



Weight Gained after Smoking Cessation May Be Caused by Onset of Hypothyroidism

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Carlé A, Bülow Pedersen I, Knudsen N, Perrild H, Ovesen L, Banke Rasmussen L, Jørgensen T, Laurberg P. Smoking cessation is followed by a sharp but transient rise in the incidence of overt autoimmune hypothyroidism—a population-based, case-control study. Clin Endocrinol 2012;77:764-72.

SUMMARY • • • • • •

Background

Current smoking is associated with a low prevalence of thyroid autoantibodies; however, the thyroid autoantibody level increases following smoking withdrawal and could be a risk factor for the development of hypothyroidism. The aim of the authors was to assess the association between smoking habits (smoking cessation in particular) and the development of autoimmune hypothyroidism.

Methods

This was a population-based, case-control study conducted from 1997 through 2000. The Danish Investigation of Iodine Intake and Thyroid Diseases (DanThyr) prospectively identified all patients with newly diagnosed overt hypothyroidism in a Danish population. A total of 140 (59.5% of all patients diagnosed with autoimmune hypothyroidism) agreed to participate. Patients were identified prospectively by population monitoring (2,027,208 person-years of observation) of all thyroid-function tests performed in the two well-defined geographical areas: Aalborg, which had moderate iodine deficiency, and Copenhagen, which had only mild iodine deficiency. All subjects with a high serum TSH (>5.0 mU/L) in combination with a low T_4 estimate identified by the register were individually scrutinized to verify or disprove new overt hypothyroidism; subjects with antibody concentrations above the functional sensitivity given by the manufacturer (TPOAb, >30 kU/L, TgAb, >20 kU/L) were regarded as antibody-positive. Only patients with primary autoimmune hypothyroidism were considered for this study. Individually, age-, sex-, and region-matched euthyroid controls (n = 560) were simultaneously included from the same population. Participants gave details on smoking habits, including smoking withdrawal, and other lifestyle factors. Smoking habits were verified by measuring urinary cotinine, a nicotine metabolite.

Results

Incident hypothyroidism was very common in people who had recently stopped smoking (odds ratio [OR] vs. never smokers (95% CI): <1 year after quitting smoking, 7.36 [2.27 to 23.9]; 1 to 2 years, 6.34 [2.59 to 15.3]; 3 to 10 years, 0.75 [0.30–1.87]; >10 years, 0.76 [0.38 to 1.51]). Results were consistent in both sexes and irrespective of age. Within 2 years after smoking cessation, the percentage of cases of hypothyroidism attributable to smoking cessation was 85%. Current smoking was not associated with an altered risk of overt hypothyroidism (OR, 0.92 [0.57 to 1.48]). The authors found no difference in years of smoking, pack-years of smoking, or preferred type of tobacco consumption.

Conclusions

The risk of receiving a diagnosis of overt autoimmune hypothyroidism is increased more than six-fold in the first 2 years after smoking cessation. Clearly, smoking cessation is vital to prevent death and severe disease. However, awareness of hypothyroidism should be high in people who have recently quit smoking, and virtually any report of symptoms should prompt thyroid-function testing.

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ANALYSIS AND COMMENTARY • • • • • •

The possible association of tobacco smoking and thyroid disease has been reported in the literature for some time, such as the higher incidence of goiter in smokers (1), risk of Graves' disease (2), development of autoimmune thyroiditis (3), and worsening of Graves' orbitopathy (4). However, several studies have had conflicting results with regard to smoking's relationship to hypothyroidism (5). The appearance of thyroid antibodies after smoking cessation has been reported (6). In the present study, the cases and controls showed no statistical differences between years of smoking, pack-years of smoking, and type of smoking. There was also no statistical difference between the two geographical areas, one with mild iodine deficiency and the other with moderate iodine deficiency. The high incidence of autoimmune hypothyroidism within the first 2 years after smoking cessation is striking; the median serum TSH was 54.5 mU/L, and as compared with controls, patients newly diagnosed with hypothyroidism had a 7.5 kg higher body weight, which the authors attributed to fluid accumulation. Weight gain and tiredness are not unusual symptoms following tobacco cessation, and these are often attributable to "lack of nicotine." Advising our patients to quit cigarette smoking is a routine recommendation in our daily medical practice. Perhaps we clinicians should pay more attention to our patients' medical history and keep in mind the possibility of hypothyroidism as the cause of symptoms that appear after smoking cessation.

References

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