Assemesent of Bone Quality, Measured by Trabecular Bone Score, in Acromegaly

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Introduction

Acromegaly is characterized by chronic exposure to high GH and IGF-I levels that leads to increased bone turnover. Regardless of BMD value, acromegalic patients seem to have an increased vertebral fracture risk probably due to a reduction of bone quality.

Aim of the study

To describe bone mass and quality in 16 acromaglic patients. Trabecular Bone Score (TBS) was used for the first time to analyze bone quality in acromegaly. TBS is a new gray-level textural metric that can be extracted from the 2-dimensional lumbar spine DXA image to estimate trabecular microstructure.

Patients and methods

56% of patients had a macroadenoma, 18% had hypopituitarism (all hypoadrenalism) and nobody had cosecretion.

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<tr>
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<th>Patients</th>
<th>Controls</th>
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<tbody>
<tr>
<td>Female</td>
<td>12/16</td>
<td>12/16</td>
<td>NS</td>
</tr>
<tr>
<td>Age</td>
<td>56.3 ± 13.8</td>
<td>58.2 ± 11.7</td>
<td>NS</td>
</tr>
<tr>
<td>BMI</td>
<td>28.1 ± 6.3</td>
<td>26.7 ± 4.2</td>
<td>NS</td>
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Patients with MEN1, ectopic GHRH secretion and history of secondary osteoporosis were excluded.

All participants underwent: vertebral RX lumbar spine and femur DEXA

TBS was assessed in the region of LS-BMD.

Results

In acromegalic patients, at bivariate analysis

TBS was associated with:
- age at diagnosis (r² = 0.35, P = 0.02)
- GH serum levels (r² = 0.81, P = 0.01)
- FN T-score (r² = 0.35, P = 0.02)
- FN Z-score (r² = 0.81, P = 0.01)

Vertebral fractures were associated with:
- age at diagnosis (r² = 0.36, P = 0.02)

LS-BMD and FT-BMD were related to:
- alteration of glucose metabolism (r² = 0.25, P = 0.04 and r² = 0.49, P = 0.002 respectively).

Acromegalic patients had impaired bone quality despite normal bone density. Further larger studies are needed to define TBS role in fracture risk in acromegaly.

Conclusion


References


Pituitary basic and neuroendocrinology Elena malchiodi