

PREVALENCE OF SICK EUTHYROID SYNDROME IN NON-THYROIDAL ILLNESS

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Abstract:

INTRODUCTION: Sick euthyroid syndrome is also known as low triiodothyronine (T3) syndrome or non-thyroidal illness syndrome which is characterized by alterations in the levels of thyroid hormones in the absence of any disorder related to thyroid gland or hypothalamic-hypophysial axis. Abnormal findings on thyroid functions tests which occur in the setting of a non thyroidal illness (NTI) without preexisting hypothalamic-pituitary and thyroid gland dysfunction. In the 1970s initially described low T3 (triiodothyronine) syndrome, known as the euthyroid sick syndrome or the nonthyroidal illness syndrome (NTIS). This can be representing especially in in critically ill patients, particularly those admitted to intensive care units. Although by definition these abnormalities are not related to intrinsic diseases of hypothalamus-pituitary-thyroid axis though rather represent imbalances in thyroid hormone production, metabolism, and action. As there is progress in illness gradual development of a more complex syndrome associated with low levels of T3 and thyroxine (T4). **AIM:** The main objective of this study is to study clinical profile sick euthyroid syndrome in Non-thyroidal Illness. **MATERIAL AND METHODS:** Total 60 patients were included in this study with the diagnosis of euthyroid syndrome with suggestive of Non-thyroidal Illness. From all the patients detail history were recorded as data as well as all the necessary lab investigations were recorded as hemogram, renal function test, liver function test, ECG, Chest roentgenogram, and thyroid function status and serum choline esterase. **RESULT:** Total 60 patients were including in this study within the period of study with different age group. Patients with age group 20-30 years age group shows majority followed by age group 30-40 years age group as 33.3% and 30% respectively. Among the 60 patients only 15 patients were observed as sick Euthyroid. Out of 15 patients with sick Euthyroid 60% showed Low T3 alone and 40% shows changes in T3, T4 & TSH Levels. **CONCLUSION:** Non-thyroidal illness syndrome is common among male in comparisons to female with the middle ages. Since the mechanism of sick euthyroid syndrome is similar to sick euthyroid syndrome in other critical care illnesses. Therefore more and more studies should be done for the better evaluation of the prognostic value of NTIS in critically ill. Thyroid functions should be assessed routinely in patients for prevent of Non-thyroidal illness syndrome.

KEYWORDS: sick euthyroid syndrome, Non-thyroidal Illness, Thyroid

Introduction:

Sick euthyroid syndrome is also known as low triiodothyronine (T3) syndrome or non-thyroidal illness syndrome which is characterized by alterations in the levels of thyroid hormones in the absence of any disorder related to thyroid gland or hypothalamic-hypophysial axis^{i,ii}. Abnormal findings on thyroid functions tests which occur in the setting of a non thyroidal illness (NTI) without preexisting hypothalamic-pituitary and thyroid gland dysfunction^{iii,iv&v}.

Most common thyroid function abnormalities in populations were found as a decreased level of serum total triiodothyronine (T3) with acute illness. Within 2 hours after the onset of severe physical stress that can be detected. Altered thyroid hormone

levels can be found in acute and chronic medical illnesses, starvation, surgery, trauma, bone marrow transplantation, myocardial infarction and can be seen in any severe systemic illness^{vi,vii}.

In the 1970s initially described low T3 (triiodothyronine) syndrome, known as the euthyroid sick syndrome or the nonthyroidal illness syndrome (NTIS). This can be representing especially in in critically ill patients, particularly those admitted to intensive care units. Although by definition these abnormalities are not related to intrinsic diseases of hypothalamus-pituitary-thyroid axis though rather represent imbalances in thyroid hormone production, metabolism, and action. As there is progress in illness gradual development of a more complex syndrome associated with low levels of T3 and thyroxine (T4

)^{viii},^{ix}. More extreme changes in hormone pattern poorer the prognosis^x. In cases of acute organophosphate poisoning also been seen in Sick euthyroid syndrome^{xi}.

