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### SILICOSIS MORBIDITY ASPECTS IN THE CLINIC OF OCCUPATIONAL MEDICINE TIMISOARA – ASPECTE DE MORBIDITATE PRIN SILICOZĂ ÎN CLINICA DE MEDICINA MUNCII TIMIȘOARA

<sup>1</sup>Florina Georgeta Popescu, <sup>1</sup>Elena-Ana Păuncu, <sup>2</sup>Cristina Nica, <sup>1</sup>Mădălina Celita Paraschiva Hanna. <sup>1</sup>Disciplina Medicina Muncii, Universitatea de Medicină și Farmacie "Victor Babeș" Timișoara, România; <sup>2</sup>Clinica Medicina Muncii, Spitalul Clinic Municipal de Urgență Timișoara, România

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**Introducere** Silicoza, una dintre cele mai vechi boli profesionale, până nu demult în topul patologiei profesionale, a fost înlocuită de bolile prin suprasolicitare. În România rămâne încă pe locul doi în ierarhia bolilor profesionale, înregistrând în 2012 un număr de 203 cazuri noi de silicoză, față de 263 boli prin suprasolicitare clasate pe primul loc. Comparativ cu 428 cazuri noi de silicoză în 2003, acestea s-au redus aproape la jumătate în 2012.

**Scop** Lucrarea de față propune o analiză a cazurilor de silicoză din Clinica de Medicina Muncii Timișoara pentru o perioadă de 5 ani. **Material și metodă** Datele au fost extrase din foile de observație ale pacienților cu silicoză internați în clinică în perioada 2008–2012. Parametrii urmăriți au fost: profesia, vechimea expunerii în mediu silicogen, vârsta, codificarea bolii la debut, parametrii funcționali respiratori, statusul biologic, patologia asociată, complicații, evoluție.

Rezultate și discuții lotul studiat a fost format din 346 persoane, reprezentând 50,07% din cazurile cu patologie profesională respiratorie, dar numai 13% din totalul internărilor. Expunerea medie a fost de 23,79±7,97 ani, iar media de vârstă 53,14±9,31 ani. 38,43% reprezintă cazurile noi, care au fost semnalate, dar dintre acestea numai 73,68% au fost declarate ca boala profesională. Conform clasificării ILO, 28,81% au fost încadrați în gradul 2 de profuzie în momentul diagnosticului. Un procent mic (7%) asociază alte patologii: tuberculoza pulmonară, antracoză, sideroză, iar o parte semnificativă asociază patologii osteomusculo-articulară (62,01%) și cardiovasculară (54,23%). Menționăm 3 cazuri asociate cu boli autoimune: lupus eritematos și poliartrită reumatoidă.

**Concluzii** Deși incidența este în scădere, principalele locuri de muncă cu expunere s-au închis sau se vor închide (mine, turnătorii), lucrătorii cu expunere la pulberi silicogene trebuie monitorizați prin serviciile de medicina muncii toată viața. Nu trebuie uitat riscul cancerigen și importanța unui regim de viață sănătos. De asemenea, includerea acestor pacienți în programe de recuperare respiratorie.

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### SILICOSIS TRENDS IN CLUJ-NAPOCA, ROMANIA OVER 35 YEARS OF EXPERIENCE

<sup>1</sup>AG Răjnovanu\*, <sup>2</sup>C Asăujan, <sup>2</sup>S Toma, <sup>2</sup>M Bucur. <sup>1</sup>Iuliu Ștefiușanu University of Medicine and Pharmacy, Occupational Health Department, Cluj-Napoca, Romania; <sup>2</sup>Spitalul Clinic Județean de Urgență, Compartimentul Medicina Muncii, Cluj-Napoca, Romania

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**Introduction** Occupational Health Unit of the Cluj-Napoca Emergency General County Hospital has a long and strong

experience in diagnosing occupational lung disease and especially in diagnosing pneumoconiosis according to International Labour Organisation (ILO) classification. This study retrospectively searched for trends in characteristics of new silicosis cases reported by this unit over more than 35 years of activity.

**Methods** We reviewed medical records of all new cases of silicosis identified between 1980–1985 (93 subjects – group I), 2000–2005 (62 subjects – group II) and 2011–2016 (60 subjects, group III). We compared for each group their mean age at diagnosis, gender distribution, smoking habit, type of industry as source of exposure to mineral dust, radiological findings (according to ILO Classification of Radiographs of Pneumoconiosis), pulmonary function tests (PFT).

