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# Retrospective cytological evaluation of indeterminate thyroid nodules according to the British Thyroid Association 2014 classification and comparison of clinical evaluation and outcomes

**Key words:** Indeterminate thyroid nodules, BTA 2014 classification, Clinical evaluation outcomes

# Research Summary

This paper mainly focused on cytology of indeterminate nodules (Thy 3) that was retrospectively reviewed according to the British Thyroid Association 2014 classification. Nodules were divided into Thy 3a (atypical features) and Thy 3f (follicular lesion) then the cytology was compared to final histology to find the best treatment and follow up for each group. Pre-surgical evalutations comprised:

- biochemical tests
- color-Doppler ultrasonography
- semi-quantitative elastography-US
- contrast-enhanced US
- mutation analysis from cytological slides

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# *Innovation points*

✓ No statistically significant difference in the risk of malignancy was found between Thy 3a (26%) and Thy 3f (14%) nodules

✓ Histology of the Thy 3a and Thy 3f nodules showed a higher incidence of Hurtle cell adenomas in Thy 3f (29%) than in Thy 3a (3%) nodules (*P*=0.01)

✓ The only pre-surgical difference concerned the BRAF V600E mutation, which was positive in some Thy 3a but not in any Thy 3f nodules (*P*=0.04)

✓ Our data support the conviction that, in mutation-negative Thy 3a and Thy 3f nodules, observation should be the first choice when not all instrumental results are suspect

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# Innovation points

A comprehensive table was generated to show our results

| | Thy 3a | Thy 3f | p |
|---|---|---|---|
| **Differentiated thyroid carcinoma** | n=10 | n=7 | |
| PTC | 3 | 1 | ns |
| FvPTC | 5 | 2 | ns |
| FTC | 1 | 2 | ns |
| Hurtle carcinoma | 0 | 1 | ns |
| Medullary thyroid carcinoma | 1 | 0 | ns |
| Indeterminate potential of malignancy | 0 | 1 | ns |
| Malignant with foci of lymphocytic thyroiditis | 2 | 1 | ns |
| **Benign histology** | n=29 | n=42 | |
| Hyperplastic nodule | 19 | 21 | ns |
| Follicular adenoma | 9 | 9 | ns |
| Hurtle cell adenoma | 1 | 12 | 0.01 |
| Benign with foci of lymphocytic thyroiditis | 5 | 10 | ns |
| Benign with incidental microcarcinomas | 3 | 4 | ns |

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# *Conclusions*

- In our revised Thy 3 nodules, malignancy was low and displayed no significant differences between Thy 3a and Thy 3f categories.
- The use of cut-offs based on histology as a reference could reduce surgery.
- In mutation-negative Thy 3 nodules, observation should be the first choice when instrumental results are not suspect.

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