In several physiological processes as normal growth development and metabolism Thyroid hormones are important and some imbalance in their levels could lead to a wide range of clinical conditions^{xii}.

The main objective of this study is to study clinical profile sick euthyroid syndrome in Non-thyroidal Illness.

MATERIAL AND METHODS:

This is a prospective study which is done in the period of one years and carried out at Vedanta Institute of Medical Sciences Dahanu Palghar, Maharashtra., in department of medicine. Total 60 patients were included in this study with the diagnosis of euthyroid syndrome with suggestive of Non-thyroidal Illness. From all the patients detail destroy were recorded as data as well as all the necessary lab investigations were recorded as hemogram, renal function test, liver function test, ECG, Chest roentgenogram, and thyroid function status and serum cholrine esterase.

RESULT:

Total 60 patients were including in this study within the period of study with different age group. Patients with age group 20-30 years age group shows majority followed by age group 30-40 years age group as 33.3% and 30% respectively as shown in table below.

Table 1: showing the no of patients according to age group in years.

Age (Years)	numbers	Percentage (%)
10-20	12	20
20-30	20	33.3
30-40	18	30
40-50	7	11.7
50-60	3	5
Total	60	100

Out of 60 patients males patients shows more percentage of illness in comparing to female as shown in table below.

Table 2: showing no of patients according to gender.

Gender	Number	Percentage (%)
Male	37	61.7
Female	23	38.3
Total	60	100.0

Among the 60 patients only 15 patients were observed as sick Euthyroid as shown in table below.

Table 3: showing magnitude of sick euthyroid

	Number	Percentage (%)
Normal Thyroid	45	75
Sick Euthyroid	15	25
Total	60	100

Out of 15 patients with sick Euthyroid 60% showed Low T3 alone and 40% shows changes in T3, T4 & TSH Levels as shown in table below.

Table 4: showing spectrum of sick euthyroid

Spectrum	Number	Percentage (%)
Low T3 Alone	9	60
Low T3, T4 Low TSH	6	40
Total	15	100

DISCUSSION:

According to WHO studied reported as about 3 million cases of Non-thyroidal Illness and 40,000 deaths annually and majority were under the age group of thirty^{xiii}. In this study showed that there was no influence on thyroid hormone alteration in NTI due to age which is similar to other studied done by Burrows AW et al^{xiv}. There are many studies which also reported high prevalence of SES in age between 20 -30 years subjects undergoing surgery^{xv}. From earlier studies report suggested that age are not influences in these alterations^{xvi}. Ames RG et.al of turkey studied showed as the mean age group of Non-thyroidal Illness was 30±15 years^{xvii}. In India the most common age group to be affected was 20-30 years (36.6%) which is similar to this study¹³. In this study male (61.7%) were more in compared to female (38.3%) which is also similar to many studied as Malik et al^{xviii} and K. Raghavan et al^{xix}. In this study out of 60 patients' 15 (25%) patients was showed incidence of sick euthyroid which is similar to the study of Guven et al in Turkey^{xx}. Although there was only 15 patients were sick euthyroid and among these 15 patients 9(60%) had low free T3 alone and 6(40%) had low T3,T4 and TSH which is also similar to the study of Guven et al²⁰ in Turkey showed as 2 had low fT3,2 had fT4 and 3 had low TSH. Although in this study mean T3 was significantly low in patients with acute Non-thyroidal Illness than with those with acute or chronic NTI. Hormone profile has been by now declared as a consistent feature of SES as many other studies shows^{xxi},^{xxii}&^{xxiii}.

CONCLUSION:

Non-thyroidal illness syndrome is common among male in comparisons to female with the middle ages. This study showed sick euthyroid syndrome in Non-thyroidal illness is more prevalence in age of 20-30 years of age group in which males are more common. Since the mechanism of sick euthyroid syndrome is similar to sick euthyroid syndrome in other critical care illnesses. Therefore more and more studies should be done for the better evaluation of the prognostic value of NTIS in critically ill. Thyroid functions should be assessed routinely in patients for prevent of Non-thyroidal illness syndrome.

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