ENDORAMA
“A CASE OF INCIDENTAL THYROID NODULE”

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Learning objectives:
- Diagnosis and work up of Medullary thyroid cancer
- Considerations during surgery
- Post operative surveillance
• 79 y/o F who presented for evaluation of bilateral thyroid nodules found incidentally.

  – Originally underwent CXR. This was followed up with CT Chest which showed a left thyroid nodule.

  – No compressive or toxic symptoms.

  – No hx of head/neck or chest radiation
- ROS: Negative
- PMH: HTN, Vit D Deficiency
- FH: Neg for thyroid cancer or other malignancy; Negative for other endocrinopathy
• Physical Exam:
  – Trachea normal, normal range of motion,
  – Phonation normal.
  – Neck supple. No neck tenderness present.
  – No tracheal deviation, no edema
  – Normal range of motion present.
  – No thyroid mass palpable and no thyromegaly.
• Next test?
• Thyroid Ultrasound
DIAGNOSTIC WORK UP
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• Thyroid Ultrasound:
  – Right lobe 1.1x0.9x1.0cm nodule, TiRADS 5; highly suspicious.
  – Left lobe 1.2x0.8x1.2cm nodule, TiRADS 5; highly suspicious.
  – No suspicious lateral LN
DIAGNOSTIC WORK UP

• Bilateral FNA:
  – Right Nodule FNA: AUS
  – Left lobe Nodule FNA: suspicious for medullary thyroid cancer.
• Ready to go to OR?
DIAGNOSTIC WORK UP

• CEA 17.5 (<3.5)
• Calcitonin 217 (<5)
• TSH 2.5
• PTH and Calcium level normal
• Serum metanephrines normal
• Genetic testing
• Plan?
TREATMENT

• OR
  – Total thyroidectomy
  – Central node dissection
  – Bilateral recurrent laryngeal nerve monitoring
• Pathology (pT1b(m), N1a)
  – Total thyroidectomy: MTC (1.5 cm right lobe, 1 cm left lobe)
  – Left level 6 lymph node: MTC (2/6), largest focus 0.2 cm, no extranodal extension.
  – Right level 6 lymph node; no carcinoma (0/1).
Medullary Thyroid Cancer

- Neuroendocrine tumors arising from parafollicular (C) cells of the thyroid
- Comprises 1-2% of thyroid cancers
- MTC arises sporadic (75%) or hereditary (25%)
- Which hereditary syndromes?
MEDULLARY THYROID CANCER

• Hereditary Syndromes:
  – MEN2A
  – MEN2B
  – Familial MTC

• RET (Re arranged during Transfection) in 1985
  – RET is a protooncogene is expressed by neural crest cells
  – Located on chromosome 10
  – Encodes a transmembrane receptor of the tyrosine kinase family
Thyroid nodule: FNA diagnosis of MTC

- US of neck
- Measure serum levels of Ctn and CEA
- DNA analysis for RET germline mutation

\[ RET^+ \]

Evaluating for PHEO

- Evaluate for HPTH

\[ RET^- \]

Absent

Present, Rx at time of TTX

Present, unilateral or bilateral ADX prior to TTX

\[ Ctn < 500 \text{ pg/mL} \]

\[ Ctn > 500 \text{ pg/mL} \]

TTX with or without cervical LND depending on US, serum Ctn levels, and intraoperative findings

Consider EBRT to the neck if extensive nodal disease, residual MTC, or extension of MTC beyond the thyroid

Imaging procedures to exclude presence of metastatic MTC

M0, proceed to TTX with or without cervical LND, depending on neck US results and serum Ctn levels

Consider EBRT to the neck if extensive nodal disease, residual MTC, or extension of MTC beyond the thyroid

Patients with progressive systemic disease

- Systemic therapy with TKI
- Clinical trial

M1, TTX

Treat regional disease
TREATMENT
**Surgical Strategies**

MTC in neck and no US evidence of neck nodes

- TT+ CND (level VI)

* 50 – 75% will have mets to central cervical LN


SURGICAL STRATEGIES

• MTC in neck and cervical nodes
  • TT+ CND (level VI)

MTC + lateral neck nodes positive on US
  • TT, + Central node and Lateral ND
  * 10.1, 77% and 98 % if 0, 1-4 0r > 4 LN are positive in the central neck
  • Consider contralateral neck dissection if calcitonin >200

**SURGICAL STRATEGIES**

- MTC in neck and no cervical nodes →
  - TT+ CND (level VI)

- MTC + lateral neck nodes positive on US
  - TT, + central and Lateral ND
  - Consider contralateral neck dissection if calcitonin >200

MTC + no neck metastases + no distant metastases
- TT, CND, consider lateral neck dissection based on calcitonin levels (No consensus)
• Post operative surveillance?
Medullary Thyroid Cancer

• Thyroid C-cells secrete hormones or amines
  - Adrenocorticotropic hormone (ACTH)
  - Chromogranin
  - Calcitonin
  - Carcinoembryonic antigen (CEA)
  - Neurotensin
MEDULLARY THYROID CANCER

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Medullary Thyroid Cancer

• Post operative surveillance: Calcitonin and CEA Serum
  – Concentrations are directly correlated to the C-cell mass.
  – Tumor markers to evaluate recurrence or progression
  – 3 months post op, then every 6 months x 1 year, then annually
  – When elevated together → progression of disease
  – CEA and Calcitonin normal or low → advanced and de-differentiation of cells
• Back to our patient
• Post operative Surveillance
  – Thyroid Ultrasound
  – Calcitonin – Undetectable (<5)
  – CEA 6 (<3.5)
  – Genetic testing