

## Extended Abstract

**Relationship between inhomogeneity of thyroid parenchyma and diabetes**Serra Roberta <sup>1</sup>, Menicagli Roberto <sup>2</sup><sup>1</sup>MD Research Pavia University Italy<sup>2</sup>Biochemistry Senior Scientist Roma BioMed Research Lab Milano Italy**Abstract****Background:**

Diseases of the thyroid gland and diabetes mellitus can often be associated with the same patient. A situation of clinical hypothyroidism is often correlated to the ultrasound finding of inhomogeneity of the thyroid parenchyma that can affect glucose tolerance. The purpose of this study is to verify whether this correlation exists between this ultrasound finding and increased glycemic level. Inhomogeneity is the degree of lack of homogeneity, for example the fractional deviation of the local magnetic field from the average value of the field. Inhomogeneities of the static magnetic field, produced by the scanner as well as by object susceptibility, is unavoidable in MRI. Inhomogeneity of the thyroid is not terribly unusual and is usually found when an ultrasound examination of the gland is performed. This is the most sensitive test for it, although it may also be seen on CT scan or nuclear scanning of the thyroid.

**Methods and Material:** We performed thyroid ultrasound on 116 patients whose glycaemia is known. We divided the patients into two subgroups; the first (66 people) presented inhomogeneity, while the second (50) represents the control. We statistically analyzed the results with the Fisher Exact Test.

**Results:**

We found in the group with thyroid inhomogeneity 20 diabetes and 46 not diabetes; in the control group we have 7 diabetes vs 43 not diabetes; the Fisher exact test statistic value is 0.0473. The result is significant at  $p < .05$ .

**Discussion:**

Hypothyroidism is the most common form of thyroid dysfunction in diabetic patients, with a prevalence of 5.7% and 8.6% in the female diabetic population. No of nodules leads to the more or less overt condition of hypothyroidism. Hypothyroidism determines a condition of insulin resistance, which could reduce the absorption capacity of sugars. The thyroid hormone deficiency can cause a reduced expression of the glucose transporters of the bowel brush border, and reduce the glucose absorption capacity. Furthermore, hypothyroidism involves a reduction in the endogenous production of glucose by the liver. The lower ability to metabolize glucose in the periphery is balanced by a reduced hepatic production of glucose and a lower intestinal absorption of carbohydrates. Hyperthyroidism (overactive thyroid) occurs when your thyroid gland produces too much of the hormone thyroxine. Hyperthyroidism can accelerate your body's metabolism, causing unintentional weight loss and a rapid or irregular heartbeat. Several treatments are available for hyperthyroidism. Doctors use anti-thyroid medications and radioactive iodine to slow the production of thyroid hormones. Sometimes, hyperthyroidism treatment involves surgery to remove all or part of your thyroid gland.

**Conclusions:**

This study highlights that thyroid inhomogeneity is a marker for the development of diabetes mellitus-2.