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The diagnostic utility of ultrasound scanning, fine needle aspiration cytology and cell block technique in the pre-operative diagnosis of suspicious thyroid nodules

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Introduction: Ultrasound scanning (USS) and fine needle aspiration cytology (FNAC) are first-line investigations to assess thyroid diseases, which assist in recognizing the suspicious thyroid nodules (SusTNs) pre-operatively.

Objectives: To determine the diagnostic utility of USS, FNAC and cell block technique in preoperative diagnosis of SusTNs.

Method: A descriptive cross-sectional study, conducted at Colombo South Teaching Hospital and Department of Pathology, University of Sri Jayewardenepura. Patients with ultrasonically detected SusTNs were included. Direct smears and cell blocks were prepared from the USS guided FNAC samples of each patient. The TIRADS classification was used for radiological assessment and the Bethesda system for cytological interpretation. Specimens with insufficient cellularity were excluded.

Results: Seventy-one patients (15-76 years) with a mean age of 49.8 were included, the majority were females (84.5%). When USS findings of the SusTNs were compared with that of FNAC, the sensitivity was 50%. 18.9% of TR4a, 66.6% of TR4b and 100% of TR4c specimens were diagnosed as malignant (Bethesda V and VI) in FNAC samples. Cell block findings in 82% of the cases matched with the FNAC results, which was statistically significant ($p < 0.001$).

Discussion: TIRADS 4 in USS denotes moderate suspicion for malignancy. The subcategories TR4a, TR4b and TR4c denote undetermined nodules, suspicious nodules and highly suspicious nodules, respectively. There is a statistically significant association between TR4c nodules and thyroid carcinoma (100%).

Conclusion: FNAC and cell block techniques complement each other in the pre-operative assessment of SusTNs. Cytology results were useful to separate TIRADS 4 into the subcategories in which TR4c demonstrated significant predictability of malignancy. The pre-operative assessment of SusTNs is imperative to minimize unnecessary thyroid surgeries.

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