Factsheet on Asbestos and Asbestos-Related Diseases

1. Asbestos Exposure Assessment, Risk Identification, and Substitutes

C. Epidemiology of ARDs

45. Predicted mortality from malignant mesothelioma among women exposed to blue asbestos at Wittenoom, Western Australia

Reid A, Berry G, Heyworth J, de Klerk NH, Musk AW


Introduction

Future mesothelioma deaths among women have rarely been estimated but merit investigation in Asian countries.

The objective was to estimate the future burden of female mesothelioma deaths in a cohort exposed to blue asbestos at Wittenoom, Western Australia. 40 deaths from mesothelioma were observed to the end of 2004. Using a range of models that incorporate time since first exposure, competing risks from other diseases, latency periods and clearance of mesothelioma from the lungs, the authors predicted 66 to 87 deaths from mesothelioma until 2030, which were characterized as high and persisting by the authors.

Unique keywords

Crociodolite, women, mesothelioma, Wittenoom

Abstract

Introduction: Nearly 3,000 women and girls were documented to have lived at the blue asbestos mining and milling town of Wittenoom in Western Australia between 1943 and 1992. Eight per cent of deaths among these women to the end of 2004 have been from malignant mesothelioma of the pleura.

Aim: To predict future mortality from mesothelioma to 2030 in this cohort.

Methods: Mesothelioma mortality rates incorporating parameters for cumulative exposure, a power of time since first exposure and annual rates of fiber clearance from the lung were calculated from maximum likelihood estimates. These rates plus age specific mortality rates for Western Australia females incorporating an excess lung cancer risk were then applied to all Wittenoom cohort women surviving to the end of 2004, in yearly increments, to predict the future numbers of cases of mesothelioma to 2030.

Results: There were 40 deaths from mesothelioma among the Wittenoom women to the end of 2004. Using a range of models that incorporate time since first exposure, competing risks from other diseases, latency periods and clearance of mesothelioma from the lungs we predict 66 (lowest estimate) to 87 (highest estimate) deaths from mesothelioma until 2030. This represents one and a half to two and a half times the number of deaths that have already occurred to the end of 2004.

Conclusion: The high toll from mesothelioma in this cohort of women and girls will continue well into the future.
Fact 1
Among the roughly 3,000 women and girls exposed to blue asbestos in Wittenoom during 1943-1992, 40 deaths (10 among workers and 30 among residents) from malignant mesothelioma of the pleura occurred during 1950-2004.

Fact 2
The mesothelioma mortality rate appears to peak for workers at 30 or more years since first exposure, but for residents the rate is still increasing, with the rate at 40 or more years since first exposure being 43% greater than the rate for 30-39 years since first exposure.

Fact 3
Predicted mesothelioma deaths between 2005 and 2030 ranged from 66 to 87 among 2,402 women.

Fact 4
A longer latency period appears to be consistent with lower exposures to asbestos among women. This may also explain why there has been no obvious decrease in mesothelioma predicted numbers to 2030.

Fact 5
The future age distribution of mesothelioma will be similar to the pattern that was observed up to the end of 2004, in which the median age at death was 60 years (inter-quartile range 52-75).

References