatic and bactericidal effect on microorganisms of the salt dust) probably contributes to the reduction of cytokine production.

P1066

WITHDRAWN



P1067

Occupational and environmental determinants of exposure to asbestos in malignant mesothelioma cases

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Background: The relationship between pleural malignant mesothelioma and exposure to asbestos is currently known, but there is no accurate information regarding high risk occupations and types of exposure in Iran.

Aim and objectives: As Asbestos is still used in Iran inspite of ban in many other countries, in this study we specified high risk jobs for asbestos exposure and further intervention.

Methods: In this case-control study, 64 cases with diagnosis of pleural malignant mesothelioma who were admitted in Masih daneshvari hospital between 2001 and 2009 were studied. All the cases and 58 controls participated in a telephone interview for job history and occupational and environmental exposures to asbestos. **Results:** Asbestos exposed occupations in mesothelioma group included corrugated asbestos cement sheet production 11 (%17.2), Insulation 6 (%9.4), construction 6 (%9.4), asbestos warehouse 3 (%4.7), oil and gas shaft drilling 2 (%3.1) and car brake shoe manufacturing 2 (%3.1). In control group the only exposed occupational exposure to asbestos was 5.51 (CI=2.26-13.47). Residency in neighbourhood of corrugated asbestos cement sheet production factory was the most prevalent cause for environmental exposure.

Conclusion: In%46.87 of mesothelioma cases, source of exposure to asbestos was corrugated asbestos cement sheet industry due to employment in the factory, residency in neighbourhood of the factory or use of its products.

P1068

Investigating of CEA, CA125, CA15-3, CA19-9, fT3, fT4, TSH, vitamin B12, folic acid and ferritin in malignant and benign diseases due to environmental asbestos exposure

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Aim: To identify several biochemical marker levels in mesothelioma (MM), in subjects with pleural plaques (PP) due to environmental asbestos exposure (EAE) and in healthy subjects with EAE.

Method: 277 patients with PP from villages close to ophiolitic units (OU) (serpentin asbest containing), 121 healthy subjects from villages close to OU, 118 healthy subjects without EAE and 24 MM patients were included to the study. Results: CA125, CA15-3, Folate, Vit B12,ferritin levels of MM patients were higher, fT3 levels of MM were lower.

Table 1. Distribution of sex, age and biochemical fi	indings according	to the groups
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Mean	Mesothelioma (n=24)	Pleural plaque (n=277)	Healthy asbestos exposed subjects (n=121)	Control subjects (n=118)	р
Male %	71	66	69	61	0.53
Age	59	64	63	62	0.076
Folate	5.81	4.53	4.73	4.49	0.002
Vit B12	587	276	264	296	< 0.001
Free T3	1.89	3.25	3.26	3.27	< 0.001
Free T4	1.23	1.14	1.14	1.16	0.19
TSH	1.44	1.77	1.66	1.42	0.145
Ferritin	371	89	71	89	< 0.001
CEA	2.17	2.17	2.23	2.37	0.626
CA15-3	27.1	20.6	17.5	21.5	< 0.001
CA19-9	13.8	10.6	10.7	12.3	0.276
CA125	40.2	14.23	11.74	12.6	< 0.001

AUC of the CA125 and CA15-3 in identifying MM were 0.78 and 0.67 in ROC curve respectively.

Table 2. Several cut off values of markers differentiating mesothelioma from benign diseases

Cut off value	Sensitivity	Specificity	Accuracy	
CA125 ≥12.37	87.5	62.6	63.7	
CA125 ≥13.63	83.3	69.6	70.2	
CA125 ≥14.025	79.2	72	72.6	
CA15-3 ≥17.8	79.2	45.3	46.9	
CA15-3 ≥18.43	75	48.4	49.6	
CA15-3 >19.205	70.8	52	53	

Other tumor markers were irrevelant.

Conclusion: CA125 and CA15-3 may have role on diagnosis of MM. Ferritin, folate, VitB12 levels were increased in MM patients where as fT3 levels were decreased.

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Intrapulmonary asbestos concentrations in shipyard workers exposed to asbestos in El Ferrol, Spain

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Introduction: Asbestos has been used in almost all industrial sectors so the collection of work history data can be difficult. For this reason, quantitative analysis of asbestos bodies (AB) in lung tissue seems more sensitive indicator of exposure than standard questionnaires about exposure to asbestos.

Material and methods: Quantitative analysis was carried out on 31 lung samples of shipyard workers from El Ferrol, Spain with a history of occupational exposure to asbestos, obtained at autopsy, in order to ascertain the concentration of AB (expressed in AB/g of dry tissue) in the lungs. This analysis was carried out in accordance with the guidelines for the analysis of mineral fibres in biological samples set by De Vuyst et al, ERS Working Group. Observation period: 1/1/2008 to October 2010.

Results: 12 had pulmonary adenocarcinoma, 5 epidermoid carcinoma, 1 poorly differentiated carcinoma, 4 asbestosis, 5 mesothelioma, 2 pleural plaques and 2 did not have pathologies related to asbestos exposure. All but one of the patients had a concentration of over 1000 AB/g in dry tissue. The average AB/g was 5947 (range:249-4660059). The work history of 29 patients was collected; 27 had worked in naval shipyards. Average age at death: 67.5. A detailed work history was not collected for 8 patients. Average period of exposure: 24.21 years. 26 patients (83.8%) had been smokers with an average consumption of 26 cigarettes/day.

Conclusions: The quantification of AB in pulmonary tissue is a very useful tool to evaluate the history of exposure to asbestos. The shipyard workers from el Ferrol had a very high concentration of AB in the lung that are the cause of the pathology.