Special Track Session 1

Thyroid Committee
Sunday, October 5, 08:00 – 09:30

Session Title

Challenge the Expert: When to Stop Radioiodine?

Moderators

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Educational Objectives

1. Clarify the Definition of Radioiodine-Refractory Differentiated Thyroid Cancer (RAIR-DTC)
2. Establish Evidence-Based Criteria for Discontinuing Radioiodine Therapy
3. Understand Alternative Treatment Strategies and Management of Side Effects

Summary

Differentiated thyroid cancer (DTC) typically responds well to surgery followed by radioiodine (RAI) therapy, resulting in excellent long-term outcomes for most patients. However, a subset of patients, estimated at around 5–15%, develop radioiodine-refractory thyroid cancer (RAIR-DTC). This condition represents a significant clinical challenge because the tumour cells no longer effectively take up or respond to radioactive iodine, limiting the effectiveness of the treatment.

RAIR-DTC is defined by several key criteria. It includes patients whose metastatic lesions do not show uptake of RAI on post-therapy imaging, those who demonstrate disease progression despite the presence of uptake, and those who have received cumulative high activities of RAI without evidence of clinical benefit. Additionally, heterogeneity in disease response, where some lesions continue to take up RAI while others do not, further complicates management.

The decision to continue or stop RAI therapy is nuanced. Treatment can be continued if there is clear evidence of iodine uptake combined with clinical or radiological improvement. Falling thyroglobulin levels, which suggest biochemical response, may also support ongoing therapy, especially in patients with limited metastatic burden and good treatment tolerance.

Conversely, RAI therapy should be stopped when the patient shows no uptake in lesions, when there is disease progression despite RAI accumulation, or after cumulative doses with no objective benefit. Importantly, treatment cessation should also be considered if the patient experiences significant toxicity, including bone marrow suppression, pulmonary fibrosis, salivary gland damage, or an increased risk of secondary malignancies like leukemia.

The clinical dilemma revolves around the balance of potential benefit against the accumulating risks of continued RAI treatment. Early recognition of RAIR-DTC is crucial to avoid ineffective therapy and transition patients to alternative treatments, such as tyrosine kinase inhibitors (TKIs) like lenvatinib or sorafenib.

Key Words
Differentiated thyroid cancer; Radioiodine; I-131; Radioiodine-refractory thyroid cancer