

Düsseldorf, Germany

CTE 7 (Technologists / Thyroid) - Interactive
Wednesday, October 17, 10:00-11:30

Session Title:
Thyroid Imaging and Therapy

Chairpersons

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Programme

- 10:00 - 10:30 Tatjana Bogović-Crnčić (Rijeka): The Role of ^{99m}Tc MIBI Scintigraphy in Thyroid Nodules Diagnostics
- 10:30 - 11:00 Arnaldo Piccardo (Genoa): PET Imaging of Thyroid Diseases
- 11:00 - 11:30 Sanja Kusačić-Kuna (Zagreb): Radioiodine Ablation in Differentiated Thyroid Cancer - An Update

Educational Objectives

1. understanding clinical indications for thyroid scan (Planar, SPECT/CT, PET/CT)
2. get acquainted with different radiopharmaceuticals used for thyroid imaging
3. to emphasis the value of Tc-99m MIBI thyroid scan
4. Address role of imaging in distinguishing malignant from benign nodule
5. define the role of Iodine 131 treatment of thyroid cancer
6. technologist role in handling Iodine 131 therapy patients

Summary

The thyroid gland plays a critical role in regulating metabolic functions including heart rate and cardiac output, lipid metabolism, heat regulation, and skeletal growth. Recent advances in thyroid imaging have considerably improved the diagnosis, treatment, follow-up, and prognosis of high prevalence thyroid diseases such as thyroid nodule, goiter, thyroiditis, and thyroid cancer that affect the normal thyroid function.

Radionuclide imaging has been a part of the thyroid evaluation for many years. Now, it plays a central role in the evaluation of thyroid disease as it provides excellent functional information about the thyroid gland. The most frequently used isotopes for thyroid scintigraphy are ^{99m}Tc Technetium pertechnetate, ^{131}I , ^{18}F -fluoro-deoxy-glucose (FDG), and ^{67}Ga .

Radionuclide scanning using ^{99m}Tc Technetium pertechnetate and ^{131}I Iodine is used in the evaluation of focal thyroid nodule as hot, warm, or cold on the basis of relative uptake of radioactive isotope by the nodule. ^{99m}Tc labelled methoxy-isobutyl-isonitrile (MIBI) is used primarily in cardiac and parathyroid gland scintigraphy, but MIBI has been proven to accumulate in tumour tissue and cancers like breast or thyroid cancer. Cells that have more mitochondria accumulate MIBI with increased intensity. ^{99m}Tc -MIBI thyroid scintigraphy can be a useful tool in the diagnostic evaluation and characterisation of thyroid nodules.

Although PET/CT has a limited role in the diagnosis, it plays a significant role in the overall post-surgery management of a patient with thyroid cancer. This follow-up role is important, especially in patients with elevated serum thyroglobulin, but negative radioiodine whole body scans. There is increasing evidence that PET/CT should be a part of routine care in the Tg positive Radioiodine scan negative patient.

^{131}I Iodine, is also used in the treatment of patients with thyroid cancer to evaluate for residual/recurrent disease, to assess distant metastasis, and in the follow-up of patients after thyroidectomy. Radioactive iodine therapy is a standard and basic procedure in the treatment of some thyroid cancers, specifically well-differentiated papillary and follicular thyroid cancer after total thyroidectomy. RAI treatment can also be repeated for persistent, recurrent or metastatic thyroid cancer.

Key Words

Thyroid, iodine-131, imaging

Take Home Message

Thyroid diagnostics today is improved with multiple choices of imaging methods leading to personalize therapy for each patient.