

# No implication of Simian virus 40 in pathogenesis of malignant pleural mesothelioma in Slovenia

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## ABSTRACT

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**Background and aim.** Malignant mesothelioma is predominantly caused by asbestos exposure, although the association of Simian virus 40 in its pathogenesis is currently still under debate. Simian virus 40, a DNA rhesus monkey virus with oncogenic properties, accidentally contaminated early batches of polio vaccine in the 1960s. In the 1990s, viral sequences and proteins were discovered in several human tumors, which triggered research to find a link between Simian virus 40 and human cancers, especially malignant mesothelioma. The aim of our study was to establish an effective laboratory procedure for Simian virus 40 detection and to investigate the presence of Simian virus 40 DNA and small t antigen in mesothelioma samples from Slovenian patients.

**Methods and study design.** Paraffin-embedded malignant pleural mesothelioma specimens from 103 Slovenian patients were collected and used for total DNA isolation and real-time polymerase chain reaction for Simian virus 40 small t and large T DNA analysis. Special attention was devoted to primer design, good laboratory practice and polymerase chain reaction contamination prevention. Polymerase chain reaction products were sequenced and BLAST aligned. One 5 µm thick paraffin section from each patient's tissue block was stained with hematoxylin and eosin for histological typing and one for immunohistochemical detection of Simian virus 40 small t antigen using a monoclonal antibody against Simian virus 40 (Pab280). SV40-expressing Wi-38 cells were used as positive control in both PCR and immunohistochemistry.

**Results.** In real-time polymerase chain reaction analyses, only 4 samples gave products with primer pairs amplifying small t antigen and were inconsistent and poorly reproducible. BLAST alignment showed no homology with any deposited SV40 sequences. No immunopositive staining for SV40 small t antigen was found in any of the samples.

**Conclusions.** We found no evidence of SV40 presence in tissue samples from 103 Slovenian patients with malignant pleural mesothelioma. Asbestos exposure remains the main risk factor for malignant pleural mesothelioma in Slovenia. Free full text available at [www.tumorionline.it](http://www.tumorionline.it)

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**Key words:** immunohistochemistry, malignant mesothelioma, quantitative polymerase chain reaction, Simian virus 40, Slovenia, small t antigen.

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