

Asbestos and SV40 in malignant pleural mesothelioma from a hyperendemic area of north-eastern Italy

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ABSTRACT

Aims and background. Malignant mesothelioma is a fatal cancer of increasing incidence in north-eastern Italy. Together with asbestos, the polyomavirus SV40 was hypothesized to contribute to the onset of malignant mesothelioma. To investigate the putative role of SV40 in the individual susceptibility to asbestos-induced malignant mesothelioma, we conducted a molecular epidemiological study on a series of malignant mesothelioma patients from an area in north-eastern Italy hyperendemic for malignant pleural mesothelioma.

Methods and study design. We collected 63 mesothelioma samples from incidence cases of patients diagnosed with malignant pleural mesothelioma in the period 2009-2010. DNA was extracted from patients' tissue biopsies using the BioRobot EZ1 Qiagen workstation. SV40 sequence detection and quantification was performed by specific real time PCR. The 74.6% of the 63 enrolled patients had a history of asbestos exposure. The epithelioid histotype was more prevalent in males (64.0%) and the mixed in females (61.5%) who showed significantly higher cancer co-morbidity (46.1% vs 12%, $P = 0.005$). SV40 was detected in 22% of MM tumors, with a low viral load. In SV40-positive patients, a threefold increased risk of asbestos exposure was observed, more evident in females (OR 4.32) than in males (OR 1.20).

Conclusions. Our findings indicate that a high prevalence of SV40 was present in malignant mesothelioma incident cases from an area hyperendemic for malignant mesothelioma in north-eastern Italy. Although asbestos is considered the main risk factor in malignant mesothelioma onset, a role for SV40 could be hypothesized.

Key words: environmental exposure, epidemiologic study, occupational exposure, polyomavirus.

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