Original Research Article

To correlate cytological finding with clinical presentation and antithyroglobulin antibodies

Dupinder Kaur1,*, Pooja Agarwal1

1Dept. of Pathology, Shri Ram Murti Smarak Institute of Medical Sciences, Bareilly, Uttar Pradesh, India

ARTICLE INFO

Article history:
Received 10-03-2021
Accepted 12-04-2021
Available online 29-05-2021

Keywords:
Cytological
Clinical
Antithyroglobulin & Antibodies

ABSTRACT

Background & Methods: All cases undergoing FNAC for thyroid swelling during study period were included in the study. The data was collected as per the pre-designed proforma including the general profile, clinical examination, laboratory investigations, USG findings and FNAC observations.

Result: In our study we found, correlation between antithyroglobulin antibody levels, 100-500 IU/ml (53), 501-1000 IU/ml (87) & >1000 IU/ml (10). Chi square = 8.2068; p-value= 0.7120 (insignificant). Correlation between T3 levels, Normal (18), Low (24) and High (108). Chi square = 12.3129; p-value= 0.3580 (insignificant). Correlation between T4 levels, Normal (00), Low (24) and High (108). Chi square = 19.9758; p-value= 0.00012 (significant). Correlation between T4 levels, Normal (00), Low (24) and High (108). Chi square = 79.0167; p-value<0.00001 (significant).

Study Designed: Prospective Observational Study.

Conclusion: Antithyroglobulin antibodies may be insignificant statistically, yet they should always be tested for, in order to establish a better understanding of the cases. The ATG levels should be kept in mind before prescribing a treatment regime for such cases. This not only leads the pathologists to continuously seek for better than the present investigations but also leads clinicians to decide a dynamic management regime. Though there is a defined protocol for thyroid work up of clinically diagnosed patients, newer and more sensitive test need to be devised.

© This is an open access article distributed under the terms of the Creative Commons Attribution License (https://creativecommons.org/licenses/by/4.0/) which permits unrestricted use, distribution, and reproduction in any medium, provided the original author and source are credited.

1. Introduction

The thyroid is provided with blood vessel blood from the predominant thyroid course, a part of the outside carotid conduit, and the mediocere thyroid supply route, a part of the thyrocervical trunk, and in some cases by an anatomical variation the thyroid ima vein, which has a variable origin.1 The unrivaled thyroid conduit parts into foremost and back branches providing the thyroid, and the substandard thyroid corridor parts into prevalent and sub-par branches.2 The unrivaled and substandard thyroid supply routes consolidate behind the external piece of the thyroid lobes.3 The venous blood is depleted by means of predominant and center thyroid veins, which channel to the inward jugular vein, and through the substandard thyroid veins. The sub-par thyroid veins begin in an organization of veins and channel into the left and right brachiocephalic veins. The two supply routes and veins structure a plexus between the two layers of the case of the thyroid organ.

Iodine is fundamental for the creation of the thyroid chemicals. Iodine (I0) goes in the blood as iodide (I−), which is taken up into the follicular cells by a sodium-iodide symporter.4 This is a particle channel on the cell layer which in a similar activity transports two sodium particles and an iodide particle into the cell. Iodide at that point goes from inside the cell into the follicular space, through the activity of pendrin, an iodide-chloride antiporter. In the follicular space, the iodide is then oxidized to iodine.5 This makes it more receptive, and the iodine is appended to the dynamic tyrosine units in thyroglobulin by the chemical thyroid peroxidase. This structures the antecedents of thyroid chemicals monoiodotyrosine (MIT),...
Table 1: Correlation between antithyroglobulin antibody levels and diagnosis (n=150)

| ATG       | Granulomatous Thyroiditis | Lymphocytic Thyroiditis | Hashimoto's Thyroiditis | Total |
|-----------|--------------------------|-------------------------|-------------------------|-------|
| <100 IU/ml| 00                       | 00                      | 00                      | 00    |
| 100-500 IU/ml| 19                       | 25                      | 09                      | 53    |
| 501-1000 IU/ml| 26                       | 37                      | 24                      | 87    |
| >1000 IU/ml| 03                       | 00                      | 7                       | 10    |
| Total     | 48                       | 62                      | 40                      | 150   |

In our study we found, correlation between antithyroglobulin antibody levels, 100-500 IU/ml (53), 501-1000 IU/ml (87) & >1000 IU/ml (10). Chi square = 8.2068; p-value = 0.7120 (insignificant)

