Extramedullary Plasmacytoma

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HEAD AND NECK GRAND ROUNDS

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Plasmacytoma

- Monoclonal proliferation of plasma cells
  - Extramedullary (EMP)—tumors arising in soft tissue
  - Bone—arising in the bone
- Multiple myeloma & plasma cell leukemias: advanced forms of plasma cell malignancies
Plasmacytoma

• Solitary plasmacytomas account for 10% of plasma cell malignancies

• EMP: 3% of solitary plasmacytomas

• 4% of nonepithelial head and neck malignancies
EMP in the head and neck

• 80% of EMPS arise in the head and neck
  – Other sites: GI, lungs, testes, skin

• most common sites
  NP
  Paranasal sinuses
  Nasal cavity
  Submucosal (pharynx, larynx, oral cavity)
Table 1. The site frequency of extramedullary plasmacytoma involvement at presentation.

<table>
<thead>
<tr>
<th>Site</th>
<th>Frequency</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Eyelid</td>
<td>2</td>
<td>2.9</td>
</tr>
<tr>
<td>Lymph node</td>
<td>1</td>
<td>1.5</td>
</tr>
<tr>
<td>Larynx</td>
<td>4</td>
<td>5.9</td>
</tr>
<tr>
<td>Nasopharynx</td>
<td>11</td>
<td>16.2</td>
</tr>
<tr>
<td>Neck</td>
<td>4</td>
<td>5.9</td>
</tr>
<tr>
<td>Oral cavity</td>
<td>3</td>
<td>4.4</td>
</tr>
<tr>
<td>Oropharynx</td>
<td>13</td>
<td>19.1</td>
</tr>
<tr>
<td>Sinonasal</td>
<td>25</td>
<td>36.7</td>
</tr>
<tr>
<td>Sphenoid</td>
<td>1</td>
<td>1.5</td>
</tr>
<tr>
<td>Thyroid</td>
<td>1</td>
<td>1.5</td>
</tr>
<tr>
<td>Upper gum</td>
<td>1</td>
<td>1.5</td>
</tr>
<tr>
<td>Parapharyngeal space</td>
<td>1</td>
<td>1.5</td>
</tr>
<tr>
<td>Supraglottis</td>
<td>1</td>
<td>1.5</td>
</tr>
</tbody>
</table>

Bachar et al 2008
Presentation

- Median age: 55 years 
  (Bachar et al: 60 years, range: 31-95, Creach et al: 64 years)

- Male: female 3:1
Evaluation

- Biopsy

- Morphology & immunophenotype

- Localized collection of monoclonal plasma cells without any other plasma cell proliferation
Histopathology

- dense plasma cells
- round to oval nucleus with a vesicular nuclear chromatin pattern
- nucleus is often located eccentrically in the cytoplasm (perinuclear halo)
Immunohistochemistry

- CD138 and cytoplasmatic light chains of type kappa or gamma

- Negative stainings for CD20 and positive stainings for CD79 can support this diagnosis

CD 138 +  
Kappa light chain +
Distant disease

- Further work-up to ensure isolated

- May include abnormal monoclonal Ig (M-protein) or light chains in serum and urine:
  - Serum electrophoresis
  - Urine protein electrophoresis

- Rule out presence of plasma cells in bones
  - Normal bone marrow
  - Normal skeletal survey results
Treatment

- External beam radiotherapy 56 (80%)
  - 35Gy in 15-20 fractions over 3-4 weeks

- Radiation alone 39 (57%)
- Radiation and surgery 14 (21%)
- Concomitant chemoradiation 3 (4%)
- Surgery alone 8 (12%)
- Chemotherapy alone 1 (1%)
- No treatment 3 (4%)
Survival

• Median follow-up 8 years (4.6 mos-29.2 yrs)
• Median survival time was 12 years (95% CI, 8.4-15.5 years).
Overall survival

Probability of Survival

Follow Up (y)
DFS

- 5-year DFS 52% (95% CI, 40-64%)
- 10-year DFS 41% (95% CI, 28-53%)
- Median DFS time was 7.6 years (95% CI, 3.4-12 years)
Local recurrence

• Local recurrences developed in 19% (13/68)
• Mean time to recurrence 36 months
• 5 year local recurrence free 81% (95%CI, 69-89%)
• 10 year local recurrence rates 79% (95%CI, 66-88%)
## Recurrence

