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**Original Research Paper**

# A Study of Thyroid Profile in Acute Ischemic Stroke Patients

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**Abstract**
*Acute stroke is one of the common causes of morbidity and mortality in India. In the Study, we are trying to estimate the prevalence of undiagnosed thyroid disorder/dysfunction in acute ischemic stroke patients and to correlate the relationship between thyroid dysfunction and acute ischemic stroke.*

**Aims and Objectives**

- To study the prevalence of undiagnosed thyroid disorders in acute ischemic stroke patients
- To correlate relationship between thyroid dysfunction and ischemic stroke

**Study Design**

Single centre, cross sectional and analytical study

**Period of study**

The work was carried from December2016 to December 2017

**Ethical Committee Approval**

Ethical committee approval obtained from the institutional ethical committee

**Inclusion Criteria**

- Willingness of the patient
- Age > 13 years
- All acute ischemic stroke patients supported by an imaging (MRI/CT)

**Exclusion Criteria**

- Non-willingness of the patient
- Age ≤13 of age
- Patients with known thyroid disorder/ disease

**Method of Collection of Data**

**History and clinical examination**

Detailed history obtained from all participants using proforma which includes age, sex, presenting complaints, duration of illness, history of alcoholism and smoking, past history of diabetes and hypertension, detailed clinical examination.

**Imaging**

All acute ischemic stroke patients included in this study are subjected to an imaging either MRI/CT brain to support the diagnosis.

**Blood Sample Collection**

- Nearly 8ml of blood are collected in the fasting state.
- Fasting lipid profile (Serum Cholesterol, TGL, HDL, LDL & VLDL) and fasting thyroid profile (F T3, F T4, TSH) are been analysed
- Blood lipid parameters were estimated with help of autoanalyser based on enzymatic calorimetric process

- Thyroid profile was estimated using CLIA method (Chemiluminescence's immunoassay).

## Analysis of data

**Age wise distribution of the patients**

| Particulars | No.of patients | Percentage |
|---|---|---|
| <55yrs | 28 | 31.1 |
| >55yrs | 62 | 68.9 |
| Total | 90 | 100.0 |

**Distribution of the patients based on FT3**

| Particulars | No.of patients | Percentage |
|---|---|---|
| <1.4 | 11 | 12.2 |
| 1.4 to 4.4 | 79 | 87.8 |
| **Total** | **90** | **100.0** |

**Distribution of the patients based on FT4**

| Particulars | No.of patients | Percentage |
|---|---|---|
| <0.8 | 9 | 10.0 |
| 0.8 to 1.8 | 81 | 90.0 |
| Total | 90 | 100.0 |

**Distribution of the patients based on TSH**

| Particulars | No.of patients | Percentage |
|---|---|---|
| <0.45 | 5 | 5.6 |
| 0.45 to 4.5 | 58 | 64.4 |
| >4.5 | 27 | 30.0 |
| Total | 90 | 100.0 |

**Distribution of the patients based on thyroid profile**

| Particulars | No.of patients | Percentage |
|---|---|---|
| Normal Thyroid Profile | 46 | 51.1 |
| Subclinical Hypothyroidism | 19 | 21.1 |
| Hypothyroidism | 8 | 8.9 |
| Subclinical Hyperthyroidism | 5 | 5.6 |
| SES | 12 | 13.3 |
| Total | 90 | 100.0 |

**Descriptive Statistics**

| Variables | N | Min. | Max. | Mean | S.D |
|---|---|---|---|---|---|
| Age | 90 | 35 | 84 | 62.71 | 12.777 |
| Serum Cholesterol | 90 | 108 | 276 | 198.61 | 33.097 |
| TGL | 90 | 80 | 356 | 188.03 | 45.169 |
| HDL | 90 | 16 | 69 | 48.27 | 9.353 |
| VLDL | 90 | 18 | 71 | 37.64 | 8.956 |
| LDL | 90 | 39 | 191 | 112.70 | 33.259 |
| FT3 | 90 | .50 | 4.10 | 2.0509 | .68488 |
| FT4 | 90 | .02 | 1.80 | 1.0489 | .33468 |
| TSH | 90 | .30 | 11.46 | 3.3934 | 2.40667 |
| Seru / HDL | 90 | 2.31 | 11.38 | 4.2928 | 1.28836 |

**Chi-square test shows comparison of age between various types of thyroid pattern**

| AGE | Normal Thyroid Profile | | Subclinical Hypothyroidism | | Hypothyroidism | | Subclinical Hyperthyroidism | | SES | | Total | | Statistical inference |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | *n* | % | *n* | % | *n* | % | *n* | % | *n* | % | *n* | % | |
| <55yrs | 13 | 28.3% | 5 | 26.3% | 3 | 37.5% | 2 | 40.0% | 5 | 41.7% | 28 | 31.1% | $X^2$=1.339 Df=4 .855>0.05 Not Significant |
| >55yrs | 33 | 71.7% | 14 | 73.7% | 5 | 62.5% | 3 | 60.0% | 7 | 58.3% | 62 | 68.9% | |
| **Total** | **46** | **100.0%** | **19** | **100.0%** | **8** | **100.0%** | **5** | **100.0%** | **12** | **100.0%** | **90** | **100.0%** | |

