Asymptomatic destructive thyroiditis changes on post-operative thyroid RFA for 69 thyroid nodules

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Abstract

【Objective】
Radio frequency ablation (RFA) has been reported that it was safe and useful treatment for thyroid nodules and was already being applied in clinical settings. However, the literature on thyroid hormone change after RFA has been founded. We here report that the change of thyroid hormone level and progress after RFA treatment.
【Methods】
We have 69 nodules, 56 patients (50 females and 6 males, mean age 50.3(range, 23-78y.o), which consisted of 58 hyperplastic nodules and 11 AFTNs. We excluded follicular lesions. RFA was performed under careful ultrasound guidance and intraoperative ablated area was estimated with US contrast agents. Post-therapeutic changes were followed with blood test. Thyroid stimulate hormone (TSH), Thyroid function (FT3, FT4) and serum Thyroglobulin level were evaluated before and after treatment in 1, 3, 6, 12 months.
【Results】
TSH level were 1.32±1.44 (μIU/ml) before RFA, 0.53±0.54, 1.53±1.22 in next day, 1M, respectively. FT3 level were 3.27±0.56(pg/ml), 4.45±0.56, 3.09±0.26, FT4 level were 1.12±0.17(ng/ml), 1.7±0.61, 1.13±0.14, Thyroglobulin level were 285.8±411.8(ng/dl), 18261.6±21418.4, 168.2±150.7 in a similar way. These changes which appeared in the next day represent a destructive thyroiditis. But patients never appealed hyperthyroidism symptom such as tachycardia, fatigue, sudoresis and so on. Then, 1month after from treatment, all of the data became normal level without treatment, and preserved during observation period.
【Conclusion】
Thyroid RFA is the safe and powerful tool for the treatment of benign thyroid nodules. We would like to keep in mind the existence of destructive changes in the thyroid function.

Objective

- Radio frequency ablation (RFA) has been reported that it was safe and useful treatment for thyroid nodules and was already being applied in clinical settings.
- The literature on thyroid hormone change after RFA has been founded.
- We here report that the change of thyroid hormone level and progress after RFA treatment.

Methods

Patients

- 69 cases (56 patients)
- Age: mean 50.3 years old (range, 23 to 78)
- Sex: F:M = 50:6
- Follow-up: mean 44.4 month (range, 8 to 81)

Hyperplastic nodules	58 cases
AFTN, TMNG	11 cases
Total	**69 cases**

Procedure

- RF devise: 17-19G RFA needle with 10-20mm active tip
  (Cool-tip RF system®, VIVA RF Generator and Electrode®)
- Plan a treatment area --- Gray scale, color flow Doppler, Enhanced US
- Prevent a thermal damage --- skin burn, nerve damage, etc…
- Performed at 30-100W
- Add a PEI treatment --- Case of cystic lesion
- Evaluate the effect --- Gray scale, color flow Doppler, Enhanced US

Treatment course

- Between Apr 2010 and Apr 2016
- Follicular lesions were excluded

Prehospital
・Investigation of indication for RFA.
・Informed consent of RFA, operation and alternative treatment.

Admission
・Local anesthesia --- In the morning of operation day.
・General anesthesia --- On the day before the operation day.

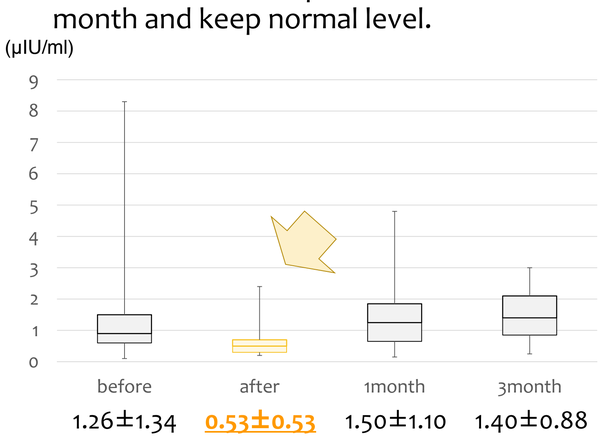
Discharge
・In the morning of the next day.
・Checking clinical symptoms.

Follow-up
・Medical examination --- Imaging(CT & US) & blood test(TSH, FT3, FT4, Thyroglobulin).
・1, 3, 6, and 12 months after treatment.

