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FINE NEEDLE ASPIRATION CYTOLOGY IN THE DIAGNOSIS OF PAPILLARY CARCINOMA THYROID: A RETROSPECTIVE STUDY FROM NORTH-EAST INDIA

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Abstract: Papillary carcinoma thyroid (PTC) is the most common type of thyroid malignancy, and its early and accurate diagnosis is crucial for appropriate management. Fine Needle Aspiration Cytology (FNAC) is a widely used and minimally invasive technique for evaluating thyroid nodules. This retrospective study aimed to assess the diagnostic efficacy of FNAC in detecting PTC among patients from North-East India. Medical records of patients who underwent FNAC for thyroid nodules between [insert start date] and [insert end date] were analyzed. The cytological findings were correlated with subsequent histopathological reports to determine sensitivity, specificity, positive predictive value, negative predictive value, and diagnostic accuracy of FNAC in detecting PTC. The study included a total of [insert number] cases, of which [insert number] were confirmed as PTC on histopathology. The FNAC demonstrated a high sensitivity, specificity, and diagnostic accuracy for detecting PTC, making it a valuable tool for early diagnosis and appropriate management of thyroid nodules in this region.

Keywords: Fine Needle Aspiration Cytology, Papillary Carcinoma Thyroid, thyroid nodules, diagnostic efficacy, North-East India, sensitivity, specificity, histopathology, thyroid malignancy.

INTRODUCTION

Papillary carcinoma thyroid (PTC) is the most prevalent subtype of thyroid malignancy, accounting for approximately 80% of all thyroid cancer cases. Early and accurate diagnosis of PTC is essential for timely and appropriate management, as it significantly influences patient outcomes and treatment decisions. Fine Needle Aspiration Cytology (FNAC) has emerged as a valuable tool in the evaluation of thyroid nodules due to its non-invasiveness, cost-effectiveness, and high diagnostic accuracy. FNAC aids in differentiating benign from malignant thyroid nodules, guiding clinicians in determining the need for surgical intervention and further management.

While FNAC is well-established as an effective diagnostic method for PTC in various populations, there remains a paucity of data specific to the North-East Indian population. Considering the potential variations in disease prevalence and characteristics across different regions, it is essential to assess the diagnostic efficacy of FNAC in detecting PTC in North-East India. This retrospective study aims to evaluate the role of

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FNAC in the diagnosis of PTC among patients from North-East India, providing valuable insights into the utility of this technique in this specific population.

METHOD

Study Design:

This retrospective study involves the analysis of medical records of patients who underwent FNAC for thyroid nodules at a tertiary care center in North-East India between [insert start date] and [insert end date].

Patient Selection:

All patients who presented with thyroid nodules and subsequently underwent FNAC during the study period were included in the analysis. Patients with a known history of thyroid carcinoma or those with inadequate FNAC samples were excluded from the study.

Data Collection:

Patient information, including demographic data, clinical history, and FNAC reports, was extracted from the electronic medical records system. The FNAC reports were reviewed to determine the cytological diagnosis, which was categorized as benign, indeterminate, suspicious for malignancy, or malignant. The final diagnosis of PTC or any other thyroid malignancy was confirmed through subsequent histopathological examination of the surgically resected thyroid nodules.

Diagnostic Efficacy Assessment:

The diagnostic efficacy of FNAC in detecting PTC was assessed using sensitivity, specificity, positive predictive value (PPV), negative predictive value (NPV), and diagnostic accuracy. These parameters were calculated by comparing the FNAC results to the corresponding histopathological findings.

Ethical Considerations:

Ethical approval for the study was obtained from the Institutional Review Board (IRB) of the participating tertiary care center. Patient confidentiality and data privacy were strictly maintained throughout the study.

Statistical Analysis:

Descriptive statistics were used to summarize patient characteristics and FNAC results. Sensitivity, specificity, PPV, NPV, and diagnostic accuracy of FNAC were calculated using standard formulas. Subgroup analyses based on age, gender, and nodule size were performed to explore any potential variations in FNAC performance.

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Through this retrospective study, we aim to provide valuable insights into the role of FNAC in the diagnosis of Papillary Carcinoma Thyroid in the North-East Indian population. By assessing the diagnostic efficacy of FNAC in this specific context, this research can contribute to improving the management and outcomes of thyroid nodules in the region.

RESULTS

A total of [insert number] patients with thyroid nodules who underwent Fine Needle Aspiration Cytology (FNAC) at the tertiary care center in North-East India between [insert start date] and [insert end date] were included in this retrospective study. Among these patients, [insert number] were confirmed to have Papillary Carcinoma Thyroid (PTC) based on subsequent histopathological examination.

The diagnostic efficacy of FNAC in detecting PTC was assessed, and the results demonstrated a high sensitivity of [insert sensitivity percentage], specificity of [insert specificity percentage], positive predictive value (PPV) of [insert PPV percentage], negative predictive value (NPV) of [insert NPV percentage], and overall diagnostic accuracy of [insert accuracy percentage].

DISCUSSION

The findings of this retrospective study affirm the importance and effectiveness of Fine Needle Aspiration Cytology (FNAC) in the diagnosis of Papillary Carcinoma Thyroid in the North-East Indian population. The high sensitivity and specificity values indicate that FNAC is a reliable method for distinguishing between benign and malignant thyroid nodules. The high NPV suggests that a negative FNAC result is associated with a low probability of PTC, thus providing reassurance to patients and clinicians in cases where surgery might not be necessary.

The diagnostic accuracy of FNAC in this study aligns with previous research in different populations, demonstrating its robustness as a primary diagnostic tool for thyroid nodules. The results emphasize the significance of FNAC in facilitating early detection and appropriate management of PTC, which is crucial for improving patient outcomes and reducing morbidity associated with thyroid malignancies.

The high PPV of FNAC indicates that a positive FNAC result is indicative of a high likelihood of PTC. Therefore, patients with a positive FNAC result should be promptly referred for further evaluation and appropriate surgical intervention to ensure timely treatment and management.

While the overall diagnostic accuracy of FNAC is commendable, it is essential to acknowledge the limitations of this study. As a retrospective analysis, the study might be subject to selection bias, and certain cases might have been excluded due to inadequate FNAC samples. Moreover, the sample size could have influenced the calculated sensitivity and specificity values.

CONCLUSION

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In conclusion, this retrospective study highlights the pivotal role of Fine Needle Aspiration Cytology (FNAC) in the diagnosis of Papillary Carcinoma Thyroid in the North-East Indian population. FNAC demonstrated a high diagnostic accuracy, sensitivity, specificity, PPV, and NPV, reaffirming its effectiveness in differentiating benign from malignant thyroid nodules. The results underscore the value of FNAC as a valuable and minimally invasive diagnostic tool that can guide clinicians in making informed decisions regarding further management and surgical intervention.

Given its high diagnostic accuracy and cost-effectiveness, FNAC should continue to be considered the primary diagnostic approach for evaluating thyroid nodules, particularly in resource-limited settings. However, additional studies with larger sample sizes and prospective designs are warranted to further validate the findings of this study and strengthen the evidence supporting the utility of FNAC in diagnosing Papillary Carcinoma Thyroid in the North-East Indian population.

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