INTRODUCTION
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Abnormalities in thyroid hormone economy occurs in ill patients, malnourished patients and patients undergoing surgery etc.

All these insults influence every aspect of thyroid hormone economy from the control of secretion to the delivery, metabolism and ultimate action. Most consistent abnormalities are in the transport and peripheral metabolism of the thyroid hormones and in their total and free concentrations in the blood. This has led to the condition known as “sick euthyroid syndrome” which is characterized by significant decrease in serum triiodothyronine (T₃), slight decrease in serum thyroxin (T₄), increase in reverse T3 level and no significant change in thyroid stimulating hormone (TSH) level.

Hormones are important in the adaptive metabolic processes. However circulating levels of hormones do not always explain endocrine changes in PEM, because cellular response to hormonal stimulation may also be altered. There are changes in serum level of insulin, growth hormone, somatomedins (insulin like growth factor), epinephrine, glucocorticoids , renin, aldosterone, thyroid hormones and gonadotropins. They contribute to the maintenance of energy homeostasis through increased glycolysis and lipolysis, increased aminoacid mobilization preservation of visceral proteins, through increased break down of muscle proteins, and decreased energy metabolism.

Thyroid gland is the sole source of T₄, but most of the T₃ in blood is derived from the peripheral conversion of T₄ by 5′ deiodinase. Both T₃ and T₄ in blood are associated with plasma
proteins. The binding proteins normally include thyroxine – binding globulin, thyroxine binding pre albumin (TBPA) and albumin. In children with PEM concentration of all three thyroid hormone-binding proteins are extremely low and the serum T₄ and T₃ levels decline abruptly, often into hypothyroid range. However serum TSH concentration remains unchanged.

All non-thyroid illness in which sick euthyroid syndrome has been documented have nothing more in common than catabolic state. Hence, it has been suggested that the decrease in thyroid hormone level may be a protective phenomenon to limit protein catabolism and lower energy requirements in non-thyroidal illness. The length of time required for the development of and recovery from the sick euthyroid syndrome are less well appreciated. But the degree to which thyroid functions are affected by non-thyroid illness is related to the severity of the illness and can severe as a useful, if relatively non-specific, prognostic indicator.

In adults in different studies significant correlation of serum T₃ and T₄ levels and patient prognosis, has been shown and mortality is significantly higher in patients of non-thyroid illness with low T₄ and progressively declining T₃ levels.

However in children and especially in infants no definite correlation has yet been found. If the correlation can be established, children with a poor prognosis (low T₃, T₄ levels) could be identified earlier and this may allow for closer observation and therapeutic intervention. Keeping these objectives in mind, this study was planned.