

SV40 in vaccines

Did polio vaccines contaminated with SV40 cause increased incidence of rare cancers and non-Hodgkin lymphoma?

Emma Hitt(emma@emmasciencewriter.com)

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ATLANTA — The US Institute of Medicine (IOM) is looking into whether polio vaccines contaminated with the simian virus SV40 — thought to inactivate p53 and Rb — and given 40 years ago have caused a spike in the incidence of several cancers.

As much as two-thirds of the oral Sabin and injected Salk polio vaccine supply given from 1955 to 1963 in the US, Australia, Canada, Germany and other countries was contaminated with SV40, according to a recent report in the Wall Street Journal. Since then, the incidence of certain rare cancers such as the brain cancer ependymoma has increased 25%; osteosarcomas are up 23%; and the incidence of mesothelioma, a lung cancer strongly linked to asbestos exposure, has soared 90%. The incidence of non-Hodgkin lymphoma, a rare cancer, has increased by 82% since 1973. A total of 56,200 new cases and 24,000 deaths from non-Hodgkin lymphoma were reported in 2001.

At a July 11 meeting of the IOM's Immunization Safety Review Committee on the subject, Janet Butel of the Baylor College of Medicine, in Houston, Texas, presented data supporting the link between SV40 and non-Hodgkin lymphoma. In March, Butel and colleagues published a study that found genetic sequences from SV40 in 42% of the 154 non-Hodgkin lymphomas they analyzed. Three of those non-Hodgkin's samples contained strains identical to that in the 1955 polio vaccine.

But Keerti Shah, of the Johns Hopkins Bloomberg School of Public Health, Baltimore, Maryland, argued at the meeting against the link, suggesting that lab studies have been too inconsistent. "The virologic and serologic data do not indicate that SV40 infection is widely disseminated in the community," one of Shah's slides read. "And it will not be possible to evaluate the etiologic link between SV40 and human tumors until the virus transmission is characterized."

Epidemiologist Howard Strickler of Albert Einstein College of Medicine in the Bronx, New York, summarized data from many studies that failed to find SV40 in human tumors.

"Certainly, I think the evidence is there, that SV40 or fragments of SV40 are present in a wide variety of tumors," William Egan, Deputy Director of the Office of Vaccines Research and Review in the FDA's Center for Biologic Evaluation and Research, told The Scientist. "But I don't think that anyone at this point can say

whether SV40 is causing these tumors."

Egan, who spoke at the meeting, also pointed out that SV40 has been found in children and adults who were born after the polio vaccine was given. "But evidence is still being gathered and warrants much further study," he said. "And the question is, 'where is it coming from and how is this circulating in the human population now?'"

A final report based on the meeting is due for release within the next 90 days.
