Diabetes and pre-diabetes are associated with cardiovascular risk factors and carotid/femoral intima-media thickness independently of markers of insulin

Faeh D., Bovet P.

Background
Impaired glucose regulation (IGR) is associated with detrimental cardiovascular outcomes such as cardiovascular disease risk factors (CVD risk factors) or intima-media thickness (IMT). Our aim was to examine whether these associations are mediated by body mass index (BMI), waist circumference (waist) or fasting serum insulin (insulin) in a population in the African region.

Methods
Major CVD risk factors (systolic blood pressure, smoking, LDL-cholesterol, HDL-cholesterol,) were measured in a random sample of adults aged 25-64 in the Seychelles (n=1255, participation rate: 80.2%). According to the criteria of the American Diabetes Association, IGR was divided in four ordered categories: 1) normal fasting glucose (NFG), 2) impaired fasting glucose (IFG) and normal glucose tolerance (IFG/NGT), 3) IFG and impaired glucose tolerance (IFG/IGT), and 4) diabetes mellitus (DM). Carotid and femoral IMT was assessed by ultrasound (n=496).

Results
Age-adjusted levels of the major CVD risk factors worsened gradually across IGR categories (NFG < IFG/NGT < IFG/IGT < DM), particularly HDL-cholesterol and blood pressure (p for trend <0.001). These relationships were marginally attenuated upon further adjustment for waist, BMI or insulin (whether considered alone or combined) and most of these relationships remained significant. With regards to IMT, the association was null with IFG/NGT, weak with IFG/IGT and stronger with DM (all more markedly at femoral than carotid levels). The associations between IMT and IFG/IGT or DM (adjusted by age and major CVD risk factors) decreased only marginally upon further adjustment for BMI, waist or insulin. Further adjustment for family history of diabetes did not alter the results.

Conclusions
We found graded relationships between IGR categories and both major CVD risk factors and carotid/femoral IMT. These relationships were only partly accounted for by BMI, waist and insulin. This suggests that increased CVD-risk associated with IGR is also mediated by factors other than the considered markers of adiposity and insulin resistance. The results also imply that IGR and associated major CVD risk factors should be systematically screened and appropriately managed.
Research Day
January 17, 2008
César Roux Auditorium

Regenerative Medicine

UNIL | Universität de Lausanne
Faculté de biologie et de médecine
CHUV RESEARCH DAY 2008
Thursday, January 17th, 2008
"Regenerative Medicine"

08:30  Presentation of the 2008 Research Day
       Professor Ivan Stamenkovic, Vice Dean for Research

08:45  Keynote speaker 1
       Professor Philippe Menasché
       Department of Cardio-Vascular Surgery
       Hôpital Européen G. Pompidou, Paris
       "Promises and pitfalls of skeletal myoblast therapy"

09:30  Coffee & Posters

10:30  6 short talks

12:00  Keynote speaker 2
       Professor Giulio Cossu
       Stem Cell Research Institute, Milano
       "Towards a cell therapy for muscular dystrophy"

12:45  Lunch, Coffee & Posters

14:00  Keynote speaker 3
       Professor Michele De Luca
       Department of Biomedical Sciences, Modena
       Epithelial Stem Cell Research Centre, Venice
       "Epithelial stem cells and regenerative medicine"

14:45  6 short talks

16:15  Coffee & Posters

17:00  Keynote speaker 4
       Professor Lior Gepstein
       Dept of Physiology & Biophysics, Technion – Haifa, Israel
       "Myocardial Regeneration by Human Embryonic Stem Cells"

17:45  Poster Prizes Ceremony

18:00  Apéritif & Buffet

Attendance is free - No registration is necessary

NOTE: Posters will be displayed from
    Wednesday January 16th early morning to Friday January 18th early morning.
## 12 short talks

<table>
<thead>
<tr>
<th>Schedule</th>
<th>Names, departments</th>
<th>Titles</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Morning</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>10h30 - 10h45</td>
<td><strong>Boris Hinz</strong> Laboratoire de biophysique cellulaire - EPFL</td>
<td>“The myofibroblast - friend and foe in tissue regeneration”</td>
</tr>
<tr>
<td>10h45 – 11h00</td>
<td><strong>Matthias Lutolf</strong> Laboratoire de cellules souches et bioengineering - EPFL</td>
<td>“Bioengineering artificial stem cell niches”.</td>
</tr>
<tr>
<td>11h00 – 11h15</td>
<td><strong>Corinne Kostic</strong> Unité de thérapie génique et biologie des cellules souches – Hôpital Ophtalmique</td>
<td>“Gene therapy preclinical studies for Leber congenital amaurosis”</td>
</tr>
<tr>
<td>11h15 – 11h30</td>
<td><strong>Anne Zurn</strong> Chirurgie expérimentale - CHUV</td>
<td>“Delayed peripheral nerve priming improves regeneration of sensory axons into the spinal cord following dorsal root injury.”</td>
</tr>
<tr>
<td>11h30 – 11h45</td>
<td><strong>Meta Djojosubroto</strong> Unité de thérapie génique et biologie des cellules souches – Hôpital Ophtalmique</td>
<td>“Increased chromosomal aberrations and transformation of adult mouse retinal stem cells”</td>
</tr>
<tr>
<td>11h45 – 12h00</td>
<td><strong>Paola Bonfanti</strong> Chirurgie expérimentale - CHUV &amp; Laboratoire de dynamique des cellules souches - EPFL</td>
<td>“Thymic epithelial cells have skin potency”</td>
</tr>
<tr>
<td><strong>Afternoon</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>14h45 – 15h00</td>
<td><strong>Dominique Pioletti</strong> Laboratoire de biomécanique en orthopédie - EPFL</td>
<td>“In Vivo evaluation of human fetal cells as allogenic cell source for tissue engineering”</td>
</tr>
<tr>
<td>15h00 – 15h15</td>
<td><strong>Mikaël Martino</strong> Laboratoire de médecine régénérative et de pharmacobiologie - EPFL</td>
<td>“Controlling mesenchymal stem cells response to biomaterials with recombinant integrin-specific fibronectin fragments”</td>
</tr>
<tr>
<td>15h15 – 15h30</td>
<td><strong>Dela Golshayan</strong> Nephrologie et Centre de Transplantation d’organes - CHUV</td>
<td>“Mechanisms of Allograft rejection and tolerance in transplantation”</td>
</tr>
<tr>
<td>15h30 - 15h45</td>
<td><strong>Jonathan Bloch</strong> Médecine Interne - CHUV</td>
<td>“Spleen derived vascular progenitor cell transfer restores metabolic and vascular insulin sensitivity in high-fat diet insulin resistant mice”</td>
</tr>
<tr>
<td>15h45 - 16h00</td>
<td><strong>Marc-Etienne Roehrich</strong> Cardiologie – CHUV</td>
<td>“Immunophenotypical analysis of putative cardiac progenitor cells isolated based on high ALDH activity from adult mouse and human hearts”</td>
</tr>
<tr>
<td>16h00 – 16h15</td>
<td><strong>Mohamed Nemir</strong> Dpt de Médecine - CHUV</td>
<td>“Control of cardiac integrity via the Notch1 receptor pathway”.</td>
</tr>
</tbody>
</table>