

Letter to the Editor: Reverse T3; a Reliable Diagnostic Test for Discerning between Euthyroid Sick and Central Hypothyroidism

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Dear. Editor

It is often difficult to distinguish between euthyroid sick syndrome and central hyperthyroidism in presence of acute or chronic illness because of close similarities in usual thyroid function tests as suggested in a recent publication. Therefore, the treatment of central hyperthyroidism, if present, is frequently delayed. However, the utility of reverse T3 is not assessed to distinguish between these two disorders. We recently demonstrated subnormal reverse T3 in central hypothyroidism in contrast to supernormal levels in euthyroid sick syndrome avoiding the delay in treatment. Therefore, we propose to utilize reverse T3 as a simple reliable discriminatory test in distinguishing between euthyroid sick syndrome and central hypothyroidism.

A recent publication titled ‘Utility of Thyroid Function Testing in inpatient setting’ is informative and interesting [1]. However, surprisingly, several publications regarding original research on this topic are missing [2]. I concur with the authors that it is often difficult to discern between euthyroid sick syndrome and ‘true’ thyroid dysfunction, especially with central hypothyroidism of pituitary or hypothalamic origin during illness, which requires retesting following recovery [2]. Some authors have suggested presence of ‘transient hypothalamic hypothyroidism’ during illness [3] [4]. In a recent study [5], we documented elevated reverse T3 in euthyroid sick syndrome (Table 1) consistent with the data in the literature, including the aforementioned report [1], in contrast to significantly lower or even subnormal reverse T3 levels in central hypothyroidism (Table 1). Therefore, it is apparent that determination of reverse T3 may help distinguish euthyroid sick syndrome from central hypothyroidism in inpatient setting leading to appropriate management.

Table 1. Age and serum free T4, free T3, TSH and reverse T3 concentrations in subjects with Euthyroid sick syndrome and central hypothyroidism. Reprinted with permission from references 5.

	Normal Subjects	Range	Euthyroid Sick Syndrome	Central Hypothyroidism
Age (Years)	48 ± 4.8	25 - 71	50 ± 3.6	47 ± 4.4
Free T4 (ug/dl)	1.26 ± 0.15	0.89 - 1.70	0.82 ± 0.02	0.85 ± 0.02
Free T3 (ng/dl)	3.5 ± 0.32	2.3 - 4.2	2.61 ± 0.23	3.05 ± 0.18
TSH (uU/ml)	3.1 ± 0.42	0.45 - 4.67	1.67 ± 0.38	1.21 ± 0.50
Reverse T3 (ng/dl)	17.6 ± 2.3	11 - 26	23.81 ± 1.2	8.78 ± 0.55*

*p < 0.01 vs Normal subjects.

Conflicts of Interest

The authors declare no conflicts of interest regarding the publication of this paper.

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