

# THYROID DYSFUNCTION IS ASSOCIATED WITH BIOCHEMICAL MARKERS OF NON ALCOHOLIC FATTY LIVER DISEASE (NAFLD) IN PEDIATRIC POPULATION



P2-562

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## Background

Thyroid dysfunction is a common condition in children and has been associated with metabolic syndrome, hypertension, cardiovascular disease and mortality. Due to the obesity epidemic in pediatric population exists a higher prevalence of nonalcoholic fatty liver disease (NAFLD), a condition associated with insulin resistance and metabolic syndrome.

In adults it has been observed that elevated TSH, even within the normal range, are positively correlated with increased biochemical markers of NAFLD. In pediatric population there is a scarce information.

## Objetives

To investigate if there is association between thyroid function and biochemical markers of NAFLD in pediatric population.

## Methods

82 children 57% (female), 13.5 years old (range 6.1-18.9 year) were studied. Anthropometry, Systolic and Diastolic blood pressure and serum determination of TSH, FT4, AST, ALT, GGT, glucose and lipid profile were performed.

Variables were transformed to log10 prior Pearson correlation. To perform statistical analysis we used STATA SE 12.0 for windows (college station, TX: StataCorp LP)

## Results

TSH and FT4 average was  $3.16 \pm 2.06$  SDS uU/ml and  $1.26 \pm 0.19$  SDS respectively. A positive association between ALT (R:0.35; p<0.01) and GGT (R:0.24; p<0.05) with TSH, but not with AST were seen. There were no association between liver enzymes with FT4 levels. A positive association between triglycerides and TSH (R:0.42; p< 0.001) and a negative association between HDL and TSH (R:-0.33; p <0.001) were seen.

No differences were observed in TSH and FT4 levels between eutrophic, overweight and obese children.

There were no association between SBP, DBP and glycemia with levels of TSH neither with FT4.

