ORIGINAL RESEARCH PAPER

General Medicine

A STUDY ON OCCURRENCE OF SICK EUTHYROID SYNDROME IN ST ELEVATION MYOCARDIAL INFARCTION AND IT'S PROGNOSTIC SIGNIFICANCE

KEY WORDS: MI- myocardial infarction, NTI- non thyroidal illness

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ABSTRACT

sick euthyroid syndrome can be described as abnormal findings in thyroid function tests that occur in the setting, a illness which is not related to thyroid gland or without preexisting hypothalamic pituitary and thyroid gland dysfunction. Recovery from underlying illness is accompanied by disappearance of the thyroid abnormalities. The aim of the present study is to see the occurrence of sick euthyroid syndrome in patients with ST elevation MI & to evaluate the prognostic significance in determining severity of acute myocardial infarction.

INTRODUCTION

Clifford Irvine in 1968 reported , reduced T4 half time in athletes. this was the first awareness of thyroid hormonal concentration alterations which were not due to problem in thyroid gland and pituitary gland. In 1971 they also found that transient increase in T4 concentration during bicycle training, which was reversible after 3 days rest. Same author had made similar observation in horses, where thyroxine levels increased in training and adaptation to cold, half life decreases in trained animals[1-2]

Later, Harland and Orr described a significantly decreased half-life of T4, when rats were exposed to a cold environment ,transiently changed concentrations of thyroid hormones were first described in 1971 by Terjung and Tipton, who reported increased concentrations of free and total T4 during bicycle ergometer training and reduced total T4 levels 24 h later [3]

abnormal findings on thyroid function tests that occur in the setting of non thyroidal illness[NTI],without preexisting hypothalamic-pituitary and thyroid gland dysfunction[4]. After recovery from illness these thyroid function tests will become completely reversible.it is not a true syndrome[5]

A decreased level of serum total triiodothyronine is the most common thyroid function abnormality noted in patients with acute illness, the change in the thyroid hormone concentration due acute or chronic stress is attributed to many theories from including cytokines like IL6, TNF alpha, interferons which directly act on hypothalamus, pituitary, TRH,TSH , thyroid binding globulin, cytokines and other mediators decrease the activity of type 1 deiodinase and decrease the capacity of T3 nuclear receptors[6]

Aim of present study is to see the occurrence of sick euthyroid syndrome in patients presented with acute ST elevated myocardial infarction

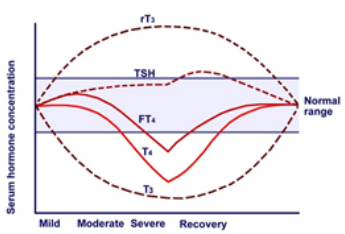

Figure 1: Relationship between serum thyroid hormone concentrations and severity of nonthyroidal illness

Sources:https://emedicine.medscape.com/article/118651-overview

MATERIAL AND METHODS:

A hospital based prospective study was carried out for the period of 6 months at medical intensive care unit of Jhalawar medical college, a total of 100 patients with acute ST elevation myocardial infarction were considered for study, a detailed history clinical examination, blood investigations, ECG, thyroid function tests were done on Day1 and Day 7.the data obtained was analyzed using appropriate software

RESULTS:

Out of 100 cases ,42 cases of ST elevation myocardial infarction patients have sick euthyroid syndrome, so the occurrence of sick euthyroid syndrome in our patients is 42%. P value is o.258. The mortality is heigh among the patients with sick euthyroid syndrome. total 6 patients have died (14.28% mortality rate).prognosis worsens with higher Killip class. In our study patients who presented with Killip class 01, the occurrence of sick euthyroid syndrome was 25%, in Killip 02 occurrence of SES is 59%, Killip 03 occurrence of SES is 67%, in Killip 04 it is 100%. P value is 0.05 which is statistically significant.

Table – 1 Observations & Result Of The Study

SES positive	Result	P value
Total number	42	0.218
Killip class 1	14	0.01
Killip class 02	20	0.032*
Killip class 03	4	0.05*
Killip class 04	4	0.046*
Total mortality	14.28%	0.176

p value below 0.05 is statistically significant *

CONCLUSIONS

acute myocardial infarction is one of the most common critical illness leading to hospitalisation, occurrence of sick euthyroid syndrome was common in acute ST elevation myocardial infarction patients ,the most common thyroid hormone abnormality found is low T3 levels as demonstrated 71% of SES has low T3 syndrome, the changes in thyroid hormone abnormalities return to normal euthyroid status after the recovery. Thyroid hormone system is rapidly down regulated in AMI. this may be beneficial in AMI.

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