Excerpt from "Microchip-Induced Tumors in Laboratory Rodents and Dogs: A Review of the Literature 1990–2006"
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Tillmann et al., 1997

Subcutaneous soft tissue tumours at the site of implanted microchips in mice. *Experimental and Toxicologic Pathology*. 1997;49:197--200.

Author(s)	# of Animals	Species	Study Length	Developed Cancer
Tillmann et al., 1997	4,279	mice	lifespan	0.8%

Fig. 1. Subcutaneous tumour associated with the transponder (size of the microchip 2 × 12 mm).

"The neoplasms induced in the present investigation are clearly due to the implanted microchips." (p. 200)

"Further information on [tumors] induced by microchips, e.g., experiments on their chemical components (glass and polypropylene cap), or the physical presence of the implant alone are necessary." (p. 200)

Summary of Study

4,279 mice were injected with microchip implants for identification purposes. Of these, 36 developed malignant tumors (fibrosarcoma and malignant fibrous histiocytoma) that were "clearly due to the implanted microchips." (p. 200) Control animals as well as experimental animals developed the tumors.

Study design and key findings

4,279 CBA/J mice were implanted with microchips for identification purposes as part of a study examining the influence of X-ray radiation and chemical carcinogen exposure on offspring. A sample of male mice was exposed to these carcinogens once or twice, then mated with untreated females. Their offspring were then studied to see if they had increased cancer susceptibility.

By the conclusion of the study, 36 of the mice had developed tumors around the microchip. Implant-related tumors were identified as fibrosarcomas with "extensive local invasion of the surrounding tissues" and malignant fibrous histiocytoma with "zones of necrosis and high mitotic activity." (p. 198)

Significantly, twice as many females developed cancers than male mice, though the females had not been exposed to the experimental treatment. 1.2% of the females and 0.5% of the males developed

tumors in the chip implantation area. The authors wrote that "the different generation and treatment groups showed no influence on tumour incidence," meaning that the tumors were unrelated to the x-ray treatment or other experimental factors.

The authors caution that the study may have underestimated the actual rate of tumor formation, since only tumors that were visible to the naked eye were examined microscopically. Tumors at an earlier stage of development may have been missed.

Study Details

- The study was conducted by Thomas Tillmann, Kenji Kamino and Ulrich Mohr at the Institute of Experimental Pathology at the Hannover Medical School in Hannover, Germany, and other researchers.[1]

- An acknowledgment at the end of the article states: "This study was supported by the European Union: EV5V-CT92-0222."

- Animals used in the study were CBA/J mice.

- The implants used were "glass-sealed devices with a polypropylene cap" obtained from BioMedic Data Systems, Inc. (European distributor PLEXX BV, Elst. The Netherlands).

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1 Other researchers included C. Dasenbrock, H. Ernst, and G. Moraweitz of the Fraunhofer Institute of Toxicology and Aerosol Research in Hannover, Germany; E. Campo and A. Cardesa of the Department of Anatomic Pathology at the University of Barcelona in Barcelona, Spain; and L. Tomatis of the Instituto per L'Infanzia in Trieste, Italy.