



Urinary iodine concentrations in pregnant women with gestational and pregestational diabetes mellitus



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BACKGROUND

Urinary iodine concentration (UIC) can reflex recent changes in iodine status and serves as a sensitive marker of current iodine intake. The cut-off for iodine deficiency was determined (appropriate to WHO) like UIC lower than 100 µg/L. (Tab. 1) The median of UIC for adequate iodine intake in pregnancy is 150–249 µg/L. (Tab. 2)

The prevalence of gestational diabetes mellitus (GDM) ranges between 1% and 14%, and it is most frequent in women aged ≥35 years in the second trimester of pregnancy.

Thyroid dysfunction and autoimmune thyroid disease may increase risk of gestational diabetes.

The aim of this study: to map the situation of UIC in pregnant women with pregestational and gestational diabetes and to explore relationship with thyroid function.

METHODS

- UIC was measured in 252 pregnant women screened positive for pregestational or gestational diabetes.
- Serum levels of autoantibodies against thyroid peroxidase (TPOAb) and thyroglobulin (TgAb), thyroid-stimulating hormone (TSH) and free thyroxine (FT4) were determined.
- Screened women were on the diabetic diet, but we have not exact data.

Tab. 1 The iodine status based on median of UIC in adults

Median urinary iodine (µg/L)	Iodine intake	Iodine status
<20	Insufficient	Severe iodine deficiency
20-49	Insufficient	Moderate iodine deficiency
50-99	Insufficient	Mild iodine deficiency
100-199	Adequate	Adequate iodine nutrition
200-299	Above requirements	May pose a slight risk of more than adequate iodine intake in these populations
≥300	Excessive	Risk of adverse health consequences (iodine-induced hyperthyroidism, autoimmune thyroid disease)

Tab. 2 The iodine status based on median of UIC in pregnancy

Median urinary iodine (µg/L)	Iodine intake	Iodine status
<150	Insufficient	Iodine deficiency
150-249	Adequate	Adequate iodine nutrition
250-499	Above requirements	May pose a slight risk of more than adequate iodine intake in these populations
≥500	Excessive	Risk of adverse health consequences (iodine-induced hyperthyroidism, autoimmune thyroid disease)

