

Gene Therapy in Mesothelioma

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In this issue of ONKOLOGIE, Veldwijk and colleagues publish a major improvement in the study of new therapies of malignant mesothelioma [1]. This aggressive mesothelial tumor that is associated with exposition to asbestos is hardly amenable to conventional treatment. The pleural cavity is a rather suitable compartment for gene therapeutic approaches. As well characterized and accepted animal models for mesothelioma are lacking, most authors resort to injection of tumorigenic cell lines into immunocompromised mice [2].

Different innovative approaches to mesothelioma treatment comprise DNA vaccination against mesothelin-expressing tumors [3] and oncolytic herpes simplex viruses [4]. At least 5 different clinical gene therapy protocols have been used with encouraging results in mesothelioma patients [5]. Besides classical suicide gene therapy with HSV thymidinkinase and ganciclovir, cytokine transfer protocols with IFN- β are tested [6]. Adeno-associated virus has not been used so far. This is the

fundamental contribution of the authors, who characterized 3 mesothelioma cell lines cytogenetically and concerning their growth characteristics [1]. They could show that mesothelioma cell lines could be transduced exceptionally well and appreciable expression of the transgene could be measured.

The in-vivo suicide gene therapy model in NOD/SCID mice developed by the authors also showed impressive results: in treated animals a significantly prolonged survival to 144 days (control: 83 days) and also a significant reduction in tumor size could be seen. Also they could show that the doubling time of mesothelioma cells rose from 44 days to 83 days after therapy. In conclusion, in the article by Veldwijk et al. the adeno-associated virus is presented as a suitable vector for gene therapy of mesothelioma in animal models. These relevant results should motivate tests of treatments combining radiation- or chemotherapy with gene therapy.

References

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