The evaluation of bone mass density (BMD) in patients after therapy of solid tumors

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Background and objectives

- Treatment
- Immobilisation
- Malnutrition
- Metastases
- Low bone mass density
- Cancer

Aim – to determinate the influence of factors on BMD and the prevalence of abnormal bone turnover

Materials and methods:

- 67 patients (43 boys, 24 girls), 4-27 years of age
- > 1 year after cessation of treatment
- 2006-2011

Solid tumor
- BMD (z-score), BMI SDS,
- Height SDS, IGF-1 SDS, PTH
- Statistica 12

Results:

![Graph showing Densitometry - BMD Z-score]

<table>
<thead>
<tr>
<th>Parameter</th>
<th>No</th>
<th>Weight and/or height deficiency</th>
<th>Without deficiency</th>
<th>P value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age</td>
<td>67</td>
<td>15,34±5,34</td>
<td>12,91±5,98</td>
<td>0,16</td>
</tr>
<tr>
<td>BMD (z-score)</td>
<td>65</td>
<td>-1,56±2,05</td>
<td>-0,25±0,90</td>
<td>0,033</td>
</tr>
<tr>
<td>IGF-1 SDS</td>
<td>54</td>
<td>-0,91±0,90</td>
<td>0,11±1,20</td>
<td>0,01</td>
</tr>
<tr>
<td>PTH (pg/ml)</td>
<td>59</td>
<td>38,98±23,56</td>
<td>33,31±21,41</td>
<td>0,35</td>
</tr>
</tbody>
</table>

Correlation

- BMD (z-score) and IGF-1 SDS: r=0.39 p<0.01
- BMD (z-score) and PTH: r=0.27 p=0.036
- BMD (z-score) and BMI SDS: r=0.25 p=0.042
- BMD (z-score) and height SDS: r=0.44 p<0.01

Conclusion:

1. Disorders of bone mineral substrate are multifactorial, BMI, height, PTH, IGF-1 have an influence on BMD
2. Patients with weight and/or height deficiency may be more likely to lose bone mass as a result of treatment.
3. Disorders of bone mineral density can also be a problem in pediatric patients, especially after anti-cancer therapy

Confirmation of the results of the above work requires further verification.