Results

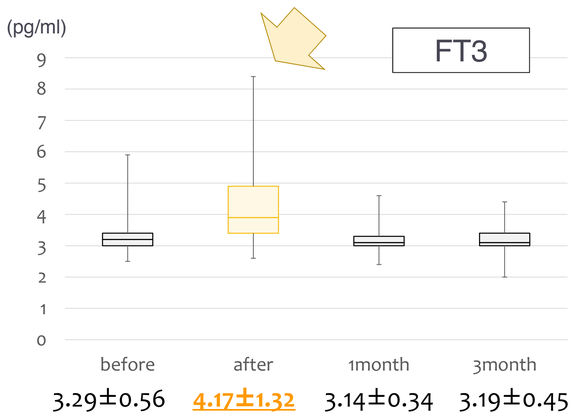
TSH

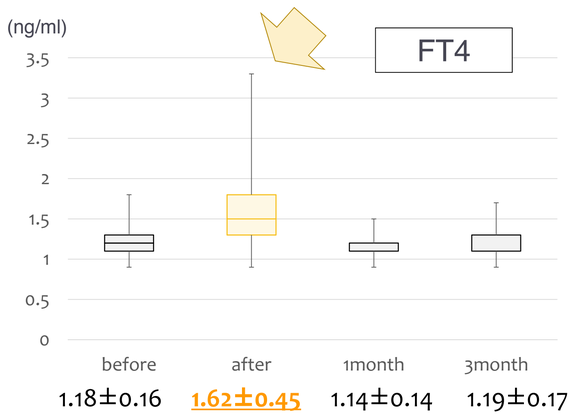
- TSH decreased on the next day of treatment.
- **It was found 37 cases(53.6%).**
- It recovered to the pre-treatment level in a month and keep normal level.



FT3, FT4

- FT3 and FT4 increased on the next day of treatment.
- **These changes were found 40cases(58.0%).**
- It recovered to the pre-treatment level in a month.