### Table 3. Local, regional, and myeloma recurrence by site

<table>
<thead>
<tr>
<th>Site</th>
<th>N</th>
<th>Local recurrence</th>
<th>Regional recurrence</th>
<th>Myeloma</th>
</tr>
</thead>
<tbody>
<tr>
<td>Eyelid</td>
<td>2</td>
<td>1 (50%)</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Head and neck lymph node</td>
<td>1</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Larynx</td>
<td>4</td>
<td>1 (25%)</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Nasopharynx</td>
<td>11</td>
<td>0</td>
<td>1 (9.1%)</td>
<td>3 (27.3%)</td>
</tr>
<tr>
<td>Neck</td>
<td>4</td>
<td>1 (25%)</td>
<td>0</td>
<td>1 (25%)</td>
</tr>
<tr>
<td>Oral cavity</td>
<td>3</td>
<td>0</td>
<td>0</td>
<td>2 (66.7%)</td>
</tr>
<tr>
<td>Oropharynx</td>
<td>13</td>
<td>2 (15.4%)</td>
<td>3 (23.1%)</td>
<td>3 (23.1%)</td>
</tr>
<tr>
<td>Sinonasal</td>
<td>24</td>
<td>8 (33.3%)</td>
<td>0</td>
<td>6 (25%)</td>
</tr>
<tr>
<td>Sphenoid bone</td>
<td>1</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Thyroid</td>
<td>1</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Upper gum</td>
<td>1</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Nasal cavity</td>
<td>1</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Parapharyngeal space</td>
<td>1</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Supraglottis</td>
<td>1</td>
<td>0</td>
<td>0</td>
<td>1 (100%)</td>
</tr>
</tbody>
</table>
Local recurrence by treatment

- Radiation only 12.8% (5 of 39 patients)
- Surgery only 12.8% (1 of 8 patients)
The effect of radiation of local recurrence

<table>
<thead>
<tr>
<th>Time</th>
<th>No radiation</th>
<th>Radiation</th>
</tr>
</thead>
<tbody>
<tr>
<td>5 y</td>
<td>67 (44-82)</td>
<td>91 (76-97)</td>
</tr>
<tr>
<td>10 y</td>
<td>67 (44-82)</td>
<td>88 (70-95)</td>
</tr>
</tbody>
</table>

P=0.09
Survival from local recurrence
Progression to multiple myeloma

- Overall 23% (16/68)
- 5-year 23% (95% CI 14-46%)
- 10-year 28% (95% CI, 18-42%)
- Most common primary site when progresses
  - Sinonasal tract (38%, 6/16)
  - Oropharynx (19%, 3/16)
  - Nasopharynx (19%, 3/16)
  - Neck (3%, 1/16)
  - Oral cavity (3%, 1/16)
  - Supraglottis (3%, 1/16)
Progression to multiple myeloma

- Bone 10 (63%)
- Lung 1 (6%)
- Groin 1 (6%)
- Unknown 4 (25%)
Multiple myeloma

- Surgery 50% (4 of 8)
- Radiation only 17% (7 of 39)
- Surgery and radiation 20% (2 of 10)
- Chemotherapy 66% (2 of 3)
- Average time from local recurrence to myeloma: 6 months
- Average time from regional recurrence to multiple myeloma: 17 months.
Survival from multiple myeloma
OS in 18 patients radiation only, few to multiple myeloma

Creach et al. 2008
Effect of radiation

- Trend toward improved local recurrence rate in patients treated primarily with radiation compared with those treated with other modalities (p = .09).

- Recurrence by treatment modalities

<table>
<thead>
<tr>
<th>Treatment Modality</th>
<th>N</th>
<th>Local</th>
<th>Regional</th>
<th>Myeloma</th>
</tr>
</thead>
<tbody>
<tr>
<td>None</td>
<td>3</td>
<td>1 (33.3%)</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Chemotherapy</td>
<td>1</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Radiation</td>
<td>39</td>
<td>5 (12.8%)</td>
<td>2 (5.1%)</td>
<td>7 (18%)</td>
</tr>
<tr>
<td>Radiation + chemotherapy</td>
<td>3</td>
<td>2 (66.7%)</td>
<td>0</td>
<td>2 (66.7%)</td>
</tr>
<tr>
<td>Preoperative radiation + surgery</td>
<td>4</td>
<td>2 (50%)</td>
<td>0</td>
<td>1 (25.0%)</td>
</tr>
<tr>
<td>Surgery</td>
<td>8</td>
<td>1 (12.5%)</td>
<td>2 (25.0%)</td>
<td>4 (50%)</td>
</tr>
<tr>
<td>Surgery with postoperative radiation</td>
<td>10</td>
<td>2 (20%)</td>
<td>0</td>
<td>2 (20%)</td>
</tr>
</tbody>
</table>
Radiation dosing?

