Discussion of UKEPS Circulation 36, 19/11/18.

Cases as glass slides (1-6) and digitally (all)

Case 1. Female, 50. Graves' disease.

- multinodular, occasional lymphoid aggregates, no PTC nuclei though nuclei pale.

Submitted answers:
- Most suggested treated Graves' Disease, +/- mention of previous therapy
- A few respondents had a differential including widely invasive follicular carcinoma
- Dyshormonogenetic Goitre

Original diagnosis: nodular hyperplasia consistent with Graves' disease.
- features identical throughout both lobes and isthmus.

More clinical information:
- Graves' with significant eye disease – methylprednisolone injections, low dose RT to orbits June 2018;
- Total thyroidectomy May 2018, good recovery.

Conclusion: Nodular hyperplasia consistent with Graves' disease.

Case 2. Female 71. ?right thyroid tumour infiltrating trachea.

- multinodular proliferation in thyroid, extending into muscle, slightly papillary / cribriform architecture, other areas solid, round to oval nuclei, no PTC nuclei, also necrosis and vascular invasion.

Submitted answers:
- all suggested carcinoma
- specifics included primary thyroid (widely invasive follicular, oncocytic) or MTC, PDC
- parathyroid
- metastatic

Original diagnosis: metastatic renal cell carcinoma
- IHC:
    - Tumour positive for Pax8, RCC, CD10, racemase
    - Tumour negative for TTF1, Tg, BRAF.

More clinical information:
- Thyroid swelling for 1 year but never investigated (main carer for husband);
- FNA elsewhere Thy2 (?sampling error);
- Nephrectomy in 2008 for RCC (elsewhere);
- Stormy intra-op and post-op course.

Discussion:

- ?mammary analogue secretory carcinoma (on H&E);
- Without IHC, could consider PDC but morphology not really right.

Conclusion: Metastatic renal cell carcinoma

Case 3. Male. Adrenalectomy for pheochromocytoma. Newly diagnosed prostate cancer. Mass weighed 96g, 82mm in maximum dimension.

- tumour in adrenal, packeted, nuclear pleomorphism, pigment, ill-defined edge.

Submitted answers:

- Most suggested phaeochromocytoma +/- ganglioneuromatous elements
- One suggestion of adrenocortical carcinoma (with no differential)

Original diagnosis: composite ganglioneuroma and phaeochromocytoma.

- Neural component with neuropil and ganglion cells;
- Plus typical phaeo, PASS 4/20.

Conclusion: Composite ganglioneuroma and phaeochromocytoma.

Case 4. Female 33. Rapidly growing thyroid lesion on background of multinodular goitre. Initial core biopsy inconclusive hence open biopsy.

- inflammatory, mononuclear cells, lots of neutrophils, a few eosinophils, sheets of large cells with large nuclei, prominent nucleoli, lots of cytoplasm.

Submitted answers:

- Most suggested malignant with a wide differential – lymphoma, carcinoma, melanoma.
- Nine plumped for HD

Original diagnosis: Classical Hodgkin Lymphoma.

- Large cells positive for CD30 and CD15;
- Background T cells;
- Previous core was inflammatory with a few odd cells.

Discussion:

- Can mimic ATC because cells often in sheets in FNAs
- DD also ALCL; Pax5 would be negative in ALCL, also a proportion ALK1 positive
- More eosinophils present than you think at first (not neutrophils).

Conclusion: Classical Hodgkin Lymphoma.

Case 5. Male 24. Large hemithyroid with tracheal compression. 129g thyroid lobe, 75mm in maximum extent. Mainly occupied by solid tumour, 72mm IME.

- thyroid with lymphocytic thyroiditis
- tumour with closely packed papillary architecture, capsular and vascular invasion,
- nuclei not classically PTC – pale, nucleoli, round, only very occasional inclusions..

Submitted answers:

- Most suggested PTC but nuclei not typical.

Original diagnosis: favoured widely invasive follicular carcinoma but was sent for second opinion. Second opinion offered "adverse prognosis variant of papillary thyroid carcinoma, with frequent capsular and angioinvasion including within an almost extrathyroidally located vessel. There are features of both tall cell and columnar cell variant, with additional oncocytic areas."

Discussion:

- Some microfollicular pattern;
- Varied architecture and subarchitecture;
- Looks endometrioid in places therefore ?columnar cell variant.

Conclusion: Adverse prognosis PTC.

Case 6. Female 20. Previous THY5 and positive LN FNA. 13.1g thyroid lobe, left 42mm IME, right 43mm IME. Multiple small white nodules clustered in right lobe 12x8mm together, largest 4mm.

- thyroid with lymphocytic thyroiditis, multiple nodules around central fibrosis, psammoma body-like calcification, follicular architecture with pale grooved nuclei with overlapping.

Submitted answers:

- PTC – variation in type – diffuse sclerosing, follicular / infiltrative follicular

Original diagnosis: infiltrative follicular variant of PTC.

