

LUNG CANCER IN MINERS EXPOSED TO SILICA AND IONISING RADIATION - A FEASIBILITY STUDY

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Does inhaled silica, or the presence of silicosis, interact with ionising radiation and other occupational carcinogens to potentiate lung cancer risks in man?

Two pathologic pathways consistent with the idea would result in associations between exposures to silica and only specific types of lung cancer. This might explain some inconsistencies in results from epidemiologic studies that do not distinguish between lung cancer cell types. We have explored systematically whether we could test the hypothesis rigorously using preserved histology slides from autopsies of thousands of former east German uranium miners, detailed records of their occupational histories, and information about environmental conditions underground.

Several thousand histology slides from a stratified random sample of 302 miners were examined independently by four pathologists. All pathologists were able to distinguish between the different lung cancer cell types and the different forms of silicosis of interest. Estimates of joint distributions of exposures to silica, radiation, asbestos and arsenic suggest that the potentially available data can be used to study the hypothesised interaction. An additional sample of at least 600 individuals from the archive would be required to test the research hypothesis with adequate statistical power. Further research along these lines is both feasible and desirable.

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