Fig. 1 The distribution of UIC in women with GDM

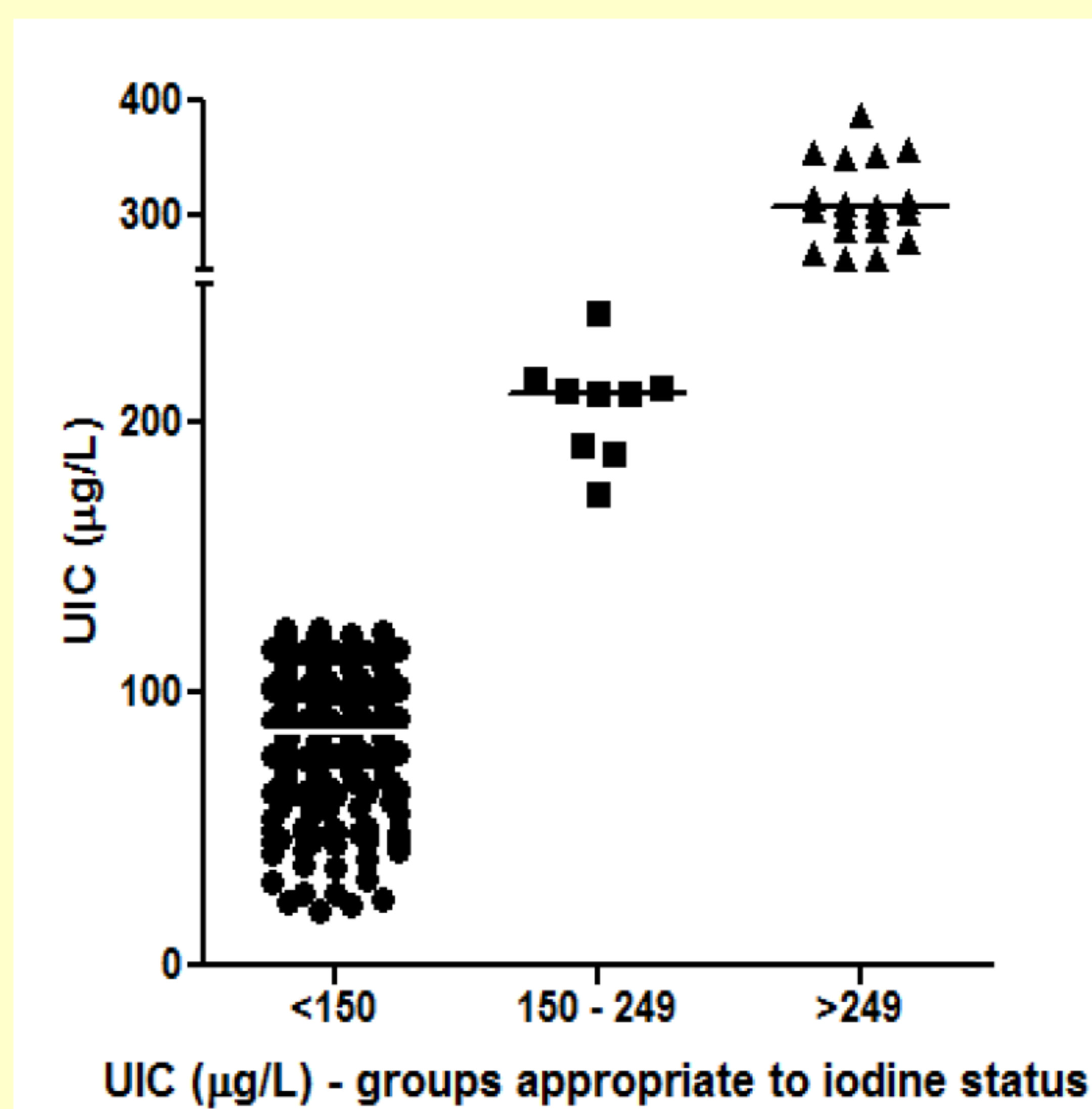
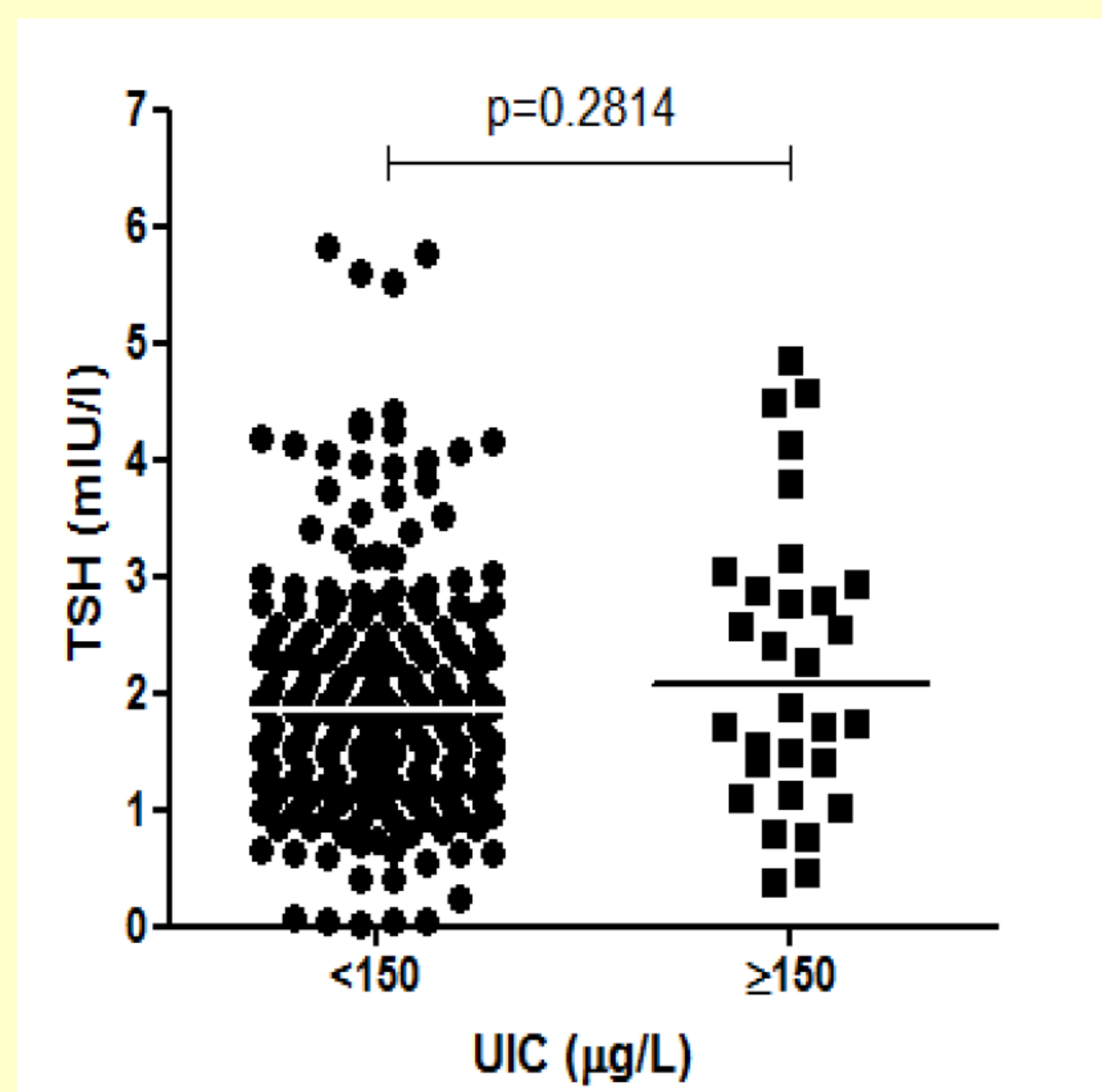


Fig.2 The comparison of TSH levels in screened women with UIC <150 µg/L and ≥150 µg/L.



"Excessive" means in excess of the amount required to prevent and control iodine deficiency.

Lines in graphs present the median.

RESULTS

Median UIC in all screened women was 90.90 µg/L (range 20-4725 µg/L). The distribution of UIC is displayed in Fig. 1.

In 222/252 (88.1%) women UIC was lower than 150 µg/L (median 85.70 µg/L) and in 151/252 (59.9%) was lower than 100 µg/L. UIC in the range appropriate with mild iodine deficiency (50-149 µg/L) was measured in 195/252 (76.2%) women and 27 (10.7%) values were found in the range of moderate deficiency (20-49 µg/L). Any value of UIC was not lower than 20 µg/L.

In 9 women (3.6%) were measured levels in the adequate range for pregnant women (150–249 µg/L).

In 21 women (8.3%) was UIC higher than 249 µg/L (median 305.1 µg/L).

In women with the UIC <150 µg/L was found lower serum levels of TSH in comparison to them with UIC ≥150 µg/L (1.866 vs. 2.079 mIU/l, p = 0.2814). (Fig. 2)

CONCLUSIONS

In total 88.1% of women screened positive for gestational or pregestational diabetes were iodine deficient in second trimester of pregnancy, but we have not found any correlation between UIC and thyroid parameters.

References

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