

## **IMPAIRED GLUCOSE METABOLISM IS A RISK FACTOR FOR INCREASED THYROID VOLUME AND NODULE PREVALENCE IN A MILD-TO-MODERATE IODINE DEFICIENT AREA**

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**Background/Purpose:** Insulin resistance (IR) is a key factor involved in the pathogenesis of impaired glucose metabolism (IGM). IR is associated with increased thyroid volume and nodule prevalence in patients with metabolic syndrome. Data on the association of thyroid morphology and IGM are limited. This prospective study was carried out to evaluate thyroid volume and nodule prevalence in patients with pre-diabetes and type 2 diabetes mellitus (DM) in a mild-to-moderate iodine deficient area.

**Methods:** Data were gathered on all newly diagnosed patients with pre-diabetes and type 2 diabetes mellitus between May 2008 and February 2010. One hundred fifty six patients with pre-diabetes and 123 patients with type 2 DM were randomly matched for age, gender, and smoking habits with 114 subjects with normal glucose metabolism. Serum thyroid-stimulating hormone (TSH) and thyroid ultrasonography was performed in all participants.

**Results:** Mean TSH level in diabetes group ( $1.87 \pm 0.89$  mIU/L) was higher than control group ( $1.41 \pm 0.76$  mIU/L) and pre-diabetes group ( $1.47 \pm 0.81$  mIU/L) ( $P < 0.0001$  for both). Mean thyroid volume was higher in pre-diabetes ( $18.2 \pm 9.3$  mL) and diabetes ( $20.01 \pm 8.2$  mL) groups than in controls ( $11.4 \pm 3.8$  mL) ( $P < 0.0001$  for both). Percentage of patients with thyroid nodules was also higher in pre-diabetes (51.3%) and diabetes groups (61.8%) than in controls (23.7%) ( $P < 0.0001$  for both).

**Discussion & Conclusion:** Patients with IGM have significantly increased thyroid volume and nodule prevalence. Working on screening programs from the initial diagnosis of diabetics may provide early diagnosis, prevention, and timely treatment of nodular thyroid disease and thyroid cancer in patients with IGM.