LETTER TO THE EDITOR

Recombinant human TSH acutely impairs endothelium-dependent vasodilation

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We read with interest the review article by Duntas & Biondi dealing with clinical and quality of life consequences induced by short-term hypothyroidism (1). Withdrawal of levothyroxine therapy exacerbates neuropsychiatric symptoms and increases cardiovascular risk, although these effects are usually reversible restoring a condition of stable euthyroidism (1). Short-term hypothyroidism is associated with cardiac abnormalities, increased peripheral vascular resistance, and endothelium dysfunction. In this setting, the recent use of recombinant human thyrotropin (rhTSH) in the clinical practice of thyroid carcinoma represents a valid alternative to levothyroxine withdrawal. The authors state that rhTSH administration is not accompanied by significant cardiac alterations and induces beneficial effects on the vascular system by increasing circulating nitric oxide (2). In this regard, we have recently assessed the acute effects of TSH on endothelial function in patients monitored for differentiated thyroid carcinoma (DTC) (3). Our data demonstrate that acutely raising serum TSH into the supraphysiological range leads to an acute impairment of endothelium-dependent vasodilation along with a significant increase in blood interleukin (IL)-6, tumour necrosis factor α (TNF α), and lipoperoxide levels. These observations are in keeping with the *in vitro* evidence of functional TSH receptors in several extra-thyroidal tissues, such as cardiomyocytes (4), aortic endothelium (5), and bone marrow cells (6), in which TSH is able to directly induce IL-6 and TNF α production (7). TNF α is a pivotal NO-controlling cytokine and may promote the expression of inducible NO synthase, leading to increased oxidative stress (8). This mechanism may explain the increased NO metabolites previously described in patients receiving rhTSH for the follow-up of DTC (2). Therefore, while agreeing with the authors that rhTSH administration is generally safe and able to avoid most signs and

symptoms of short-term hypothyroidism, we underline that rhTSH *per se* may acutely induce low-grade inflammation and endothelial function impairment.

References

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