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GP260**Factors influencing nodular goiter – An analysis of the growth rates in long-term follow-up patients**

Takao Kunori, Noriko Nemoto, Shinya Kawaguchi, Akihiko Hashimoto, Hiroshi Yoshida, Satoru Shiraso, Nanako Fujikawa & Fumiaki Shinya
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Background

Nodular goiter (NOD) is one of the most common disease (69% in our thyroid clinic). Although the nodular growth is generally slow, it may be influenced by thyroid hormones, autoimmunity or other factors. The analysis may contribute to predict the outcomes.

Patients and methods

2,213 Japanese patients (2007–2018; Fukushima coast area) with NOD were enrolled in this study. Mean observation period was 6.4 years with 7 visits (1–50). They consist of female (80%, mean age 57) and man (20%, 66). Serology was performed for thyroid peroxidase antibody (TPO), anti-thyroglobulin antibody (TgAb), thyroid stimulating hormone receptor antibody (TSH-RAb) and, in some patients, thyroid stimulating hormone antibody (TSAb). Hormonal assay was performed for free thyroxine (F-T4), free triiodo-thyronine (F-T3), thyroid stimulating hormone (TSH) and thyroglobulin (Tg). Nodules were examined by ultrasonogram to estimate total volumes of nodules (VOL). Pathological diagnosis was made by a fine needle aspiration cytology. Growth rates of nodules (VR%) were calculated from a formula; (current VOL/initial VOL)/years.

Results

1. VR: 33% of NOD remained unchanged after 2 years of follow-up period, whereas 29% reduced and 38% enlarged. 2. TSH: TSH decreased from 1.46 IU/ml (mean) to 0.79 IU/ml after 8 years ($P < 0.05$). 3. TSH and NOD: VR (year) yearly decreased from 7% (0–2 years) to 0.9% (16 years). Patients with high TSH (> 3 IU/ml) showed high VR (26–68%). 4. Thyroid antibodies: Positive (+) rates were 28% in TPO and 22% in TgAb. Both were associated with reduction of VR: no increase of VR in TPO+, whereas an increase (up to 3–8%) in TPO- ($P < 0.05$). TSH-R was associated with an increase of VR (from 2% to 11%). 5. Cytology: VR was highest in cancer ($P < 0.001$). 6. Physical states: VR was high in youth (age 10–30) and decreased in aging ($P < 0.001$). Female had higher VR (3.9) than man (0.13, $P < 0.05$). 7. Drugs: Patients treated with Levothyroxine showed low VR (–2%), whereas those with Methimazole showed high VR (+20%).

Conclusions

Growth of NOD was associated with various factors including TSH, thyroid autoantibodies and age. The activity appeared to be lost according to the follow-up periods.

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GP261**Evaluating effects of thyrotrophin receptor antibody positivity on cytology and histopathology in patients with graves disease**

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Aim

It has been reported that thyrotrophin receptor antibody (TRAb) is associated with frequency and aggressiveness of thyroid cancer in patients with Graves disease (GD). However, there is not any data regarding the effects of TRAb on cytology and histopathology results of patients with nodular GD. Thus, the aim of the present study is to evaluate the effects of TRAb on cytology and histopathology results in patients with nodular or multinodular thyroid disease on the basis of GD.

Materials and methods

Clinical data of patients with GD who had thyroidectomy and preoperative TRAb levels were reviewed retrospectively. The cytology and histopathology results of 548 nodules from 598 patients with GD were evaluated for the present study.

Results

Of 598 patients, 189 (31.6%) were men and 409 (68.4%) were women. However 352 patients did not have nodular disease on preoperative thyroid ultrasound, 74

had only one nodule and 172 had ≥ 2 nodules. 517 (86.5%) patients had benign and 81 (13.5%) had malignant final histopathology. In malignant group, 77 (95.1%) patients had papillary thyroid carcinoma, 2 (2.5%) had follicular thyroid carcinoma, 1 (1.2%) had thyroid tumor of uncertain malignant potential, and 1 (1.2%) had hurthle cell thyroid carcinoma. However, TRAb was detected as positive in 359 (60%) patients, it was found as negative in 239 (40%) patients. There were 185 nodules in TRAb positive group and 363 nodules in TRAb negative group, and there was no significant difference in cytology results between groups ($P = 0.181$). Malignancy was detected in 48 (13.4%) and 33 (13.8%) patients with TRAb positive and negative patients, respectively ($P = 0.878$), and there was not any difference in histopathology results between groups ($P = 0.161$). Furthermore, there was no difference in features of carcinoma such as capsular, vascular, and lymphatic invasions between TRAb positive and negative groups ($P > 0.05$).

Conclusion

In the present study, it was found that malignancy rate was similar in TRAb positive and negative patients. Contrary to literature, TRAb positivity was not associated with increased malignancy rate and also had no effect on cytology and histopathology results in patients with GD.

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GP262**Classification of thyroid nodules by ultrasound in clinical practice: the added value of the judgment of the skilled endocrinologist**

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Background and aim

Several ultrasound (US) classifications for thyroid nodules have been proposed. Since most of them are hardly applicable in clinical practice, we set up the Modena US Thyroid Classification (MUT) that stratifies the risk of malignancy considering both knowledge derived from scientific literature and clinician subjective impression. The aim of the present study was to test the diagnostic accuracy of different thyroid US classification systems, AACE/ACE-AME, American Thyroid Association (ATA), British Thyroid Association (BTA), and MUT, and to evaluate inter-classification agreement.

Methods

We prospectively enrolled 111 patients (33M, 78F; age 19–75) candidate for surgery because of indeterminate, suspicious or malignant cytology. All patients underwent neck US before surgery and a score according to MUT was assigned: 1 not certainly nodular; 2 not suspect; 3 indeterminate; 4 suspect; 5 very suspect. Then, we retrospectively classified nodules according to AACE/ACE-AME, ATA and BTA, thanks to the detailed collection of each nodule US features in a preformed checklist. US pattern was related to histology. Sensitivity, specificity, diagnostic cut-off value and accuracy of each classification were calculated. The overall agreement between classifications was quantified by Bland-Altman test. The agreement between single nodule analysis by different classifications was evaluated considering Weighted Cohen's Kappa.

Results

Fifteen patients had uninodular and 96 multinodular goiter, for a total of 457 nodules. MUT has the highest accuracy (AUC 0.808) and specificity (89%), followed by ATA and BTA, and finally by AACE/ACE-AME. ATA and BTA are highly interchangeable and MUT is comparable to both of them. AACE/ACE-AME is the least interchangeable with all the other classifications. Considering agreement between single nodule analyses by different classifications, ATA and BTA had the best ($\kappa = 0.723$); AACE/ACE-AME showed slight agreement with BTA ($\kappa = 0.177$) and MUT ($\kappa = 0.183$), and fair agreement with ATA ($\kappa = 0.282$); MUT had fair agreement with both ATA ($\kappa = 0.291$) and BTA ($\kappa = 0.271$).

Conclusions

Our data analysis to quantify the agreement between different classification systems confirms the reliability and reproducibility to classify malignancy. However, results bring out the limit in specificity of the current reference classifications, which improves when the subjective impression of the clinician is considered.

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