Table 2: Correlation between T3 levels and diagnosis (n=150)

| T3 Levels | Granulomatous Thyroiditis | Lymphocytic Thyroiditis | Hashimoto's Thyroiditis | Total |
|-----------|--------------------------|-------------------------|-------------------------|-------|
| Normal    | 00                       | 00                      | 18                      | 18    |
| Low       | 02                       | 00                      | 22                      | 24    |
| High      | 45                       | 63                      | 00                      | 108   |
| Total     | 47                       | 63                      | 40                      | 150   |

In our study we found, correlation between T3 levels, Normal (18), Low (24) and High (108). Chi square = 12.3129; p-value = 0.3580 (insignificant)

Table 3: Correlation between T4 levels and diagnosis (n=150)

| T4 Levels | Granulomatous Thyroiditis | Lymphocytic Thyroiditis | Hashimoto's Thyroiditis | Total |
|-----------|--------------------------|-------------------------|-------------------------|-------|
| Normal    | 00                       | 00                      | 00                      | 00    |
| Low       | 02                       | 00                      | 40                      | 42    |
| High      | 45                       | 63                      | 00                      | 108   |
| Total     | 47                       | 63                      | 40                      | 150   |

In our study we found, correlation between T4 levels, Normal (00), Low (24) and High (108). Chi square = 19.9758; p-value = 0.00012 (significant)

Table 4: Correlation between TSH levels and diagnosis (n=150)

| TSH Levels | Granulomatous Thyroiditis | Lymphocytic Thyroiditis | Hashimoto's Thyroiditis | Total |
|-----------|--------------------------|-------------------------|-------------------------|-------|
| Normal    | 02                       | 00                      | 00                      | 02    |
| Low       | 43                       | 63                      | 00                      | 106   |
| High      | 02                       | 00                      | 40                      | 42    |
| Total     | 47                       | 63                      | 40                      | 150   |

In our study we found, correlation between T4 levels, Normal (00), Low (24) and High (108). Chi square = 79.0167; p-value<0.00001 (significant).

and diiodotyrosine (DIT).

Thyroid autoantibodies show up for the most part with the presence of lymphocytes in the focused organ. Lymphocytes produce antibodies focusing on three diverse thyroid proteins: Thyroid peroxidase Antibodies (TPOAb), Thyroglobulin Antibodies (TgAb), and Thyroid animating chemical receptor Antibodies (TRAb). A few patients who are solid might be positive for more than one of these antibodies. Specialists who go to such patients will in all probability do routine subsequent meet-ups on the patient’s wellbeing since, despite the fact that it is profoundly impossible that they will introduce any thyroid issues, there is as yet an opportunity that they will build up some sort of brokenness with time.

The side effects may differ contingent upon the thyroid capacity, for example hyperthyroidism or hypothyroidism. Hyperthyroidism can cause perspiring, fast pulse, tension, quakes, weariness, trouble dozing, unexpected weight reduction, and distending eyes. Hypothyroidism can cause weight acquire, exhaustion, dry skin, balding, narrow mindedness to cold, and stoppage. The impacts of this illness might be lasting however can once in a while be transient. Manifestations may travel every which way relying upon whether the individual gets treatment, and whether the treatment takes effect.

2. Materials and Methods

The present study is conducted from 2013 to 2016 among 150 admitted patients. All cases going through FNAC for thyroid growing during study period were remembered for the examination. The information was gathered according to the pre-planned
proforma including the overall profile, clinical assessment, research center examinations, USG discoveries and FNAC perceptions.

Patients going to any clinical office with thyroid expanding during the investigation time frame were arbitrarily chosen for the examination. After complete history and careful clinical assessment, FNAC was being performed with a 22 measure needle in 10 ml needle with or without USG direction according to prerequisite.

2.1. Inclusion criteria

All the patients with palpable thyroid swelling undergoing FNAC procedure at Amaltas Institute of Medical Sciences, Dewas.

2.2. Exclusion criteria

Already diagnosed by FNAC as thyroid swelling other than thyroiditis.

3. Result and Discussion

The case with normal TSH levels belonged to Granulomatous Thyroiditis group. 43 cases of Granulomatous Thyroiditis and all 63 cases of Lymphocytic Thyroiditis had low TSH levels. All 40 cases of Thyroiditis and 1 case of Granulomatous Thyroiditis had High TSH levels. This correlation was found to be statistically significant.