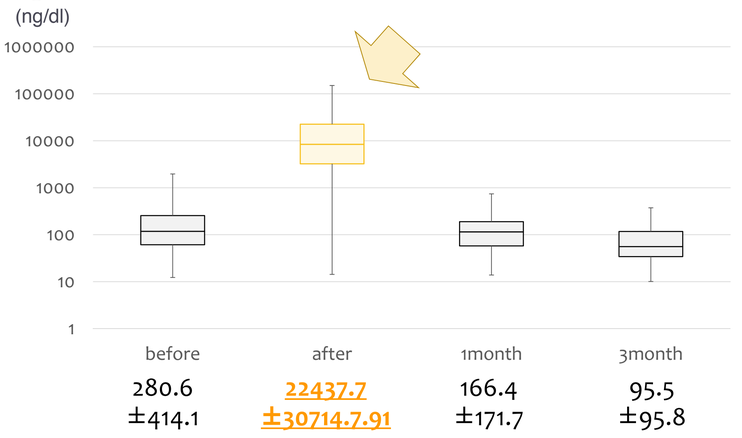




Mean±SD

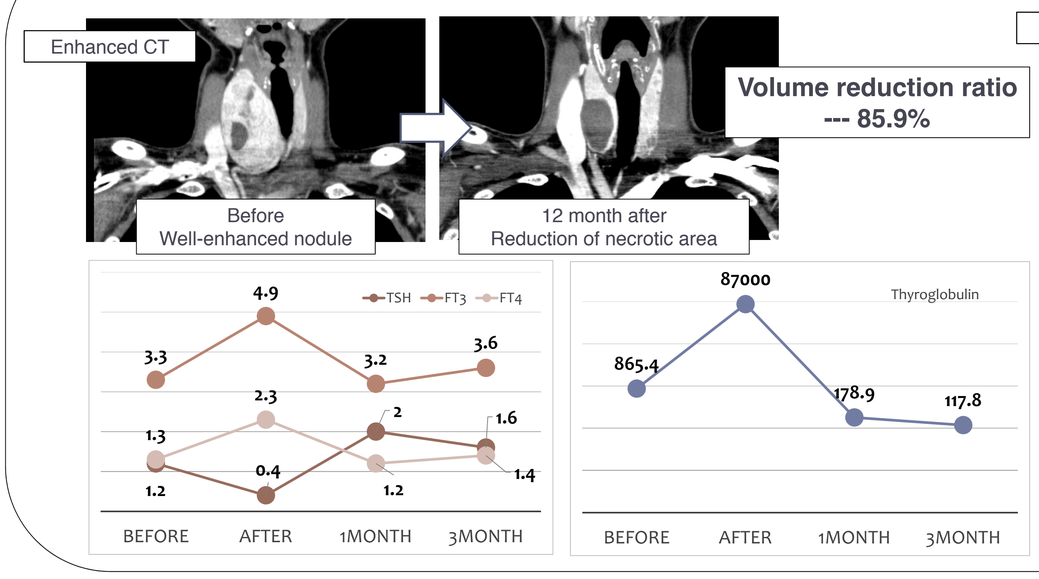
Thyroglobulin

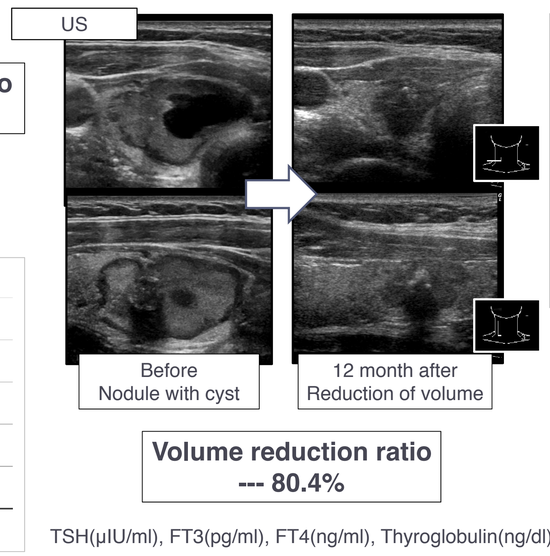
- Serum thyroglobulin increased significantly on the next day of treatment.
- **This change was found all cases.**
- It recovered to the pre-treatment level in a month and gradually decreased.



Either clinical or subclinical hyperthyroidism were found 44 cases(63.8%).
No patients complained any hyperthyroidism symptom.

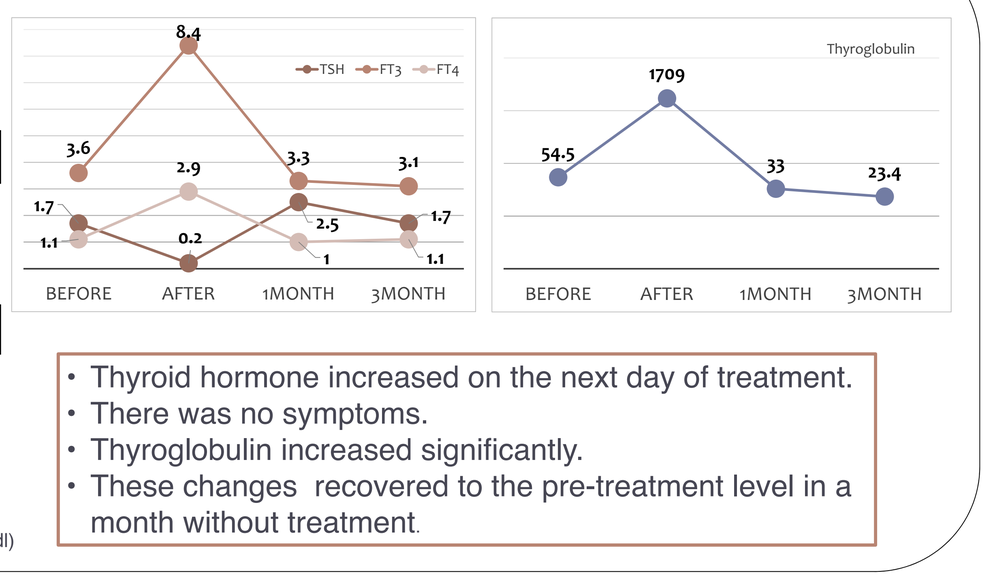
Case 1 ~ 25 year-old, female, Adenomatous Nodule ~





TSH(μIU/ml), FT3(pg/ml), FT4(ng/ml), Thyroglobulin(ng/dl)

Case 2 ~ 49 year-old, female, Adenomatous Nodule ~



- Thyroid hormone increased on the next day of treatment.
- There was no symptoms.
- Thyroglobulin increased significantly.
- These changes recovered to the pre-treatment level in a month without treatment.

Discussion & Conclusion

- These changes which appeared in the next day represent a destructive thyroiditis.
  ⇒**Thermal destruction of thyroid cells caused these changes.**
- 1month after from treatment, all of the data became normal level without treatment, and preserved during observation period.
  ⇒**High degree condition of thyroid hormone might be kept only temporarily.**
- Patients never appealed hyperthyroidism symptom such as tachycardia, fatigue, sudoresis.
  ⇒**No patients required medical care.**

- **In this study, we found that the number of patients suffered a destructive thyroiditis changes after RFA treatment for thyroid nodules.**
- **Sometimes, thyroid hormone become extremely higher after RFA treatment. Accordingly we might observe carefully to the patient with heart disease, unstable thyroid function and so on.**

Thyroid RFA is the safe and powerful tool for the treatment of benign thyroid nodules.
We would like to keep in mind the existence of destructive changes in the thyroid function.