

Environmental Asbestos Exposure as a Risk Factor for Small Airways Obstruction

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Abstract

Background: Tremolite is one of the six recognized types of asbestos, whose toxicity and carcinogenicity is well-documented. Resident population in the area of Lagonegro (Basilicata, Italy) has been shown to be exposed to environmental tremolite pollution, deriving from superficial rocks and asbestos caves. A branch of the ongoing health surveillance program for residents is evaluating the prevalence of pulmonary functional abnormalities.

Methods: The study group was composed by 655 long-term residents in the tremolite-exposed area of Lagonegro (age 49.35 ± 16.68 , current smokers 109, ex-smokers 126) . The control group was composed by 653 individuals living in areas not tremolite-exposed (age 54.45 ± 17.9 ')

Lung function test

Spirometry was performed following the current recommendations [5]. The same spirometer (Pony FX, Cosmed, Italy) was used for all the participants to the study. Obstructive pattern was defined as a value of Forced Expiratory Volume in the first second/ Forced Vital Capacity (FEV₁/FVC) ratio <70. Restrictive pattern was defined as values of FEV₁ and FVC lower than 70%pred and FEV₁/FVC ratio >70. Small airways obstruction was defined as values of Forced Expiratory Flow at 25-75% of FVC (FEF_{25-75%}) <70%pred.

Statistical analysis

Qualitative data were summarized as count and percentage and comparisons were performed with

variables: age group ($\chi^2=129.3$, $p<0.0001$), with higher risk in older age; sex ($\chi^2=3.3$, $p=0.0685$); BMI class ($\chi^2=0.77$, $p=0.68$); smokers and ex-smokers compared to not-smokers ($\chi^2=25.2$, $p<0.0001$); tremolite exposure ($\chi^2=64.2$, $p<0.0001$). The odds ratio for tremolite exposure, adjusted for other covariates in the model, was 3.46 (95% CI 2.55-4.68, see Table 2).

Effect

OR