

## Evaluating the Diagnostic Efficacy of TIRADS in Predicting Fine Needle Aspiration Outcomes in Thyroid Nodules

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### ABSTRACT

The Thyroid Imaging Reporting and Data System (TIRADS) is widely utilized for standardizing the assessment of thyroid nodules via ultrasound imaging. Reliable evaluation of thyroid nodules is essential for determining the need for fine needle aspiration (FNA) and subsequent management. This study aimed to assess the diagnostic accuracy of TIRADS in predicting FNA cytology results and to analyze its effectiveness in guiding clinical decisions in thyroid nodule evaluation. A cohort of 100 patients, each presenting with thyroid nodules and undergoing FNA, was analyzed. Two radiologists independently assigned TIRADS scores to each nodule. Inter-rater reliability was evaluated using the kappa coefficient, while the associations between TIRADS scores and FNA findings were determined via chi-squared tests. The findings demonstrated moderate inter-rater agreement between the two radiologists ( $\kappa = 0.453$ ,  $p < 0.001$ ). Significant associations were identified between specific TIRADS scores and FNA results; notably, TIRAD 2 correlated strongly with benign findings ( $p=0.120$ ) per Rater 1 and TIRAD 3 showed significant association with benign findings for Rater 2 ( $p=0.022$ ). This study validates the utility of TIRADS in predicting FNA outcomes, emphasizing its role in informed clinical decision-making. Recommendations for bolstering diagnostic accuracy include standardizing radiologist training and ensuring regular updates on TIRADS guidelines to promote consistent application in clinical practice.

**Keywords:** Thyroid nodules; Thyroid Imaging Reporting and Data System (TIRADS); Fine Needle Aspiration (FNA); Diagnostic accuracy.

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