GIANT PARATHYROID ADENOMA WITH SEVERE HYPERCALCEMIA
CASE REPORT

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Introduction:
Parathyroid adenomas are the main cause of primary hyperparathyroidism. They are usually small - less than 1 g - and not easy to find - requiring meticulous imaging studies for localization. Giant adenomas (defined according to gland size at or above 3.5g – the 95th percentile of gland weight) have seldom been described in the literature.

Case Report:
* A 68 year old woman presented in our clinic with polydipsia, polyuria, nausea, weight loss, dorsal and lumbar spine pain, extreme muscular weakness - she wasn’t able to walk – confusion and depressive mood. Symptoms developed progressively during the last 6 months in a patient with unremarkable medical history.
* Clinical exam: signs of dehydration and a palpable right cervical mass.
* Blood chemistry results: serum calcium 21mg/dL(normal range 8.8-10.2), serum alkaline phosphatase 680IU/L(normal range 50-136), serum phosphate 2.0mg/dL(normal range 2.5-4.5), normal kidney function. Serum intact PTH was 2238pg/ml. (normal range 15-65). The patient was also vitamin D deficient - 25OH vitamin D 14μg/L. Thyroid function tests were normal.
* Radiographic study showed signs of vertebral osteoporosis and fracture of the first lumbar vertebra. Cerebral CT scan (indicated by the psychiatrist) showed multiple osteolytic areas of the skull.
* DXA osteodensitometry: osteoporosis (lumbar spine T score -2.950; radius 33% T score -6.750).
* Abdominal ultrasound: bilateral nephrolithiasis.

Cervical ultrasonography

Parathyroid scintigraphy

* Cervical ultrasonography: hypoechoic, inhomogeneous mass with regular margins, 38/30/45mm, laterally and caudally to the right thyroid lobe; no image of adenopathy.
* Parathyroid scintigraphy (99Tc-MIBI): large area of high uptake in the right cervical region.
* Treatment : intravenous fluids for re-hydration, loop diuretic (furosemide), intravenous bisphosphonate (Zoledronate 4mg) and subcutaneous Calcitonin (400U every 12 h) to reduce the level of calcium, which decreased to11.2mg/dl after 5 days but did not normalize.
* The patient was successfully operated. Surgical exploration found no evidence of malignancy; the tumor, although large (32g), was encapsulated, with no signs of local invasion and was easily removed.
* The pathologic diagnosis: parathyroid adenoma with nuclear atypia, without capsular or vascular invasion.

Serum calcium dropped after surgery – lowest level 6.8mg/dl fourth day. Hypocalcemia was managed with iv calcium and Alpha-calcidol (2μg). At discharge the patient was hypocalemic but asymptomatic.

Calcium metabolism parameters – evolution after parathyroid surgery

<table>
<thead>
<tr>
<th></th>
<th>Calcium mg/dl (n 8.8-10.2)</th>
<th>Alkaline phosphatase IU/L (n 50-135)</th>
<th>PTH pg/ml (n 15-65)</th>
<th>25-OH Vitamin D μg/dL (n 10-30)</th>
</tr>
</thead>
<tbody>
<tr>
<td>At discharge</td>
<td>8.3</td>
<td>670</td>
<td>192</td>
<td>14.9</td>
</tr>
<tr>
<td>1 month</td>
<td>7.4</td>
<td>233</td>
<td>506</td>
<td>17.2</td>
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<tr>
<td>3 months</td>
<td>8.5</td>
<td>156</td>
<td>390</td>
<td>20.5</td>
</tr>
<tr>
<td>6 months</td>
<td>8.8</td>
<td>135</td>
<td>62</td>
<td>38.0</td>
</tr>
</tbody>
</table>

* Preoperative value

Despite treatment with Cholecalciferol 10000IU, Calcium 2g and Alpha-calcidol 2μg (with close monitoring of calcium metabolism parameters), mild hypocalcemia persisted for months thereafter and so did the high levels of PTH - the hungry bones syndrome. Parathyroid hormone normalized after 6 months, when calcium and vitamin D levels returned to normal.

Conclusions:
This is a rare case of giant parathyroid adenoma. The particularities of the case are the size of the tumor, the very high level of calcium and PTH, and the persistence of high levels of PTH and hypocalcemia months after surgery in a patient who is also vitamin D deficient.