T-scores in African American Women

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Many older bone densitometer (DXA) machines are programmed to calculate T-scores for African-American patients using peak African-American bone mass as reference standard.

This presents a problem because most data regarding fracture risk has been derived using Caucasian data (Binkley 2002). If the T-score for an African-American woman is calculated using a race-adjusted reference, the same absolute bone density will yield a lower T-score for an African-American than for a Caucasian woman. For this reason, the International Society for Clinical Densitometry has recommended that T-scores for all women, regardless of ethnicity, be calculated from Caucasian reference standards (ISCD 2007).

An African-American patient was referred to our clinic because of an abnormal bone density study. Her DXA measurements (gm/cm²) and the reported T-scores are shown in Table 1. We suspected these calculations were done using the African-American reference standard and asked that the T-scores be recalculated on the same machine, entering the patient as Caucasian. The results are shown in the 3rd column of Table 1.

Table 1. Density and T-scores for a 64 year-old African-American Woman

<table>
<thead>
<tr>
<th>Site</th>
<th>Bone mineral density (g/cm²)</th>
<th>Race-adjusted T-score</th>
<th>Non-race-adjusted T-score</th>
</tr>
</thead>
<tbody>
<tr>
<td>Spine</td>
<td>0.824</td>
<td>-3.0</td>
<td>-2.0</td>
</tr>
<tr>
<td>R total hip</td>
<td>0.865</td>
<td>-1.1</td>
<td>-0.6</td>
</tr>
<tr>
<td>R femoral neck</td>
<td>0.740</td>
<td>-1.5</td>
<td>-1.0</td>
</tr>
<tr>
<td>L total hip</td>
<td>0.932</td>
<td>-0.6</td>
<td>-0.1</td>
</tr>
<tr>
<td>L femoral neck</td>
<td>0.728</td>
<td>-1.6</td>
<td>-1.1</td>
</tr>
</tbody>
</table>
Using the initial calculations, the patient has a diagnosis of osteoporosis and is therefore a candidate for bisphosphonate therapy. Using the recalculated values and the World Health Organization fracture risk assessment tool FRAX® pharmacologic therapy is not recommended.

Clinicians who treat African-American women should ascertain whether bone density T-scores for these patients are being calculated with African-American or with Caucasian peak bone density as the reference standard. Older machines that report T-scores based on an African-American reference standard can be replaced or updated with software available from the manufacturer.

REFERENCES


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