The T4 levels were high in 45 (out of 47) cases of Granulomatous Thyroiditis and all 63 cases of Lymphocytic Thyroiditis while the levels were low in all 40 cases of Hashimoto’s Thyroiditis.

The correlation of T3 levels was, however, found to be statistically insignificant. The studies with a positive correlation were those done by Brent et al.\(^9\) Vahid et al.\(^9\) and Basbug et al.\(^10\)

Frequency of immune system thyroiditis was 13.4%. More patients were females (96.7%), 53.3% of cases were found in the age of 21-40 years. 80.6% patients had a diffusely developed thyroid organ clinically. 92.7% patients showed grade I/II goiter. USG likewise showed a diffuse extension in 85.3% cases. 150 patients with immune system thyroiditis, (73.3%) patients were euthyroid whereas 32 (21.3%) patients were hypothyroid at the hour of FNAC.\(^11\) 08(5.3%) patients found to be hyperthyroidism & 08% patients showed subclinical hypothyroidism. Pervasiveness of euthyroid immune system thyroiditis showed up high in our examination. Among the cytomorphological highlights, presence of lymphocytes was reliably found in all instances of constant lymphocytic thyroiditis/blended thyroiditis.\(^12\)

4. Conclusion

Antithyroglobulin antibodies may be insignificant statistically, yet they should always be tested for, in order to establish a better understanding of the cases. The ATG levels should be kept in mind before prescribing a treatment regime for such cases. This not only leads the pathologists to continuously seek for better than the present investigations but also leads clinicians to decide a dynamic management regime. Though there is a defined protocol for thyroid work up of clinically diagnosed patients, newer and more sensitive test need to be devised.

5. Source of Funding

No financial support was received for the work within this manuscript.

6. Conflict of Interest

The authors declare they have no conflict of interest.

References

1. Melmed S, Polonsky KS, Larsen PR, Kronenberg H. Williams Textbook of Endocrinology . In: and others, editor. 12th Edn. Saunders; 2011. p. 331.
2. Young B. Wheater’s functional histology: A text and colour atlas . In: 5th Edn. Oxford: Churchill Livingstone; 2006. p. 333–5.
3. Dorland’s. Illustrated Medical Dictionary. In: 32th Edn. Elsevier Saunders; 2012. p. 999–1562.
4. Smith TJ, Hegedus L. Graves’ Disease". N Engl J Med. 2016;375(16):1552–65.
5. Talley N. Clinical Examination . In: The endocrine system. Churchill Livingstone; 2014. p. 355–62.
6. Larsen WJ. Human embryology . In: 3rd. edn. Philadelphia, Pa: Churchill Livingstone; 2001. p. 372–4.
7. Giani C, Fierabracci P, Bonacci R, Gigliotti A, Campani D, Negri FD, et al. Relationship between breast cancer and thyroid disease: relevance of autoimmune thyroid disorders in breast malignancy. J Clin Endocrinol Metab. 1996;81(4):990–4.
8. Chen YK, Lin CL, Chang YJ, Cheng FT, Peng CL, Sung FC, et al. Cancer risk in patients with Graves’ disease: a nationwide cohort study. Thyroid. 2013;23:879–84. [doi:10.1089/thy.2012.0568]
9. Roudsari FV, Ayati S, Torabizadeh A, Ayatollahi H, Esmaeli H, Shahabian M, et al. Serum calcium and magnesium concentration in preeclamptic and normal pregnancies; a comparative study. J Reprod Infertil. 2008;9:256–62.
10. Basbug M, Aygen E, Tayyar M, Tutus A, Kaya E, Oktem O, et al. Correlation between maternal thyroid function tests and endothelin in preeclampsia eclampsia. Obstet Gynecol. 1999;94:551–5.
11. Shweta P, Bijwe AD, Chopwad. Autoimmune thyroiditis - Correlation of clinico-radiological presentation, thyroid profile and cytomorphological spectrum. IAIM. 2018;5(1):50–63.
12. Akamizu T, Amino N. Hashimoto’s Thyroiditis. In: Groot LD, Negri FD, et al. Textbook of Endocrinology . In: 12th Edn. Saunders; 2012. p. 999–1562.

Author biography

Dupinder Kaur, Resident
Pooja Agarwal, Associate Professor
