gens after transplantation of the skin. Extrinsic regulation of the function of this system requires knowledge of function of its individual components, as cells, lymphokines, etc. We are evaluating these components in a model of human skin with lymph stasis. Interruption of immune cell traffic through the skin in lymphedema brings about accumulation of lymphocytes and other cells, which facilitates their phenotypic and functional assessment. The question we asked was what is the composition of immune cells in human skin and how can it be influenced by hyperthermia.

Methods. Skin specimens were obtained from 13 patients with obstructive lymphedema of lower limbs before and after three 15-day courses of 45 min treatment with microwave irradiation. This is a routine protocol for treatment of lymphedema. In some patients lymph draining skin was collected. Specimens were labelled with an array of monoclonal antibodies for lymphocytes (lc), Langerhans cells (LC), and macrophages (mf).

Results. Epidermis contained 50–60 LC/linear mm stained with CD1 antibody, and occasionally T lymphocytes. Keratinocytes were Ia-negative. Papillary dermis contained 3–4 capillaries per papilla stained with Dako M 616 and 1–2 perivascular CD1 + LC. There were perivascular infiltrates with CD2+, CD4+, and some CD8+ lymphocytes. M 718 mf were scattered throughout the papillary and reticular dermis. Hyperthermia produced stimulation of expression of Ia (HLADR) antigens on epidermal LC and keratinocytes, dermal endothelial cells, LC, 1c, mf, and fibroblasts. Higher extravasation rate of M 407 IgG and light-lambda chains M 614 was observed around capillaries. Small thrombi in blood vessels disappeared.

Summary and conclusions. Microwave hyperthermia produced nonspecific activation of immune cells in skin, simultaneously with decrease of the number of infiltrating lymphocytes. The question arises how can this method of skin treatment affect passenger lymphocytes, inactivate or stimulate.

191 A Useful Biotechnological Approach to Solve the Problem of Graft-Purity in Human Pancreatic Islet Transplantation

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Human islet transplantation requires large amounts of viable islets separated from the presumably highly immunogenic exocrine tissue. A new method to solve this problem has been previously established in a rat model: the electromagnetic separation (EMS) with magnetic albumin-microspheres coupled to UEA-I, a lectin with binding specificity for rat exocrine tissue. Thus separated rat islets remained functionally intact as could be demonstrated by syngeneic transplantation and in vitro measurements of insulin secretion. Further studies with disintegrated human pancreas material revealed that WFA is a lectin with binding specificity for human exocrine tissue. First trials with WFA-coupled crude islet preparations purified by EMS appeared to be very efficient. However, difficulties to obtain sufficient human material for extensive studies prompted us to change to other species with unlimited access to islets as required for large scale EMS. Thus, 22 lectins were studied for their binding specificity to pig, dog and bovine exocrine tissue in indirect immunofluorescence. For each of the 3 species 1 or 2 highly selective lectins were established. These lectins were covalently coupled to magnetic microspheres and preliminary EMS runs with pig islets were performed. Following these in vitro studies, it is planned to perform autologous islet transplantation in dogs, to show the in vivo function of the magnetically purified islets. The animal data on large scale purification should provide the basic knowledge required for: (1) a more direct approach to lectin-dependent EMS of human islets and (2) a consideration of purified xenogeneic islets as potential donor tissue in clinical transplantation.

192 15-Deoxyspergualin: Characteristics of the Mode of Action of this New Immunosuppressant

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The new immunosuppressant 15-deoxyspergualin (DOS) shows similar efficiency as cyclosporin A in allograft prolongation but appears to act by a different mechanism. This is indicated by the following data from rat kidney and skin grafting, immunoperoxidase histology, FACS analysis and interleukin-1 (Il-1) production. (1) MHC fully allogeneic kidney grafts (DA to LEW) are indefinitely accepted when DOS (2.5 mg or less/kg/day i.p.) is applied from day 0 to + 13. DOS induces specific unresponsiveness, as tested with donor-type and third party skin grafts on day + 150. (2) DOS appears to be still highly effective in graft prolongation, when treatment begins between day + 1 and + 3, but not between day + 4 and + 6, as can be shown with MHC allogeneic kidney as well as skin grafts (normal survival 7–9 d). (3)