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Interleukin-1 receptor blockade does not affect endotoxin-induced changes in plasma thyroid hormone and thyrotropin concentrations in man.

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Abstract

Interleukin-1 (IL-1) has been implicated as a mediator of the euthyroid sick syndrome. The effects of IL-1 can be blocked by the naturally occurring IL-1 receptor antagonist (IL-1ra). In the present study, iv administration of endotoxin was used as a human model of the euthyroid sick syndrome. To assess the role of endogenous IL-1 in endotoxin-induced changes in plasma thyroid hormone and TSH concentrations, 18 healthy postabsorptive humans were studied on a control study day, followed 3 days later by a study day on which they were randomly assigned to one of three treatments: a 6-h infusion of recombinant human IL-1ra alone (133 mg/h), endotoxin alone (lot EC-5; 20 U/kg), or both endotoxin and IL-1ra. Administration of IL-1ra alone did not affect the plasma concentrations of thyroid hormones or TSH compared with those on the control day. Endotoxin injection was associated with decreases in T4 ($P = 0.06$ vs. the control day), free T4 ($P = 0.02$), T3 ($P < 0.001$), and TSH ($P < 0.0001$) and a rise in rT3 ($P < 0.001$), reproducing the major features of the euthyroid sick syndrome. Coinfusion of IL-1ra did not influence these endotoxin-induced changes. Our results suggest that endogenous IL-1 does not play an important role in the alterations in plasma thyroid hormone and TSH concentrations induced by m endotoxemia in healthy humans.

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