Figure 1. Association between TSH and GGT

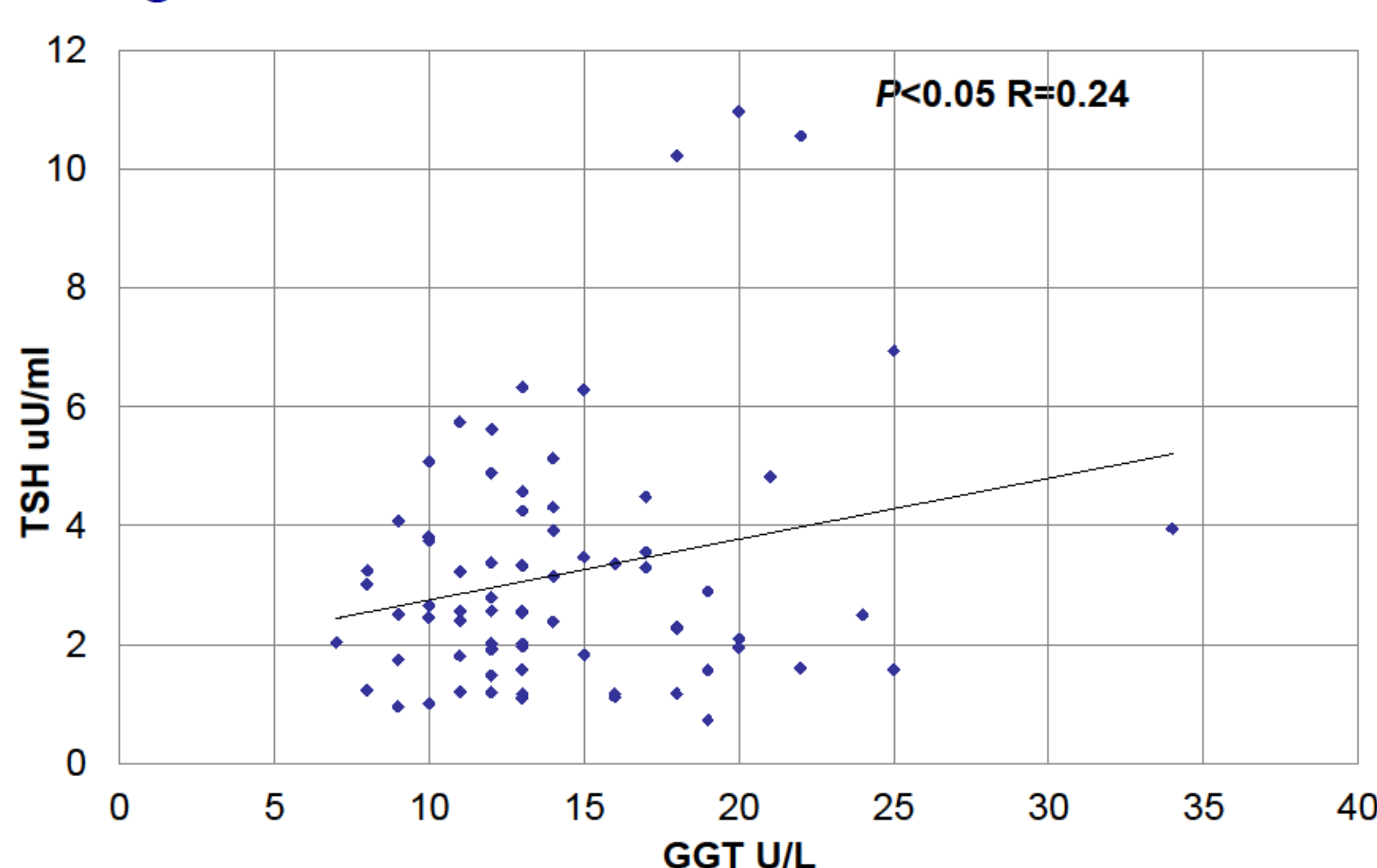


Figure 2. Association between TSH and ALT

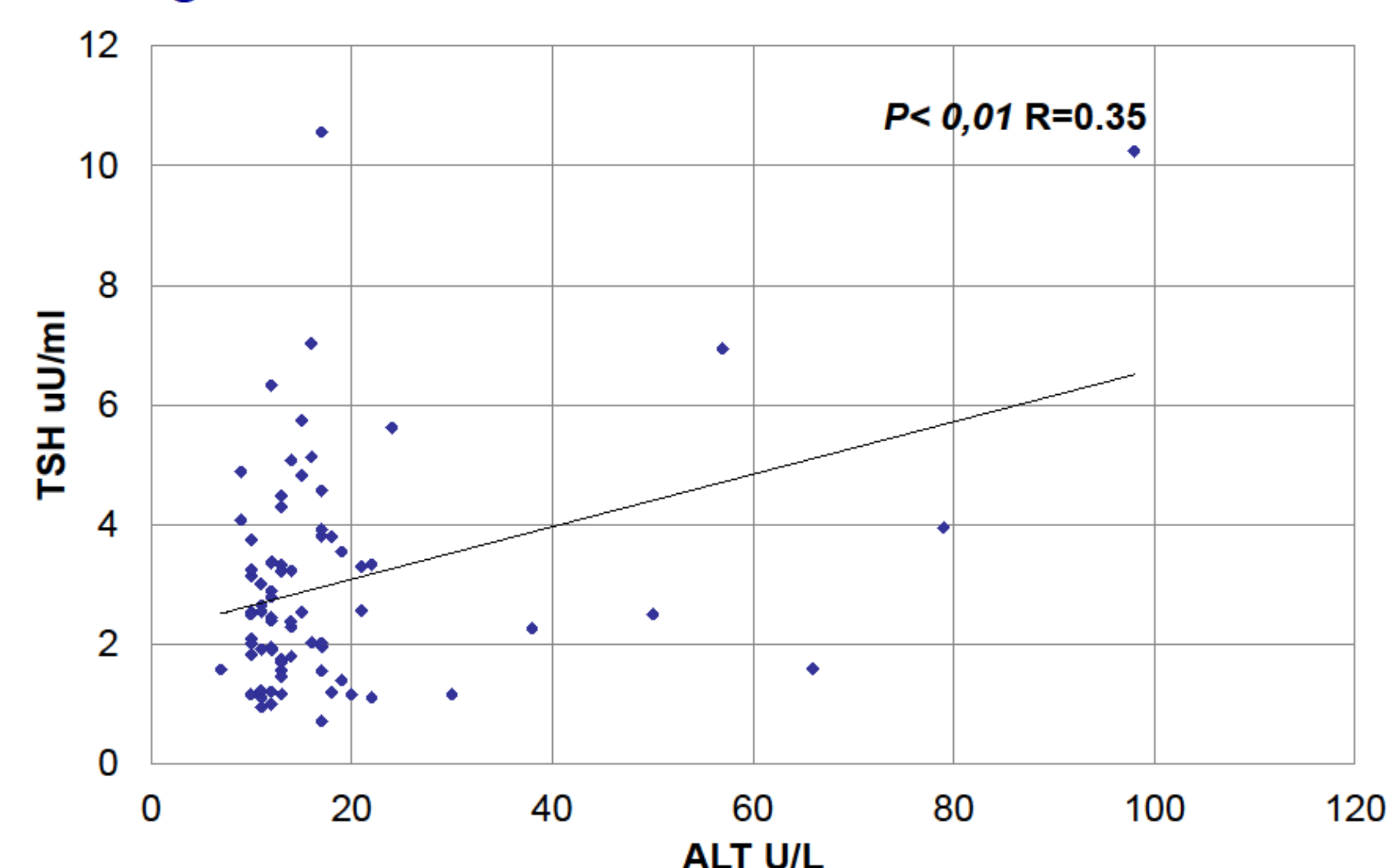


Figure 3 Levels of TSH and FT4 between eutrophic overweight and obese children (percentile)

	eutrophic	overweight	obese	P value
FT4 (ng/dl) <sup>a</sup>	1.28 ± 0.17	1.31 ± 0.17	1.24 ± 0.21	0.49
TSH (uU/ml) <sup>b</sup>	2.70 ± 1.32	3.04 ± 2.28	3.75 ± 2.46	0.15

a. SI unit conversion factor for FT4: ng/dL x 12.872 = pmol/L

TSH levels, even within the normal range, are associated with markers of NAFLD in the pediatric population.

The relationship persists after adjusting for body mass index, suggesting that the thyroid dysfunction could have a direct effect on liver parenchyma independent of nutritional stage. Measurement of liver enzymes is useful for identifying children with NAFLD risk that is a potentially serious chronic disease. More studies are needed to assess the causality of this association and the effect of treatment of thyroid dysfunction in the development of liver disease

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