**Chi-square test shows comparison of age between various types of thyroid pattern**

| AGE | Normal Thyroid Profile | | Subclinical Hypothyroidism | | Hypothyroidism | | Subclinical Hyperthyroidism | | SES | | Total | | Statistical inference |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | *n* | % | *n* | % | *n* | % | *n* | % | *n* | % | *n* | % | |
| 35 to 45yrs | 5 | 10.9% | 1 | 5.3% | 1 | 12.5% | 1 | 20.0% | 3 | 25.0% | 11 | 12.2% | |
| 46 to 55yrs | 8 | 17.4% | 4 | 21.1% | 2 | 25.0% | 1 | 20.0% | 2 | 16.7% | 17 | 18.9% | $X^2$=7.442 Df=16 .964>0.05 Not Significant |
| 56 to 65yrs | 12 | 26.1% | 5 | 26.3% | 2 | 25.0% | 1 | 20.0% | 4 | 33.3% | 24 | 26.7% | |
| 66 to 75yrs | 11 | 23.9% | 5 | 26.3% | 0 | .0% | 1 | 20.0% | 2 | 16.7% | 19 | 21.1% | |
| 76 to 85yrs | 10 | 21.7% | 4 | 21.1% | 3 | 37.5% | 1 | 20.0% | 1 | 8.3% | 19 | 21.1% | |
| Total | 46 | 100.0% | 19 | 100.0% | 8 | 100.0% | 5 | 100.0% | 12 | 100.0% | 90 | 100.0% | |

## Conclusion

From this study, we came to the following conclusions:

- Thyroid dysfunction is not uncommon in acute ischemic stroke patients
- Thyroid dysfunctions can affects various risk factors of ischemic stroke, so identification and management of these disorders can reduce recurrence of ischemic stroke
- Based on findings, I suggested that thyroid function test may be needed in acute ischemic stroke patients. And also the repeat thyroid function test for the patient with suspected euthyroid state after 6 months.

## References


1. Akram Mohammed Al-Mahdawi; Thyroid function test in patient with ischemic stroke; karbala J. Med. Vol.6, No.2, Dec, 2013
2. Davidson s principles and practice of Medicine 23rd edition
3. Ganong s review of Medical Physiology 25th edition
4. Harrison s principles of Medicine 19th edition
5. Thyroid Dysfunction in Acute ischemic stroke in Medical Intensive care unit in Zagazig university hospitals; International Journal of Advanced Research(2014), Volume 2, Issue 7, 385-391
6. Williams textbook of Endocrinology 13th edition
7. Deb P, Sharma S and Hassan KM (2010). Pathophysiologic mechanisms of acute ischemic stroke. An overview with emphasis on therapeutic significance beyond thrombolysis. Pathophysiology. 17 (3): 197–218.
8. Fisher M, and Mcleod M (2008): Stroke. Lancet; 371: 1612-1623.
9. Feigin VL, Weibers DO, Nikitin YP, et al (1998): Risk factors of ischemic stroke in a Russian Community, a populationbased casecontrol study. Stroke. 29: 34-39
10. Surks MI, Onrz E, DeNms GH et al.,(2004): Subclinical thyroid disease: scientific review and guidelines for diagnosis and management. J AMA, 291 :228-38.
11. Fazio S, Palmieri EA, Lombardi G et al (2004): Effects of Thyroid Hormone on the Cardiovascular System. Recent Progr Horm Res, 59:31-50.
12. Osman F, Daykin J, Sheppard M, et al (2000):, Cardiac rhythm abnormalities in thyrotoxicosis - the explanation for excess vascular mortality. J Endocrinol;164:321-329.
13. Bengtsson D, Brudin L, Wanby P and Carlsson M (2012): Previously unknown thyroid dysfunction in patients with acute iscehmic stroke. Acta Neurol Scand: 136: 98-102.
14. Hage M, Zantout SM, and Azar ST (2011):, Thyroid Disorders and Diabetes Mellitus, Journal of Thyroid Research.,77:312-320.
15. Warlow C, Sudlow C, Dennis M, Wardlaw J, Sandercock P.Stroke. Lancet 2003; 362:1211– 1224.
16. Allan H. Ropper, Martin A.Samuels. Cerebrovascular Diseases, Adams and

Victor's Priciples of Neurology, Ninth Edition; 2009:

17. Donnan GA, Fisher M, Macleod M, Davis SM. Stroke. Lancet 2008;371: 1612–1623.
18. Coceani M, Iervasi G, Pingitore A, et al. Thyroid hormone and coronary artery disease: from clinical correlations to prognostic implications. Clin Cardiol. Jul 2009;32(7):380-5
19. Paul S. Jellinger, Donald A. Smith, Adi E. Mehta. AACE lipid and Atherosclerosis Guidelines. Endocr Pract 2012; 18(Suppl 1)
20. Wade SS, Claiborne J, Donald E. Cerebrovascular Diseases. In: Stephen LH (edr). Harrison's Neurology in Clinical Medicine. 1st edn. New York: McGraw Hill; 2006: 233-260.
21. Weetman, AP, McGregor, AM. Autoimmune thyroid disease further developments in our understanding. Endocr Rev 1994; 15:788.
22. Towfighi, A, Saver, JL, Engelhardt, R, Ovbiagele, B. A midlife stroke surge among women in the United States. Neurology 2007; 69:1898.
23. Lewington S, Clarke R, Qizilbash N, Peto R, Collins R. Age-specific relevance of usual blood pressure to vascular mortality: a metaanalysis of individual data for one million adults in 61 prospective studies. Lancet 2002; 360:1903–1913.