

crease the anti-tumor effect, the $\beta 2$ -microglobulin gene has been added to HLA-B7 in this gene transfer system.

Murine fibroblasts that are producing retroviral vectors (retroviral vector producer cells or VPC) are directly implanted into growing brain tumors in human patients. The gene being transferred into the surrounding brain tumor cells is the herpes simplex-thymidine kinase (HS-tk) gene, which confers a sensitivity to the anti-herpes drug, ganciclovir or GCV (Cymevene®, Grünental, Austria). GCV is phosphorylated by the HS-tk enzyme within the cell. Other cellular kinases convert ganciclovir-monophosphate to the triphosphate form which results in cell death. This retroviral-mediated in vivo gene delivery system selectively targets proliferating cells. Since the CNS is relatively quiescent, brain tumors became a logical choice as a first application (32). The direct injection of HS-tk vector producing cells into the tumor mass so results in selective killing of tumor cells without damage to surrounding normal tissues. Thus, the first protocol for human gene therapy with the above mentioned approach for patients with recurrent glioblastoma multiforme is under investigation in Austria (personal communication). These brain tumor gene therapy experiments represent the first use of virus-mediated in vivo gene transfer in humans.

The therapeutic use of enzymes linked to a CEA-promoter gene which can activate pro-drugs into their biologically active forms is discussed in a review article by Mullen (33). In this article the author reports about uses of metabolic suicide genes which can convert a relatively non toxic pro-drug in a highly toxic agent. Cells genetically transduced to express such genes essentially commit metabolic suicide in the presence of the appropriate pro-drug.

And already there are further strategies of cancer treatment modalities on the horizon. This exciting gene therapy experiments are going to be challenged by a new series of experiments with "Anti-sense and Triplex-DNA" therapies. Both strategies are aiming to stop the production of pathogenic proteins by either blocking transcription (triplex) or translation (antisense) during protein biosynthesis (34).

There is common agreement in the medical setting that preventive medicine is to be regarded with highest priority. In certain families, genetic abnormalities passed along in the family are known to predispose individuals to cancer. For instance, some forms of colon cancer are clearly genetically based (35). In future, retroviral vectors could be used to insert stable genes into mammary epithelial cells by inducing proliferation of the tissue by hormonal manipulation in these high risk patients. Further clarification of the genetic basis of cancer will certainly allow the possibility for a variety of genetic manipulations that may function to prevent the onset of malignancy. Just as for therapy, the potential uses of gene transfer for the prevention of cancer are seemingly unlimited.

VII. Kursus für Parotis- und Fazialis-Chirurgie sowie Fazialis- und Rekurrens-Diagnostik

Termin und Ort: 23. bis 26. Februar 1997 – Köln, Universitäts-HNO-Klinik.

Information: Priv.-Doz. Dr. O. Michel, Stichwort: Parotis-Kurs, Univ.-HNO-Klinik, Joseph-Stelzmann-Straße 9, D-50924 Köln, Tel. +49 / 221 / 478 DW 4770, Fax DW 4793.

14. Intensiv-Sonographie-Kongreß

in Zusammenarbeit mit der Deutschen Gesellschaft für Ultraschall in der Medizin

Termin und Ort: 1. bis 4. März 1997 – Badgastein.

Kongreßsekretariat: SONO PRO MEDICO, Frau Heide Harzheim, Postfach 501434, D-50974 Köln, Tel. +49 / 2236 / 66067, Fax +49 / 2236 / 63499.

Original Scientific Paper

From the Department of General and Trauma Surgery, Heinrich-Heine-University, Düsseldorf, Germany

Recurrent Nerve Palsy and Hypocalcemia After Surgery of Benign Thyroid Diseases

J. Witte, D. Simon, Cornelia Dotzenrath, J. Sensfuß, P. E. Goretzki, and H. D. Röher

Key-words: Thyroid surgery – benign thyroid diseases – recurrent laryngeal nerve palsy – hypoparathyroidism – permanent outcome.

Schlüsselwörter: Schilddrüsenoperation – gutartige Schilddrüsenerkrankungen – Nervus-recurrens-Parese – Hypoparathyreoidismus – Spätergebnisse.

Summary: Background: A critical analysis of early and late postoperative complications is necessary to assure the quality of surgery for benign thyroid diseases. The 2 major complications are palsy of the recurrent laryngeal nerve and hypoparathyroidism. Yet, long-term and follow up studies, as well as pre and post operative investigations are rather scarce.

Methods: 3246 patients operated on for benign thyroid diseases between 4/86 and 12/93 were retrospectively screened and analyzed for early postoperative recurrent laryngeal nerve palsy and hypoparathyroidism. Permanent laryngeal nerve paralysis and hypocalcemia was investigated by sending questionnaires to these patients and their physicians.

Results: 88 patients (2.7%) had early postoperative laryngeal nerve palsy. 58 (1.78%) of them recovered completely, reducing the cases of permanent paralysis to 30 patients (0.92%), 22 of which had proven (0.68%) permanent recurrent laryngeal nerve paralysis. The 8 questionable cases (0.24%) could not be evaluated.

Hypoparathyroidism necessitating calcium and/or vitamin D-treatment for more than 2 years was present in 18 patients (0.6%), which were without symptoms under this medication.

Conclusions: Dissecting the recurrent laryngeal nerve and visualizing the parathyroid glands during surgery for benign thyroid diseases decrease nerve paralysis and hypoparathyroidism to a permanent prevalence of less than 1%.

(Acta Chir. Austriaca 1996;28:361-364)

Rekurrensparese und Hypoparathyreoidismus – Komplikationen der Chirurgie gutartiger Schilddrüsenerkrankungen

Zusammenfassung: Grundlagen: Die Qualität der Chirurgie gutartiger Schilddrüsenerkrankungen wird u. a. an der Häufigkeit postoperativer Komplikationen gemessen. Die beiden wichtigsten Komplikationen sind hierbei die Nervus-recurrens-Parese und der Hypoparathyreoidismus. Insgesamt gibt es jedoch nur wenige Langzeitstudien, deren Zahlen über Rekurrensparesen und Hypoparathyreoidismus auf nachprüfbaren Untersuchungsergebnissen beruhen.

Corresponding address: J. Witte, M.D., Department of General and Trauma Surgery, Heinrich-Heine-University, Moorenstraße 5, D-40225 Düsseldorf, Germany.