Clinico-Pathological Correlation of U3 Thyroid Nodules: A Retrospective Review
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Abstract

Background: The incidence of thyroid cancer is increasing globally mainly due to increased detection of papillary microcarcinoma. The British Thyroid Association (BTA) guideline (2014) recommends the use of U2-U5 classification on ultrasound to assess thyroid cancer risk. U3 nodules have low, but indeterminate risk and therefore need FNAC. This retrospective review analyses the outcome of U3 nodules in an outer London hospital.

Method: Thyroid ultrasound performed between 2016 and 2017 were searched and those with reported U3 nodules were selected (n=104) for this retrospective review. Static images were interrogated against the BTA guideline for U3 characteristics, corresponding cytology and histology. People with overt hypox or hyperthyroidism were excluded. Results: Nearly 81% (n=84) were female (mean age 48 years). Multiple nodules were noted in 54% (n=56) of which only 5% (n=2) were larger than 4 cm compared to 19% (n=9) among solitary nodules. The nodules were mainly heterogeneous (87%) and mixed vascular was the most common reported U3 characteristic (94.5%) followed by Isoechoic nodules (35.5%). Other features were reported less frequently (<30%). FNAs was done at least once in 86% (n=89). In those with multiple nodules larger than 4 cm compared to 19% (n=9) among solitary nodules. The nodules were mainly heterogeneous (87%) and mixed vascular (81%).

Results: The overall Thy1 cytology rate for our cohort was 25%.

- Out of this cohort of patients, nineteen patients went on to have thyroid surgery. Four of these had total thyroidectomies:
  - Two were performed due to large goiters
  - The second two were performed due to Thy5 cytology and these had papillary cancer (pT1a pN1a) and were treated with iodine. (percentage of cancers)

Discussion

- There is scope for improving reporting accuracy of U3 nodules and we are currently proposing a template to incorporate all sonographic characteristics from the BTA guidelines (table 2):

  - Proposed Ultrasound Template for Thyroid Nodules
  - Thyroid echotexture: (Homogenous/Heterogenous)
  - Thyroid vascularity: (Increased/Normal/NA)
  - Retrosternal extension: (Yes/No)
  - Nodules: (None/Single/Multiple)
  - Cervical Lymph Nodes: (Normal/Enlarged)

- Our Thy1 rate is within the recommended range by the Royal College of Radiologists but may be improved further by introducing a cytopathology technician to Head and Neck ultrasound lists to improve yield of FNAs.

- Considering the yield of cancer in U3 nodules is very low, and with a significant Thy1 yield of FNAs, it raises the question of the overall benefit in sampling U3 nodules.

Conclusion

- The BTA classification system is effective in picking up Papillary microcarcinoma in patient’s with equivocal U3 thyroid nodules.
- Overall, FNA acquired cytology yield is good, in particular in patients with multiple nodules.
- There seems to be an overall reliance on mixed vascularity as a sonographic feature of U3 nodules compared to other characteristics.
- There is a reassuringly low rate of clinically significant papillary cancer risk, less than 3%

References

3. www.cancerresearchuk.org/cancerTinfo/cancerstats/types/thyroid/uk-thyroid-cancer-statistics

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