State and metabolism of osseous tissue in people with postinfarction cardiosclerosis

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Cardiovascular diseases is an actual problem of the national health service as well as worldwide. The aim of our study was to assess the state of osseous tissue and markers of bony metabolism (MBM) in patients with postinfarction cardiosclerosis.

Materials and methods:
- Group I included 16 healthy individuals (62.3±6.05 years),
- group II – 29 patients with postinfarction cardiosclerosis (62.9±5.46 years).
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- Structural and functional state of osseous tissue was assessed by means of ultrasound densitometry of calcaneus using a Sahara device (Hologic, USA).
- Serum level of the marker of bony tissue formation – osteocalcin (OC) and the marker of resopotion - β-CrossLaps was determined by the immunoenzymatic method using analyzer «Eleksys 2010».
- Blood plasma calcium (Ca) and phosphorus (P) levels were estimated of the spectrophotometer.
- Statistical analysis was done using software package “STATISTICA 7.0”. Data presentation corresponded to the character of their distribution: in normal distribution (by Shapiro-Wilk test) the data were expressed as mean values ± standard deviation (M±SD), in non-normal distribution - as median (Me) and interquartile range [LQ-UQ]. In normal distribution for testing the hypothesis about the equality of two group means we used Student t-test (t). In non-normal distribution comparison of two independent groups of the studied variable was done with the help of Mann-Whitney U test. To assess the correlations between the variables we used the Pearson correlation analysis test (r) and nonparametric Spearman's correlation analysis (R).
Results:

Picter 1. Extrapolated index of calcaneal bone mineral density

<table>
<thead>
<tr>
<th>g/cm²</th>
<th>Group I</th>
<th>Group II</th>
</tr>
</thead>
<tbody>
<tr>
<td>0.42</td>
<td>0.44</td>
<td>0.46</td>
</tr>
<tr>
<td>0.46</td>
<td>0.48</td>
<td>0.48</td>
</tr>
<tr>
<td>0.5</td>
<td>0.516*</td>
<td>0.462</td>
</tr>
<tr>
<td>0.52</td>
<td>0.52</td>
<td></td>
</tr>
</tbody>
</table>

T-score parameter in group II was lower (p<0.05; Chi-Square=9.01) than in group I and was -1.1[-1.8;–0.8]. Parameters of ultrasound densitometry of calcaneus by T-score in group II corresponding to osteopenia were in 59% and corresponding to osteoporosis – only in 7%.
The values of markers of bony metabolism and levels of Ca, P didn’t differ between the groups (p>0.05). There was a strong correlation between OC and β-CrossLaps (R=0.86; p<0.05), in all the subjects their values were either within normal limits or reduced and only one patient had elevated β-CrossLaps.
Conclusion

Thus, in patients with postinfarction cardiosclerosis findings of ultrasound densitometry of calcaneus by T-score most often evidence osteopenia, rarely osteoporosis. Assessment of the MBM (OC, β-CrossLaps) in cases when T-score parameters correspond to norm and osteopenia is less informative.