

## **Malignant and Non-Malignant Asbestos-Related Pleural and Lung Disease: 10-Year Follow-Up Study**

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**Aim.** To examine the presence of radiologically visible lung and pleural changes in patients who were exposed to the asbestos dust, and to correlate the progression of these changes with the duration and intensity of exposure and smoking. We also evaluated possible correlation between non-malignant asbestos-related pleural abnormalities and the occurrence of malignant pleural mesothelioma.

**Methods.** Among 7,300 patients who visited our department between 1991 and 2000 due to non-specific respiratory symptoms, we selected 2,420 with chest X-rays indicating the possible existence of non-malignant asbestos-related diseases. The selected group was followed-up for progression of radiological changes and the development of malignant pleural mesothelioma, and the changes were correlated with the intensity and duration of exposure to asbestos dust and smoking.

**Results.** Radiological changes characteristic for non-malignant asbestos-related pleural disease or lung asbestosis were identified in 340 (14%) out of 2,420 examined patients, of whom 77 (22.6%) developed malignant pleural mesothelioma, as compared with 13 patients out of 2,080 (0.6%) without radiological signs of asbestosis or pleural changes. Twenty-three (29.9%) patients who presented with a progression of pleural disease and lung asbestosis had a very significant incidence of malignant pleural mesothelioma ( $p < 0.001$ ). We also found that 55 (71.4%) patients with the highest asbestos exposure level (grade 3) developed malignant pleural mesothelioma more often ( $p = 0.044$ ). No correlation was found between malignant pleural mesothelioma development and duration of asbestos exposure ( $p = 0.149$ ) or smoking habit ( $p = 0.617$ ). Professionally exposed patients were at 3.3-times higher relative risk (95% confidence interval, 2.28-4.75) than those who were not exposed to develop malignant pleural mesothelioma.

**Conclusions.** The risk of developing lung asbestosis increased with the level of exposure to asbestos dust and smoking. The risk of developing pleural disease correlated with the intensity and duration of exposure, but not with smoking. The patients with progressive pleural and parenchymal changes are at particularly high risk of developing malignant pleural mesothelioma and must be under special surveillance.

**Key words:** asbestos; asbestosis; Croatia; environmental exposure; mesothelioma; occupational exposure