

Chapter

1. Asbestos Exposure Assessment, Risk Identification, and Substitutes

Section

C. Epidemiology of ARDs

No./Title

23. Occupational asbestos exposure among respiratory cancer patients in Lithuania

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Introduction

Asian context

The study, under the theme of lung cancer caused by asbestos exposure, implemented a personal interview using an internationally established questionnaire covering most likely activities of asbestos exposure at the workplace.

Critical appraisal

Using the Helsinki criterion of ≥ 25 fiber years, the authors estimated the proportion of lung cancer cases attributable to heavy occupational exposure to asbestos. This proportion was further multiplied with the total annual number of cases to derive the number of asbestos-related compensable lung cancer cases.

Unique keywords

Lung cancer, Helsinki criterion, heavy occupational exposure, compensation, Lithuania

Abstract

Background: Despite intensive use of asbestos, no cancer case has ever been diagnosed as asbestos-related in Lithuania. This paper attempts to estimate the proportion of those occupationally exposed to asbestos among respiratory cancer patients.

Material and Methods: Occupational exposure to asbestos was assessed retrospectively for 298 lung cancer and four mesothelioma patients, admitted to the Institute of Oncology, Vilnius. The evaluation was based on personal interview data using an internationally established questionnaire covering most likely activities of asbestos exposure at the workplace. Cumulative exposure to asbestos at work was estimated in fiber years. Lung tissue asbestos fiber burden analysis was conducted by scanning transmission electron microscopy on 23 samples.

Results: A cumulative asbestos exposure of ≥ 25 fiber years was found for 10 lung cancer patients (3.4%). They worked in foundries, construction, installation, shipyard, power plant, railway, asbestos cement, glass and chemical industry. In a further 56 lung cancer patients (18.8%) and for one (25%) mesothelioma patient, a cumulative exposure from 5 to 24.9 fiber years was assessed. Asbestos fibers were detected in 18 cases, the burden ranged from 0.1 to 4.1 million fibers/g dry lung tissue; concentrations exceeding 1 million f/g dry lung tissue were found in four cases. All fibers were chrysotile.

Conclusions: Findings indicate that a fraction (3.4%) of the lung cancer cases could be attributed to heavy occupational exposure to asbestos using the Helsinki criterion of ≥ 25 fiber years. Therefore, approximately 50 lung cancer cases per year in Lithuania could be asbestos-related compensable occupational diseases.



Annotation

Fact 1

- In a Lithuanian case-series study, 182 of 298 lung cancer patients (61.1%) were exposed to asbestos and their estimated average cumulative exposure to asbestos was 6.94 fiber years (minimum 0.01, maximum 102.4).

Fact 2

- 116 (38.9%) lung cancer patients had low cumulative asbestos exposure (<5 fiber years) 56 (18.8%) had middle cumulative asbestos exposure (5-24.9 fiber years) and 10 (3.4%) had high cumulative asbestos exposure (≥ 25 fiber years).

Fact 3

- Asbestos fibers were detected in 18 among 23 cases with concentrations ranging from 0.1 to 4.1 million f/g dry lung tissue and there was only chrysotile in the lung tissue.

Fact 4

- The proportion of current and ex-smokers among male lung cancer patients was high in this study (98.9%).

Fact 5

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References