

# SV40, genetic polymorphism and mesothelioma. Pathological and epidemiological evidence

C. MAGNANI

CPO Piemonte & University of Eastern Piedmont at Novara

## KEY WORDS

SV40; malignant mesothelioma; genetic polymorphism

## SUMMARY

**Background:** *Asbestos exposure is the only cause of epidemiological relevance for pleural malignant mesothelioma (MM), but the mechanism of action is not entirely understood. A causal role was suggested for SV40 since viral DNA and proteins were detected in pleural MM and SV40 caused MM in hamsters. SV40 proteins (Tag) interact with oncogenes P53 and Rb.* **Objectives:** *To review evidence on the association of SV40 with MM, bearing in mind laboratory and epidemiological studies.* **Methods:** *The review on SV40 was based on scientific papers published since 1990 on association of SV40 with human cancer.* **Results:** *Studies researching SV40 DNA in MM tissue observed a wide range of prevalences (0% to 70%); causes of variability were not convincingly identified. An association of MM with SV40 was suggested but confounding factors and biases were not considered. Cohort studies on humans inoculated with contaminated vaccines did not show an increased incidence but their statistical power was limited. Diffusion of SV40 in humans is linked to polio vaccines produced in 1955-63 from SV40-infected monkeys. A 11-12% prevalence of SV40 in adults were reported in the USA, 2-6% in Europe and Africa. The age pattern of MM does not suggest a cohort effect related to contaminated vaccines.* **Discussion:** *association of SV40 with human MM is suggested from laboratory observations but still lacks confirmation in well designed epidemiological studies. Other putative co-factors in MM occurrence are mutations in genes involved in repair of damage caused by asbestos, notably DNA-repair genes. Preliminary observations are available but epidemiological studies are needed to test this hypothesis.*

---