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EM-S01

Color/Power Doppler Ultrasound in Thyroid and Parathyroid Diseases

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For thyroid and parathyroid tissue, ultrasound will be a non-invasive and reproducible procedure for benign, malignant nodular goiter and functional disease evaluation, like hyperthyroidism, hypothyroidism ad autoimmune thyroid disease. Generally, gray-scale ultrasound seemed to be the main stem for routine survey together with fine needle aspiration cytology in Taiwan. Due to the limitation of reimbursement of national insurance, color and doppler ultrasound had not been particularly emphasized. However, such doppler ultrasound technique and reading could be very important to assist probable differential diagnosis of various thyroid disease status. In this lecture, we will review the present application of color/doppler ultrasound in thyroid and parathyroid diseases, including certain studies in Taiwan.

EM-S02

Post-operative Lymph Nodes Survey for Patients of Thyroid Cancer

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Thyroid cancer, accounting for roughly 1% of all new malignant diseases, is on the rise, with papillary thyroid carcinoma (PTC) constituting 80-85% of cases. The prevalence of thyroid cancer continues to grow in Taiwan, where it ranks as the 4th major cancer in women and 14th in men. Nodal metastasis, a typical characteristic of PTC, significantly impacts prognosis. Lymph node (LN) metastasis is reported in 20%-50% of cases and can reach up to 90% with micrometastasis. The long-term recurrence rate of differentiated thyroid carcinoma may be as high as 30%. The presence of nodal metastasis serves as structural evidence of disease persistence, leading to disease-specific death rates of 11% with loco-regional metastases and up to 50% with distant metastases. Early diagnosis of loco-regional lymph node metastases is crucial for providing timely and intensive treatment. This speech will explore the structure and histology of LNs and the anatomy of the neck, focusing on the distribution of LN metastasis. The diagnostic tool of fine needle aspiration thyroglobulin for detecting LN metastasis will be discussed, along with management strategies. The presentation aims to provide a comprehensive view of thyroid cancer, emphasizing the importance of timely diagnosis and integrated care.

EM-S03

Computer-Aided Ultrasonography versus Conventional Ultrasound: Fight between AI and Humans

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Decision making in patients with thyroid nodules depends on ultrasound and fine needle aspiration (FNA). However, because ultrasound (US) image interpretation is operator-dependent with moderate to significant interobserver variability, unnecessary FNA and/or diagnostic procedures are common in practice. In addition, the evaluation of ultrasound features is time-consuming, and as the volume of examinations increases and interpretation times extend, clinicians are under increasing pressure to provide effective and timely diagnoses.

Artificial intelligence (AI)-based computer-aided diagnosis (CAD) systems have been introduced to help accurately and consistently interpret ultrasound features, thus overcoming the limitations of clinicians in ultrasound diagnosis. The technique generally consists of several steps, which

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may include image preprocessing, feature extraction, and data classification.

Many studies have reported the potential role of these systems in thyroid cancer diagnosis and demonstrated comparable or even superior diagnostic performance to that of experienced operators. The increasing adoption of AI in the management of thyroid nodules has generated interest in clinical decision aids and improved workflow efficiency.

EM-S04 RFA of Primary and Recurrent Papillary Thyroid Cancer

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RFA plays a significant role in the treatment of both primary and recurrent thyroid cancer. For cases of PTMC or localized recurrence, RFA can serve as an alternative treatment option. This minimally invasive procedure employs thermal energy to destroy cancer cells or abnormal tissue while safeguarding surrounding normal tissue.

For PTMC, RFA can be utilized as one of the treatment methods, particularly when surgical removal is not suitable or patients prefer not to undergo regular ultrasound monitoring. This method offers minimal scarring, quicker recovery, and lower risks.

In cases of recurrent thyroid cancer, RFA can be considered after initial treatment, especially if cancer cells reappear in the thyroid region or nearby lymph nodes. It provides a means to control disease progression while minimizing impact on surrounding structures.

Overall, RFA offers personalized treatment options for both primary and recurrent thyroid cancer patients, effectively managing the disease and maintaining quality of life. However, the suitability of this treatment depends on factors like tumor size, location, patient preferences, and the experience of the operating physician. This presentation will introduce the application of RFA in primary and recurrent thyroid cancer cases.