**Results** Mean age at diagnosis for the last group (57.15 years) compared to the other two (group I – 51.87 and group II – 52.24 years); sex distribution: females for the last two groups (16.12% group II and 5% group III compared to 0 cases in group I). The vast majority of patients in group I (97%) were from mining industry; in group II mining was represented by only 38% of patients, while foundries took the lead by 52% and some other industries were responsible for 10% cases, distribution remaining the same in group III (40% mining industry, 41.66% – foundries and 18.33% other industries). A slight increase in group III was found in smoking habit prevalence (58% – group I, 55% – group II and 65% – group III current or ex-smokers). The most important data regarded opacities profusion and size on radiographs and pulmonary function tests results. If in group I we found a fairly even distribution for profusions (23%–1, 26%–2, 16%–3), radiographs with axe symbol (13%) and with large opacities (22%), in group II and III profusion 1 was predominant (68% and 40%) and profusion 2 (19% and 36.66%) was also significant. On the other hand, in group I restrictive pattern at PFT was in the first place (42%) and obstructive pattern in group II (52%). In group III ventilatory defects were less frequent (28.33% obstructive and just 6.66% restrictive).

**Conclusion** Our results suggest significant changes in silicosis pattern in studied population. Age for first diagnosis tends to increase, radiological findings are less severe and pulmonary dysfunctions are less frequent. All these changes might be explained by a major shift in job exposure suggested by a decrease in mining activities and increase for other industries, especially foundries in our area of research.

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### PLEURAL PLAQUES: MARKERS OF ASBESTOS EXPOSURE OR INDEPENDENT RISK FACTOR FOR PLEURAL MESOTHELIOMA? A CASE REPORT

<sup>1</sup>Pietro Sartorelli, <sup>1</sup>Gabriele d'Hauw, <sup>1</sup>Antonietta Gerardina Sisinni, <sup>1</sup>Riccardo Romeo, <sup>1</sup>Valentina Paolucci, <sup>2</sup>Donatella Spina. <sup>1</sup>Department of Medical Biotechnology, Unit of Occupational Medicine AOU Senese, University of Siena, Siena, Italy; <sup>2</sup>Department of Medical Biotechnology, Unit of Anatomic Pathology AOU Senese, University of Siena

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Pleural plaques (PPs) represent the most common non malignant asbestos-related disease. Currently PPs are widely referred as a marker of asbestos exposure and not as an independent

risk factor for the development of asbestos-related neoplastic diseases (1). However, the association between PPs and pleural mesothelioma (PM) remains controversial, as some studies on cohorts of asbestos exposed workers have shown correlation between PPs and PM. Despite this, scientific literature is poor. Research has been focused on the relationship between PPs and lung cancer, while there is a lack of studies on the possible relationship between PPs and the development of PM.

**Case presentation** A clinical case of a patient affected by asbestosis and PPs with a history of occupational asbestos exposure is presented. During the follow up a PM was diagnosed at a PP.

**Conclusions** The widespread belief that there is no relationship between PPs and PM is not supported by a vast literature as it happens for the absence of association between PPs and lung cancer. In the patient described it is not possible to determine whether the localization of the PM at a PP is incidental or not and whether the PM can be attributed only to intense exposure or even to the presence of PPs. Similar cases may not be uncommon even if not reported in the literature.

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## CHANGE THE PROFILE OF SILICOSIS IN UNDERGROUND GOLD MINING IN MINAS GERAIS, BRAZIL

<sup>1</sup>LL Silva, <sup>2</sup>LPC Lima, <sup>3</sup>CC Barbosa, ADM<sup>3</sup>, <sup>3</sup>AS Mosci, <sup>4</sup>DNP Della Torre, <sup>5</sup>AM Silveira\*, <sup>5</sup>APS Carneiro. <sup>1</sup>Santa Casa de Misericórdia de Belo Horizonte Hospital, Brazil; <sup>2</sup>Specialization in Occupational Medicine, Faculdade de Ciências Médicas/MG, Belo Horizonte, Brazil; <sup>3</sup>Justiça do Trabalho, Belo Horizonte, Brazil; <sup>4</sup>Occupational Medicine Residency, Hospital das Clínicas, UFMG, Belo Horizonte, Brazil; <sup>5</sup>Hospital das Clínicas, Universidade Federal de Minas Gerais, Belo Horizonte, Brazil

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**Introduction** Minas Gerais is the Brazilian state with the highest reported number of silicosis, much of which originated from gold mining industry. The objective was to analyse the temporal occurrence of silicosis in gold mining identifying occupational factors related it.