- 23% local failure rate < 40 Gy vs. 9% local failure rate > 40 Gy
- Differences in local failure and initial control are statistically different
- Similar differences in time to recurrence
## Univariate prognostic factors in patients with plasmacytoma

<table>
<thead>
<tr>
<th></th>
<th>Median PFS (years)</th>
<th>P value</th>
<th>Multiple myeloma free survival (years)</th>
<th>P value</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Age</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>&lt;55</td>
<td>4.6</td>
<td>0.096</td>
<td>7.7</td>
<td>0.0276</td>
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<tr>
<td>&gt;55</td>
<td>2.9</td>
<td>3.2</td>
<td></td>
<td>0.1228</td>
</tr>
<tr>
<td><strong>Type</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>Bone</td>
<td>3.2</td>
<td>0.0845</td>
<td>4.1</td>
<td>0.1228</td>
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<tr>
<td>EMT</td>
<td>7.4</td>
<td>7.4</td>
<td></td>
<td></td>
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<tr>
<td><strong>Site</strong></td>
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<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>head and neck</td>
<td>7.4</td>
<td>0.0246</td>
<td>7.7</td>
<td>0.0807</td>
</tr>
<tr>
<td>other</td>
<td>3.1</td>
<td>4.1</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Treatment</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Radiation</td>
<td>2.6</td>
<td>0.0359</td>
<td>3.2</td>
<td>0.0222</td>
</tr>
<tr>
<td>Surgery and radiation</td>
<td>7.4</td>
<td></td>
<td>7.7</td>
<td></td>
</tr>
</tbody>
</table>

Kilci̇ksiz et al. 2008
Conclusions

• Rare entity
• More common in head and neck and better prognosis
• Radiation for local control, ? Role of surgery, ? RXT dosing
• Multiple myeloma
Case presentation
TB

- 58 year-old male followed for OSA, incidental finding 9/07: intranasal mass

- Asymptomatic

- Biopsy and excision at outside hospital: plasmacytoma (CD 138 and kappa light chain positive)

- Presented for evaluation of residual disease
TB

- PMH: OSA (CPAP), BPH, HTN, GERD, hypercholesterolemia, L1-L2 laminectomy

- FH: child deceased at age 12 from ALL, father, sister- laryngeal SCC, mother- lung cancer, sister-suicide

- SH: 20py, quit 15 years ago. Moderate drinker until 20 years ago

- Medications: Nexium, Amlodipine, Lipitor, Flomax, Aspirin, Viagra
TB

• Examination:
  – Bilateral TMS wnl (no effusion)
  – flexible NPL: normal nasal cavity and nasopharynx, except for small amount of reddish neoplasm 1 cm in greatest size, at left of midline in posterior nasopharynx
  – Neck : no cervical adenopathy
TB

- Skeletal survey negative
- Body CT negative
- Bone marrow biopsy negative
- Blood workup
- Serum and urine electrophoresis:
  - Serum protein electrophoresis:M spike of 0.09 cm.
  - Serum immunofixation reveals an IgA kappa restrictive band.
  - Urine protein electrophoresis normal.
  - Serum free light assay: slightly elevated kappa of 23.6 with a normal lambda 15.7 and a normal ratio of 1.50.
TB

- 4/08 NPL: NP mass at junction of posterior and superior walls, 1cm and centrally cavitated with 2 new red lesions which appeared during radiation and remained persistent
- PET/CT, CT with IV contrast (7/08). NED
Treatment

• Definitive radiation therapy completed 2/08

• 50 Gy to the nasopharynx

• 45 Gy to the retropharyngeal lymph nodes and bilateral level 2 nodes.
• Pathology
References

• Kumar S. Solitary plasmacytoma: is radiation therapy sufficient? Am J Hematol. 2008 Sep;83(9):695-6
• Straetmans J. Extramedullary plasmacytomas in the head and neck region, Eur Arch Otorhinolaryngol. 2008 Feb 26.