Radionuclide therapy in the palliation of painful metastases in elderly patients.

A.P. PECKING, A.L. GIRAUDET, L. CHAMPION, V. EDELINE, O. MADAR, D. KAMIONER, J.L. ALBERINI

Nuclear Medicine Department, Institut Curie-Hôpital René Huguenin, F92 210 ST CLOUD.
Bone metastases are present in more than 90% of patients who die from prostate carcinoma, 

They may responsible for:
• significant pain,
• neurological symptoms,
• pathological bone fractures,
• spinal cord compression

with important impact on general suffering, reduced functional capacity and increased dependency on others.
Bone pain in prostate cancer is usually treated with a combination of:

- analgesics,
- hormonal treatment,
- chemotherapy,
- bisphosphonates,
- external beam radiotherapy.

Despite these efforts, many patients suffer from unrelieved or insufficiently relieved pain, even when taking strong opioids.
Another therapy:

bone-targeting beta-emitter
89 Strontium (metastron ®)

Pure beta emitter
Dosage : 148 MBq
T1/2 : 50.65 days,
E max : 1.5 MeV

Tumoral retention : 80 % at 100 days
This retrospective study has included 841 pts (medium age 73.4 ± 17.5 years).

In case of partial remission or relapse after a complete response additional infusions were suggested.

- 268 pts (71.2 ± 12.4 years) had 2 infusions
- 86 pts (70.1 ± 8.2 years) had 3 infusions.
THERAPEUTIC EFFICACY ASSESSMENT

group 1: *global response* (disappearance of more than 80% of all the painful sites and significant decrease in the daily use of narcotic analgesics).

- group 2: *partial response* (significant reduction of the pain in more than 40% of all the painful site without any significant reduction of the daily use of narcotic analgesics)

- group 3: *failure* (slight or no change in pain and increasing in daily use of narcotic analgesics)
<table>
<thead>
<tr>
<th></th>
<th>1st course (841)</th>
<th>2nd course (268)</th>
<th>3rd course (86)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age</td>
<td>73.4 ± 17.5</td>
<td>71.2 ± 12.4</td>
<td>70.1 ± 8.2</td>
</tr>
<tr>
<td>PSA</td>
<td>371.2 ± 105.3</td>
<td>288.6 ± 92.7</td>
<td>401.2 ± 111.2</td>
</tr>
<tr>
<td>Number of painful sites</td>
<td>4.3 ± 2.2</td>
<td>4.1 ± 3.5</td>
<td>6.8 ± 4.1</td>
</tr>
<tr>
<td>Metastatic sites</td>
<td>12.4 ± 6.1</td>
<td>16.8 ± 5.9</td>
<td>16.5 ± 6.8</td>
</tr>
<tr>
<td>Therapeutic efficacy</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Group 1</td>
<td>106 (12.6%)</td>
<td>57 (21.4%)</td>
<td>13 (15.1%)</td>
</tr>
<tr>
<td>Group 2</td>
<td>424 (50.4%)</td>
<td>144 (53.7%)</td>
<td>37 (43%)</td>
</tr>
<tr>
<td>Group 3</td>
<td>311 (37%)</td>
<td>67 (25%)</td>
<td>36 (41.9%)</td>
</tr>
<tr>
<td>Time to response (d)</td>
<td>11.3 ± 2.4</td>
<td>14.4 ± 4.48</td>
<td>15.6 ± 5.13</td>
</tr>
<tr>
<td>Time efficacy (d)</td>
<td>158.4 ± 82.6</td>
<td>137.7 ± 58.9</td>
<td>101.1 ± 31.4</td>
</tr>
<tr>
<td>Platelet toxicity</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Grades (OMS) 0–1</td>
<td>626 (94.9%)</td>
<td>148 (88.1%)</td>
<td>46 (86.9%)</td>
</tr>
<tr>
<td>Grades (OMS) 2–4</td>
<td>33 (5.1%)</td>
<td>20 (11.9%)</td>
<td>7 (13.2%)</td>
</tr>
</tbody>
</table>
Side effects:

Pain was usually increased during the first 15 days following the infusion in 24.1% of the treated patients.

PSA were significantly increased in 681 patients (81%) after the first infusion (spike effect).

Spine neurologic syndrome was noticed for 3 pts within 4 months after the infusion and external radiotherapy was necessary for 1 case.

Colitis was noticed for 41 pts (4.8%).
CONCLUSIONS

Radionuclide therapy of painful bone metastases may improved the patient’s quality of life in more than 60% of all the treated cases and can be suggested as a valuable supplement to other modalities currently used.

Repeated infusions provide an enhancement of the treatment efficacy.

Bone marrow toxicity is acceptable and is increasing with the number of infusions.