Prolactin Induced Hypercalcemia in Gigantomastia of Pregnancy

Introduction

PTH–related protein (PTHRP) associated hypercalcemia is often secondary to humoral or solid malignancy. We present a case in which excess of PTHrP is resulting from an overshoot of normal physiology during pregnancy.

Case Presentation

History
- 32-year old female, 2nd pregnancy, 15 weeks gestation
- Abdominal pain, constipation, polyuria / polydipsia; several weeks
- Breasts tender and firm, growth (B to G cup first pregnancy, current > H cup)

Physical examination
- Normal vital parameters
- BMI 21.8 kg/m², breast circumference 109 cm

Chemistry at presentation

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Value</th>
<th>Unit</th>
<th>Reference</th>
</tr>
</thead>
<tbody>
<tr>
<td>Calcium</td>
<td>3.37</td>
<td>mmol/L</td>
<td>2.15-2.55</td>
</tr>
<tr>
<td>Urinary Calcium</td>
<td>19.2</td>
<td>mmol/24h</td>
<td>2.5-8.0</td>
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<tr>
<td>PTH</td>
<td>&lt;0.3</td>
<td>pmol/L</td>
<td>0.7-8.0</td>
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<tr>
<td>Colecalcerol</td>
<td>21</td>
<td>mmol/L</td>
<td>50-250</td>
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<tr>
<td>ACE</td>
<td>27</td>
<td>mmol/min/ml</td>
<td>23-67</td>
</tr>
<tr>
<td>Lysozyme</td>
<td>503</td>
<td>µg/L</td>
<td>240-500</td>
</tr>
<tr>
<td>PTHrP</td>
<td>5.5</td>
<td>pmol/L</td>
<td>&lt;0.7</td>
</tr>
</tbody>
</table>

Complementary Investigation
- Radiology (CT, ultrasound, mammography and MRI): Nephrocalcinosis and dense breast tissue (BI-RADS2), otherwise normal
- Gynaecologic and fiberoptic laryngscopy: normal

Reference values in pregnancy

Prolactin levels rise to prepare mammary glands for lactation phase. Concomitantly, PTHrP is increasingly produced by breasts to mobilize extra calcium for fetal need.

Gigantomastia of pregnancy
- Prolactin hypersensitivity leads to massive breast growth
- In case of gigantomastia of pregnancy, physiologic PTHrP response is massive due to large volume of breasts

Hypothesis
- Decrease of prolactin by dopamin agonists will stop stimulation of mammary tissue and might decrease PTHrP levels

Treatment
- Saline infusions (4L, 3x/week)
- Bromocriptin 2.5 mg BD (TD at gestation 30 weeks)
- Literature: mastectomy 2-3 or induced labour 4

Results
- Stabilisation of prolactin
- Decrease of PTHrP
- Normalisation of calcium even after stop of saline infusions
- Good pregnancy outcome

Conclusions
- Hypercalcemia can be caused by gigantomastia induced PTHrP overproduction during pregnancy, due to increased sensitivity of breast tissue to prolactin
- PTHrP induced hypercalcemia can be treated with saline and dopamin agonists resulting in complete remission and a good pregnancy outcome
- This more conservative approach sucessfully prevented premature induction of labour or acute mastectomy as previously described 1, 4

References