THYROID

PP-T-01

THIONAMIDE-ASSOCIATED NECROTIZING AUTOIMMUNE MYOPATHY (NAM) IN GRAVES' DISEASE: A CASE REPORT

https://doi.org/10.15605/jafes.038.AFES.154

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CASE

Necrotizing Autoimmune Myopathy (NAM) has never been reported as a cause of myositis in thionamide-treated Graves' disease (GD). A 21-year-old Thai female presented with a 12-month history of palpitations. A diagnosis of GD was confirmed by elevated serum anti-TSH receptor antibody. Methimazole (MMI) 20 mg/day was started. Eleven weeks after therapy, she complained of generalized muscle pain. Elevated serum CK level at 791 U/L (<170) was found. MMI was switched to Propylthiouracil (PTU) 450 mg/day but serum CK level further rose to 2,538 U/L with worsening myalgia. Radioactive iodine (RAI) 30 mCi was given and she developed hypothyroidism at 9 weeks after treatment. She unexpectedly developed rhabdomyolysis (peak serum CK level at 13,084 U/L) while having a mild COVID-19 infection at 10 weeks after RAI. Finally, the diagnosis of NAM was established based on muscle biopsy. Our case highlighted NAM as an unusual cause of thionamide-associated myositis.

KEYWORDS

anti-thyroid drugs (ATDs), Thionamide, Necrotizing Autoimmune Myopathy (NAM), Graves'disease, Myositis

PP-T-02

EVALUATION OF LEARNING METHODS SIMILAR TO DEEP LEARNING AND DEVICE USING DEEP LEARNING FOR THE DIAGNOSIS OF THYROID NODULES

https://doi.org/10.15605/jafes.038.AFES.155

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INTRODUCTION

We recently developed a deep convolutional neural network algorithm (SEveRance Artificial intelligence program, SERA) using 13,560 ultrasound images of thyroid nodules labeled benign and malignant and this algorithm showed comparable diagnostic performance with experienced radiologists. We assessed whether the self-learning method similar to deep learning could be adapted for human learning as an ancillary approach to one-on-one education.

METHODOLOGY

Twenty-one internal medicine residents studied the "learning set" in three replicates which were composed of 3,000 images selected from 13,560 thyroid nodules and their diagnostic performances were evaluated before the study and after every learning session using the "test set" which was composed of 120 thyroid nodule images. The diagnostic performances of eight radiology residents were evaluated before and after one-on-one education using the same "test set". After final test, all readers once again evaluated the "test set" with the assistance of SERA.

RESULTS

Before the study, the mean area under the receiver operating characteristic (AUROC) of internal medicine residents was considerably lower than that of radiology residents (0.578 and 0.701, respectively). Diagnostic performance of internal medicine residents, although not as much as radiology residents who received one-on-one education (AUROC = 0.735), increased throughout the learning program (AUROC = 0.665, 0.689, and 0.709, respectively). All diagnostic performances of internal medicine and radiology residents were better with the assistance of SERA (AUROC 0.755 and 0.768, respectively).

CONCLUSION
A novel iterative learning method using selected ultrasound images from big data sets can help beginners learn to differentiate between benign and malignant thyroid nodules. With the assistance of SERA, the diagnostic performances of readers with various experiences in thyroid imaging could be further improved.

KEYWORDS
deep learning, thyroid nodule, ultrasound, learning program, diagnostic performance

PP-T-03

A CASE OF SCLEROSING EPITHELIOID FIBROSARCOMA WITH METASTASES TO THE THYROID

https://doi.org/10.15605/jafes.038.AFES.156

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CASE
Sclerosing Epithelioid Fibrosarcoma (SEF) is a rare form of sarcoma with slow growth, often with local recurrences/distant metastases. Treatment is by wide excision and adjuvant chemotherapy/radiotherapy. A 36-year-old Filipino female was first diagnosed with SEF when she presented with abdominal pain and elevated lipases and amylases. CT showed lesions in the pancreas, left erector spinae, axilla, lateral chest wall, left lower lung lobe, and liver. Biopsy revealed round cell sarcoma consistent with SEF. She underwent wide excision of the masses and adjuvant chemotherapy. After 6 months, an enlarging mass was noted on the thyroid. Thyroid function tests were normal. On thyroid ultrasound, a 2.6 x 1.8 x 2.4 cm, hypoechoic, solid nodule in the right lobe and a 0.3 x 0.2 x 0.3 cm hypoechoic solid nodule in the left lobe were seen. She underwent a total thyroidectomy. Histopathologic examination of the thyroid mass confirmed SEF.

KEYWORDS
thyroid, sclerosing epithelioid fibrosarcoma, thyroid metastases, sarcoma

PP-T-04

FOLLICULAR VARIANT OF PTCA INITIALLY PRESENTING AS WIDESPREAD METASTASES

https://doi.org/10.15605/jafes.038.AFES.157

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CASE
Papillary thyroid carcinoma accounts for most cases of thyroid cancer with most cases having good prognosis and low incidence of metastases. The follicular variant (FV) is the most common. First described in the 1960s, the understanding of FV-PTC began to evolve with molecular profiling demonstrating a similarity with FTC, and clinical behavior profiling showing that a subtype may behave like PTC with a propensity for lymph node metastases. We are presented with an unusual case of an infiltrative FV-PTC presenting with widespread multiple metastases on diagnosis.

A 64-year-old female presented with a 1-year history of a slowly enlarging mass on the left mandible, associated with an enlarging anterior neck mass. On examination, there was a 7 x 8 x 3 cm hard, fixed, left mandibular mass and a palpable right thyroid nodule measuring 2.5 x 2 cm. There was no difficulty in swallowing or breathing, but she had some difficulty in eating due to trismus. There were no associated symptoms of hypo- nor hyperthyroidism. Investigations revealed a euthyroid status. CT scan showed a solid lobulated heterogeneously enhancing mass measuring 4.2 x 5.1 x 5.2 cm on the body and angle of the left mandible. Ultrasound showed multiple thyroid nodules, the largest - a mixed cystic and solid mass measuring 2.9 x 2.7 x 2.17 cm on the right thyroid lobe, for which FNA was performed. Histopathology showed benign follicular nodules. An incision biopsy of the mandibular mass showed the presence of thyroid tissue. Further imaging showed metastases to the left frontal and parietal bone, T7 vertebra, and bilateral lungs. With a pre-operative diagnosis of a primary thyroid malignancy, the case was discussed in a multi-disciplinary tumor board meeting. The patient then underwent total thyroidectomy with segmental mandibulectomy. Histopathology post-op showed a metastatic multifocal infiltrative follicular variant of PTC. RAI was administered post-surgery and suppressive thyroxine therapy was started. Steroids were given during RAI, with no untoward events post-treatment. Post-ablative whole-body scanning revealed increased tracer uptake in multiple areas: left frontal and parietal bone, bilateral thyroidal beds, left supraclavicular lymph node, the sternomanubrial junction, bilateral lung lobes, right humeral head, and T7 vertebra. Further doses of RAI were planned and she is currently maintained on