ENDEHELIAL PROGENITOR CELLS MOBILIZATION IS INCREASED AMONG HIGH-PERFORMANCE ATHLETES

ACC Poster Contributions
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Session Title: Progenitor Cells, Endothelial Cells and Vascular Disease
Abstract Category: 8. Vascular Biology/Atherosclerosis/Thrombosis/Endothelium
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Background: Physical exercise is recommended to prevent cardiovascular disease. Exercise stimulates the release of endothelial progenitor cells (EPC) from the bone marrow, improving the turnover of the endothelium. However, high-performance runners (HPR) have been less studied. We aimed to quantify the number of EPC and microparticles (MP) in HPR and compared with a control group.

Methods: HPR subjects (n=16), defined on basis of time to perform a 10-km race, were compared with sedentary controls (n=40), matched for age and gender. Quantification of EPC (CD34+/CD133+/KDR+), counts of endothelial-derived (E) MP (CD31+/CD51+) and platelet-derived (P) MP (CD31+/CD42+) per mL of plasma were performed by flow-citometry. Flow-mediated dilation and carotid intima media thickness (cIMT) were evaluated.

Results: Mean time for performing 10-km race was 31 min and 40 sec for men and 37 min and 37 sec for women in the HPR group, and they ran an average of 132 km/week. HPR presented higher HDL-C (p<0.0001), lower values for body mass index (p<0.0001), LDL-C (p=0.0001), triglycerides, apo B (p<0.0001), and high-sensitivity C-reactive protein (p=0.025). We observed a trend to higher number of EMP in HPR (p=0.088), without differences in PMP. There was an increase in all subpopulations of EPC in HPR (Table 1). FMD (SD) was increased in HPR [30 (12)% vs. 16 (10)%, p<0.0001], without differences in cIMT.

<table>
<thead>
<tr>
<th>Group</th>
<th>HPR</th>
<th>SD</th>
<th>CONT</th>
<th>SD</th>
<th>p-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>CD34+/KDR+</td>
<td>0.42</td>
<td>0.34</td>
<td>0.08</td>
<td>0.03</td>
<td>0.05</td>
</tr>
<tr>
<td>CD34+/CD133+</td>
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<td>0.02</td>
<td>0.01</td>
<td>0.01</td>
<td>0.002</td>
</tr>
<tr>
<td>KDR+/CD133+</td>
<td>0.29</td>
<td>0.06</td>
<td>0.05</td>
<td>0.01</td>
<td>&lt;0.0001</td>
</tr>
</tbody>
</table>

Conclusions: High-performance exercise is related to increased EPC mobilization and to vascular health.