Discussion:

- Discussion re psammoma bodies in background thyroid (does not make the tumour multifocal) and LNs;
- Some features of diffuse sclerosing variant but not diffuse enough in this block, looks more like central sclerosis from infarction.

Conclusion: **infiltrative follicular variant of PTC.**

Digital-only cases

Case 7. Male 79, likely adrenal cancer. Adrenalectomy, Mass 418g, necro-haemorrhagic. No normal adrenal seen.

- lesion with solid and glandular architecture, angioinvasion, packeted in places, mitoses, nuclear pleomorphism.

Submitted answers:
- Mostly ACC, fewer metastases, melanoma, phaeochromocytoma

Original diagnosis: adrenal cortical carcinoma, Weiss 7.
- IHC
  - Positive for CAM5.2, focally for CK7, MNF116;
  - Negative for CD56, AE1/3, inhibin, chromogranin, S100, RCC, EMA, Melan A, synaptophysin, CK20, vimentin, thyroglobulin, TTF1, PSA, CA19.9, CK5/6, Ck19, Pax8.

Conclusion: **adrenal cortical carcinoma, Weiss 7.**

Case 8. Male 49. Right thyroid mass, THY3f. Thyroid lobe, 80mm IME. Tan coloured tumour, 60mm.

- thyroid with tumour, follicular and solid architecture, oncocytic cytoplasm, no PTC nuclei, capsular and vascular invasion.

Submitted answers:
- Minimally invasive FC or oncocytic carcinoma

Original diagnosis: minimally invasive follicular carcinoma / oncocytic carcinoma.

Conclusion: **Minimally invasive FC or oncocytic carcinoma**

Case 9. Male, 66. Right thyroid. THY5 FNA. Core biopsy

- core biopsy, partly necrotic tumour poorly differentiated, focally squamoid.

Submitted answers:
- Most carcinoma, either SCC or with thymic elements

Original diagnosis: in keeping with SCC.
- IHC – positive for CK5/6, p63;

More clinical information:

- Severe dysplasia in pyriform fossa;
- Imaging looked like direct invasion from larynx.

Discussion:

- What was cytology? – Thy5, not know wording; (After meeting PM checked. FNA thyroid called malignant in keeping with SCC with a background of a follicular lesion which would have been called THY3f without the squamous malignancy)
- Variety of scenarios if squamoid – could be ATC with squamous areas and direct invasion of larynx;
- Discussed when others do core biopsies, examples are:
    - Locally aggressive, ?ATC;
    - Clinically ATC vs lymphoma;
    - Weird cytology eg MTC, ATC, lymphoma;
    - View expressed that cores best avoided in single nodules because:
        - Cannot make diagnosis in follicular lesions in cores;
        - Punctures of capsule cause histology artefacts and interpretation problems.

Conclusion: in keeping with SCC.

Case 10. Female 62. Right renal carcinoma. Presumed left adrenal metastasis. 94g adrenal, 100mm IME. Solid, yellow, haemorrhagic tumour 90mm IME.

- adrenal, central vascular lesion, packeted cells, pleomorphic nuclei.

Submitted answers:

- Most phaeochromocytoma, ACC or metastatic RCC

Original diagnosis: phaeochromocytoma.

- IHC:
    - Positive for synaptophysin;
    - Negative for Pax8, AE1/3.
- Also seen by Justine Barletta, USA.

Conclusion: phaeochromocytoma

Case 11. Female 52. THY3a. Known breast cancer. Thyroid lobe 34mm IME, 24mm white nodule.

- encapsulated nodule, lymphocytic thyroiditis, packeted spindle cell lesion, prominent vessels, few follicles - ?part of tumour or entrapped background thyroid.

Submitted answers:

- MTC, mixed MTC and follicular lesion, HTA, spindle cell FA

Original diagnosis: initially perplexed but reported as medullary thyroid carcinoma.

- IHC:
    - Positive for TTF1, synaptophysin (strong), chromogranin, calcitonin (patchy);
    - Negative for CEA – repeat was probably still negative

More clinical information:

- Found on PET, as case below;
- Nil elsewhere and breast tumour looked different.

Discussion:

- Serum calcitonin? – not known
- Looked at follicles – negative for synaptophysin, positive for CK19 – was not thought originally to be a mixed tumour.

Conclusion: Medullary Thyroid Carcinoma

Case 12. Female, 60. U4, THY4 isthmus nodule. Intrahepatic cholangiocarcinoma. 9g thyroid 39mm IME. 16mm nodule near isthmus.

- tumour in thyroid and LNs, clearly PTC.

Submitted answers:

- PTC

Original diagnosis: PTC (classical).

More clinical information:

- Found on PET scan. Included with case above to demonstrate that not everything found incidentally on PET scans is an oncocytic lesion

Conclusion: PTC

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