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# CHRONOBIOLOGICAL THYROID AXIS ACTIVITY COULD PREDICT ANTIDEPRESSANT RESPONSE IN MAJOR DEPRESSION

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**Background:** We previously demonstrated that the difference between 23.00h and 08.00h TSH response to TRH tests on the same day (ΔΔTSH test) is reduced in about 75% of drug-free depressed inpatients. This study sought to determine whether this chronobiological index, at baseline and after 2 weeks of treatment, could predict antidepressant response.
**Methods:** The ΔΔTSH test was performed in 50 drug-free DSM-IV euthyroid major depressed inpatients and 50 hospitalized controls. After 2 weeks of antidepressant treatment the ΔΔTSH test was repeated in all inpatients. Antidepressant response was evaluated after 6 weeks of treatment.
**Results:** At baseline, ΔΔTSH values were significantly lower in patients compared to controls ($p < 0.000001$): 38 patients showed reduced values (i.e. ΔΔTSH ≤ 2.5 mIU/L; sensitivity, 76%; specificity, 98%). After two weeks of treatment, 20 patients showed ΔΔTSH normalization (among them 18 were subsequent remitters), while 18 patients did not normalize their ΔΔTSH (among them 15 were non remitters) ($p < 0.00001$). Among the 12 patients who had normal ΔΔTSH values at baseline, 8 out 9 who had still normal values after 2 weeks of treatment were remitters, while the 3 with worsening thyroid axis function (i.e. reduced ΔΔTSH value after 2 weeks of treatment) were non-remitters ($p < 0.02$).
**Conclusion:** Our results suggest that after 2 weeks of antidepressant treatment: 1) an abnormal ΔΔTSH test could predict non-remission, and 2) ΔΔTSH normalization is associated with subsequent remission. Thus, chronobiological restoration of the thyroid axis activity precedes clinical improvement and may predict the therapeutic outcome in major depression.

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