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Application of cell block technique in the preoperative diagnosis of thyroid neoplasms: An institutional study

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Background: Though there is a higher incidence of thyroid tumors, malignancy rate is low. Common approach for thyroid tumor diagnosis is Fine Needle Aspiration Cytology (FNAC). However, lack of cellularity, loss of tissue architecture, and poor cytomorphologic features lead to false diagnosis in the preoperative period. This leads to re-surgeries and unwanted surgeries. Expedient and accurate diagnosis is essential to determine the tumor prognosis.

Objective: To predict thyroid malignancy on cytology specimens using cell block preparation.

Method: Thirty four radiology guided FNAC specimens were collected from Colombo South Teaching Hospital. Cell blocks were prepared from the needle wash samples, by alcohol acid formalin technique after direct smear preparation for cytology. Cell blocks and the direct smears were evaluated to determine the adequacy of the cellular yield to obtain the correct cytological diagnosis. Sample was considered satisfactory if the smears had more than six clusters of follicular cells with a minimum of ten cells in each cluster.

Results: Among the thirty four FNAC specimens, 50.0% reported as satisfactory with sufficient cellularity in direct smear and cell block while 20.6% of the specimens reported as poor cellularity by both techniques. However, 20.6% of specimens showed sufficient cellularity in the direct smear but not in the cell block and 8.8% of the specimens had sufficient cellularity in cell block technique but poor cellularity in the direct smear. Altogether, 79.4% of the total specimens could be diagnosed using either direct smear, cell block technique or using both techniques.

Conclusion: The combined use of direct smear and the cell block technique increases the preoperative cytological diagnostic ability of thyroid neoplasms, than the single direct smear technique. Both methods are less time consuming, and relatively inexpensive, hence suitable in a resource poor setting to minimize unwanted thyroid surgery by improving the cytological diagnostic accuracy.

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