



## Incidence of euthyroid sick syndrome in traumatic brain injury (TBI) patients

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### Abstract

**Background:** Euthyroid sick syndrome is a condition in which serum levels of thyroid hormones are low in patients who have a nonthyroidal systemic illness but who are euthyroid.

**Keywords:** Traumatic brain injury TBI, euthyroid sick syndrome (ESS), free T<sub>3</sub>, free T<sub>4</sub>, TSH

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**Introduction:** Traumatic brain injury (TBI) is an important cause of death and disability in young adults, and may lead to physical disabilities and long-term cognitive, behavioral, psychological and social defects. (1-3).

Substantial changes in serum levels of thyroid hormones have been described following many nonthyroidal illnesses, in particular after major surgery (4), burns (5) most of critical illness (6) and drug therapy (7). Decreased levels of T<sub>3</sub> and free T<sub>3</sub> is associated with increases in reverse T<sub>3</sub> and normal TSH levels which known as euthyroid sick syndrome (ESS) have been observed in such conditions (8). This pattern is suggestive of a decrease in thyroid function of hypothalamic or pituitary origin as TSH levels remain normal despite low thyroid hormone levels.

Euthyroid sick syndrome (ESS) effects on patients suffering from traumatic brain injury (TBI) have received little attention. Moreover, there is limited evidence that serum levels of thyroid-related hormones might influence functional outcome in the acute phase of brain damage. However, the relationship is complex, and the relevance for functional outcome and the therapeutic interventions remain the subject of ongoing researches (9).

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