NEW TRENDS IN PARATHYROID ALLOTRANSPLANTATION,
Warsaw 2006

B. Wozniewicz  MD PhD

Department of Pathology
The Childrens’ Memorial Health Institute, Warsaw
Biomedical Research Center, Warsaw
New trends in parathyroid allotransplantation - 2001

- PTH
- Ly
- End
- Fib
- No HLA Class II
- PTH TX
- Pure PTH Cell Culture TX
New trends in parathyroid allotransplantation - 2001

<table>
<thead>
<tr>
<th>Organ PTx</th>
<th>Cell PTx</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Immunogenic epitopes 50%</td>
<td>1. Devoid of immunogens</td>
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<tr>
<td>2. Surgical blind selection</td>
<td>2. Controlled selection</td>
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<tr>
<td>3. Rejection reaction</td>
<td>3. No Rejection</td>
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<tr>
<td>4. Immunosupresion</td>
<td>4. No immunosupression</td>
</tr>
</tbody>
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- 1. Devoid of immunogens
- 2. Controlled selection
- 3. No Rejection
- 4. No immunosupression
PTH + HLA class I and II type antigen presentation before and after culturing
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Hyp.diff. PTH

-HLA-ABC IFalpha 48h

-HLA-DR

Norma-PTH

-HLA ABC

-HLA-DR
Human cultured parathyroid cells injected into a mouse peritoneal cavity confirmed the lack of immunogenicity (one year after xenotransplantation)
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Microencapsulated cell culture

Analysis of cell number and distribution

Cell culture conditions
Culture period – three weeks
Chang medium + human serum
Humidified atmosphere 37°C
5% CO₂

Number of viable cells

Preparates of bead cross section
formaldehyde fixing
paraffin – microtome
hematoxylin, eosin staining
Number of viable cells
Fixed samples of microencapsulated cell culture Photos made after cell death

Alginate beads transferred to 0.9%NaCl + EtOH

Olympus optical microscope, transmitted light thanks to dr Korzynska, IBIB
Non Rejection Reaction

• 1. Problem of adhesion-failure
• 2. Problem with capillary finding
• 3. Problem with vasculature interaction
• 4. Problem with programmed death
• 5. Problem with local ischaemia
• 6. Problem with monitoring
• 7. Problem with recovery of HLA class-I
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Participants:

Prof.dr. T.Tołoczko, Prof. dr . J. Szmit & Dr med. I. Nawrot
Medical School Warsaw

Prof. Dr med. A. Gorski –
Institute of Transplantology, Medical School Warsaw

Prof. Dr med. J.Kawiak & Prof. Dr Eng. A. Werynski
IBiIB Warsaw

Dr n med A. Sawicki
Calcium Metabolism Center, Osteomed Warsaw

Prof. Dr hab. B.Wozniewicz
Dep.Pathology, CMHI -Warsaw
HEART FAILURE
AND DE NOVO CARDIOGENESIS

Bogdan Woźniewicz

The Children’s Memorial Health Institute
Introduction. In human and experimental animals there is now incontrovertible evidence that new myocytes are continuously generated throughout life in response to physiological and pathological stimuli. Locally or systematically derived mesodermal cells can differentiate into a variety of mesodermal tissues including bone, cartilage, tendon, fat, endothelium, skeletal muscles and cardiomyocytes. The adult heart stromal cell system has been proposed to consist of multipotent stem cells that are capable of self-renewal and differentiation into fibroblast and myofibroblast de novo.

Methods. Histological, immunocytochemical and electron microscopic investigations were performed on 10 human heart explants with antibodies anti-CD3, CD4, CD34, CD31, PCNA, Ki67, TGF, heavy chain alpha myosin, actin, connexin, cadherin, and TUNEL. Two-month culture of heart fragments using Chang medium +20% Fetal Calf Serum was performed.

Results. Proliferated cells that represent myofibroblasts and cardiomyoblasts differentiation have been shown at the periphery of scars, in the endocardial layer and in the perivascular space. These findings may be used in prospective studies in selection of these cells for further differentiation and as a reservoir of the cells for cell transplantation therapy in stage IV NYHA. Cell population resembling phenotypes of myofibroblast-like cells grown slowly from the fragments obtained from patients with heart failure.

Conclusion. Failing hearts in contrast to normal exhibit accumulation of number of cells being bipotential in differentiation into fibroblast and myofibroblast de novo. In vitro efforts should be made with a blocking agents, e.g. anti-fibroblastic growth factors to inhibit fibrogenesis and improve cardiogenesis.
Introduction. In human and experimental animals there is now incontrovertible evidence that new myocytes and angiocytes may be generated throughout life in response to physiological and pathological stimuli. Adult heart stromal cell system has been proposed to consist of mesodermal stem cells that are capable of self-renewal into de novo cardiomyocytes. Similar stimuli e.g. prolonged hypoxy is able to stimulate de novo angiogenesis from endothelial cells. The rate of cell renewal is slow and low. In contrast to normal healthy heart the more severe heart failure the more chance in findings of angiogenesis and cardiogenesis is possible. The problem is haw to differentiate natural vascular system from neo-endotheliogenesis and vasculogenesis could be determined. This findings may be enhancement by application of various method of direct or indirect stimulation e.g. plasmides or autologous blood stem cell transplantation.

Aim. The aim of presentation is to introduce electron microscopic investigation for evaluation normal vessels from self-renewal angiocytes.

Material and method. Electron microscopic examination were performed in specimens obtained from seven heart explants in patient with stage IV heart insufficiency (NYHA) undergoing heart transplantation. Material was performed in the routine way to Epon 812 (fixation in 3% glutaraldehyde, dehydration, OsO4 staining). Semithin section stained with toluidine blue were selected using optic microscopy and ultrathin section were observed in Jeol 100CX EM. Additional staining using monoclonal CD31/PACAM-1 and polyclonal VEGF-1 antibodies were used for visualisation of vessels in paraffin embedded sections.

Results. Monoclonal and polyclonal antibodies stain adult opened terminal vessels filled usually with erythrocytes, not aggregates of immature cells. Electron microscopy was useful to determine endothelial/angiocytes precursors from other cells since they present basement membrane and fenestration of the cytoplasm. Histologically in the routine examination angiogenesis was suggested when around the cardiocytes were observed not a single vessel but a plexus of vessels and endothelial cells.

Conclusion. Electron microscopy is useful in qualification of self-renewal angiogenesis in the heart with severe failure.
Culture of progenitor cells from the cochlea

B. Cukrowska¹, K. Niemczyk², K. Pietrasik², A. Bruzgiewicz², K. Morawski², B. Biskup², M. Pronicki¹, A. Zajączkowska¹, B. Woźniiewicz¹

¹ Instytut „Pomnik - Centrum Zdrowia Dziecka” Zakład Patologii
Kierownik Doc. dr hab. M. Pronicki

² Katedra i Klinika Otolaryngologii Akademii Medycznej w Warszawie
Kierownik Prof. dr hab. n med. K. Niemczyk
Thymic progenitor cells

Narodowy program regeneracji i transplantationi Grasicy 2007-2009
Transplantacje komórek

- Realizacja u człowieka
- Przytarczyce od 1993 Warszawa skuteczne
- Trzustka wiele ośrodków nieskuteczne
- Komórki nerwowe dopamina zwierzęta
- Komórki sercowe – w toku
- Komórki akustyczne eksperymenty, zwierzeta
- Komórki grasicy – USA skutecznie
- Komórki wątrobowe – eksperymenty zwierzeta
- Skóra – skuteczne
- Keratinocyty - skuteczne