**Methods** Cross-sectional study with 1022 former gold miners workers of Nova Lima (MG), conducted between 1995 and 2011.

**Results** Silicosis was diagnosed in 20.1% of the workers none of whom worked on the surface. Those who have worked in underground for up to 5 years had 4.4% prevalence in contrast to those with more than 20 years, whose prevalence was 35.8%. Among those who started work in underground until the 1950 the disease had a prevalence of 73.3% while among those that started after 1990 no cases were identified.

**Discussion** It have occurred a significant drop in the incidence of silicosis in gold mining. The disease is known to be dose-dependent so is expected the decrease in the number of cases by improvements in work environments. It is essential that measures continue to be implemented in all fields of activity with exposure to silica to decrease the number of cases.

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## ASSESSMENT OF SERUM AND URINARY BIOMARKERS FOR PNEUMOCONIOSIS IN A COHORT OF STONE WORKERS EXPOSED TO ASBESTOS CONTAMINATED MINERALS

<sup>1,2,3</sup>Hsiao-Yu Yang\*, <sup>1,2,3,4</sup>Pau-Chung Chen. <sup>1</sup>Institute of Occupational Medicine and Industrial Hygiene, National Taiwan University College of Public Health, Taipei, Taiwan; <sup>2</sup>Department of Public Health, National Taiwan University College of Public Health, Taipei, Taiwan; <sup>3</sup>Department of Environmental and Occupational Medicine, National Taiwan University Hospital, Taipei, Taiwan; <sup>4</sup>Department of Environmental and Occupational Medicine, National Taiwan University College of Medicine, Taipei, Taiwan

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**Introduction** Pneumoconiosis resurged in recent years but current medical surveillance programs have flaws that result in low detection rate. Development of new screening tools is warranted. The objective of the study was to develop serum and urinary screening tests for pneumoconiosis.

**Methods** We conducted a cross-sectional study in 140 stone workers between March 2013 and July 2014. We compared serum soluble mesothelin-related peptide (SMRP), fibulin-3, and urinary 8-Oxo-2'-deoxyguanosine (8-OHdG)/Creatinine between cases of pneumoconiosis and control. Using the ILO international classification of radiographs of pneumoconiosis profusion subcategory  $\geq 1/0$  combined with restrictive type ventilatory impairment in standard pulmonary function test (FVC <80% of predicted and/or FEV1/FVC >70% of predicted) as the reference standard, we calculated sensitivity, specificity, false positive, false negative, and the likelihood ratio of the biomarkers. We created the receiver operating characteristic (ROC), calculated the area under the curve (AUC) and decided the cut-off values using the Youden index.

**Results** After excluding one subject with uremia and one subject with COPD, a total of 138 subjects were enrolled that included 20 cases and 118 controls. The ROC-AUC was 0.7 for SMRP (95% CI: 0.5 to 0.8), 0.5 for Fibulin-3 (95% CI: 0.4 to 0.7), and 0.5 for 8-OHdG/Creatinine (95% CI: 0.4 to 0.6). There was a dose-response relationship between SMRP and the severity of pneumoconiosis. Using SMRP larger than 0.62 nM as the cutoff value, the diagnostic test had the highest positive likelihood ratio followed by using fibulin-3 larger than 43.9 ng/mL as cutoff value, and then 101.65 ng/mg for 8-OHdG/Creatinine. In the case group, 65% of subjects processed asbestos-contaminated ores including nephrite, antigorite, or talc. Subjects exposed to nephrite had significantly higher level of SMRP than exposed to other types of stones.

**Conclusion** SMRP might be used in the screening for workers exposed to asbestos contaminated minerals.

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## OCCUPATIONAL LUNG DISEASE

Paul Mckeagey\*. Belfast City Hospital, Belfast, UK

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<sup>1</sup>David Fishwick, <sup>2</sup>Johanna Feary  
<sup>1</sup>University of Sheffield, Sheffield, UK  
<sup>2</sup>Brompton Hospital, London, UK