

Which is better? A comparison of the British Thyroid Association (BTA) U grading system against the American College of Radiologists (ACR) TI-RAD grading system in assessing the risk of thyroid nodule malignancy?

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Introduction

British and American guidelines currently utilise a combination of ultrasound (US) and fine needle aspiration cytology to risk stratify the likeliness of thyroid nodules being malignant. Is there a significant difference in risk profiling between grading systems and which is more accurate at malignant risk stratification.

Methods

A blinded retrospective cohort analysis of 115 thyroid US scans for adult male and female patients who underwent total or hemi thyroidectomy. BTA U and ACR TI-RAD scores were allocated and compared against final histology to assess for correlation. Two independent head and neck radiology physicians ensured inter-observer variability was reduced.

Results

The largest proportion of malignant lesions lie in the U2 category (13.9%) compared to U3 (8.69%) and for TI-RAD, malignant T2 lesions is 2.6%. Under the TI-RAD system a larger proportion of patients are sampled due to most U2 lesions being T3 categorised but malignant pickup is marginally higher at 11.3% vs 8.69% with a 20% increase in the number of patients needing to be sampled. Overall, patients were scored higher using TI-RAD.

Conclusions

When comparing the TI-RAD against the U-grading system, the latter has greater specificity, PPV and NPV. Limitations are U2/T2 (benign) and U3/T3 (indeterminate) graded lesions. TI-RAD grading is radiologically more cautious; therefore, more lesions are sampled for a modest increase in detection. Both systems have positive and negative attributes but the financial and patient morbidity associated with excess investigation the TI-RAD system does not offer a greater pickup rate based on risk but rather volume. Given the current financial burden on the NHS, is implementation of a system which increases clinical and investigation time for an 11% increase in cancer pickup rate beneficial? The rationale behind such a comment is that radiological identification of disease identified varies and one must also consider the importance of false positives and incidentalomas.