Interesting case conference

2/04/13
Clinical Data:

• Previously healthy 31-year-old man referred to Endocrinology clinic for consultation regarding multinodular goiter

• Two sisters diagnosed with unspecified thyroid cancer.

• Thyroid US findings: Multinodular thyroid with dominant nodule in the right (0.8 cm) with focal coarse calcification. All of the observed nodules are subcentimeter in size.
On-site assessment for adequacy:

Diff-Quik smears examined.
Cellular specimen
Cellular specimen – Architectural disorganization
Discohesion; plasmacytoid cells
Differential Diagnosis:

Hurthle cell neoplasm
  Hurthle cell adenoma vs. carcinoma

Medullary carcinoma

Metastasis
Dialogue between pathologist and endocrinologist:

Path: “What exactly is the family history of thyroid cancer?”

Endo: “I think it’s papillary thyroid carcinoma...let me ask the patient...the patient states medullary carcinoma.”

Path: “That’s what I was contemplating...could you draw a serum calcitonin?”

Endo: “Oh, I see that a serum calcitonin was measured one month ago.”
<table>
<thead>
<tr>
<th>RESULT</th>
<th>REFERENCE RANGE</th>
</tr>
</thead>
<tbody>
<tr>
<td>108 pg/mL</td>
<td>&lt; 18 pg/mL</td>
</tr>
</tbody>
</table>

Results from Warde Medical Laboratory Ann Arbor, MI
Dialogue between pathologist and endocrinologist:

Path: “I think medullary carcinoma is a very real possibility here. Can we get two dedicated passes for the cell block?”

Endo: “Sure.”

Path: “Just in case the cell block is acellular, could you also draw blood for serum calcitonin today?”

Endo: “Sure.”
Cellular specimen – discohesive plasmacytoid cells
Abundant cytoplasm; granular chromatin; plasmacytoid cells
CALCITONIN
MICROSCOPIC DIAGNOSIS:
Positive for medullary thyroid carcinoma (SEE COMMENT).

COMMENT:
----------------
The calcitonin immunostain strongly highlights the cells of interest in the cell block section.
SERUM CALCITONIN

RESULT:
241 pg/mL

REFERENCE RANGE:
< 18 pg/mL
CLINICAL FOLLOW-UP

The patient and his family underwent genetic testing and was found to have MEN2A.
Summary of Medullary Thyroid Carcinoma

- 5-10% of all thyroid carcinomas, arises from parafollicular cells
- 80-90% sporadic, occur in adults (mean age 50 yrs). Rest occur in children in association with syndromes like MEN
- 90% secrete calcitonin
- Treatment=> total thyroidectomy with excision of regional lymph nodes
Summary of Medullary Thyroid Carcinoma

- Predominantly isolated tumor cells, uniform in size and shape
- Cytoplasm moderate or abundant and finely granular
- Nuclei eccentrically placed (plasmacytoid appearance), some cases the cells are spindled and the cells look like a comet with a long cytoplasmic tail
- Coarsely granular salt-and-pepper chromatin with inconspicuous nucleoli
- Intranuclear inclusions can be observed
- Amyloid present in some but not all cases