

# Serum prolactin and macroprolactin levels in pregnancy and association with thyroid dysfunction and thyroid autoimmunity

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## OBJECTIVES

To assess the contribution of macroprolactin to high serum prolactin levels and the association of prolactin (PRL) and macroprolactin (macroPRL) levels with thyroid status and thyroid autoimmunity during pregnancy.

## METHODS

Selected patients were divided into three groups according to the thyroid status; group 1 euthyroidism (n 40: TSH between 0.1  $\mu$ IU/L and 2.5  $\mu$ IU/L), group 2 hypothyroidism (n 54: TSH  $\geq$  2.51  $\mu$ IU/L), and group 3 hyperthyroid (n 44: TSH  $\leq$  0.09  $\mu$ IU/L). A level of TPOAb  $\geq$  35 U/mL has been considered as antibody positive. Polyethylene glycol (PEG) precipitation method was used for detection of macroprolactin. A percentage recovery of 40% or less is considered as macroprolactinemia. If macroprolactin was negative, the percentage of monomeric prolactin recovery (monoPRL %) after PEG precipitation was used for comparison between the groups.

**Table 1:** Comparison of demographic and laboratory parameters between the groups

Data	Group 1 Euthyroid (n=40)	Group 2 Hypothyroid (n=54)	Group 3 Hyperthyroid (n=44)	P
Age (years)	29.2 $\pm$ 5.6	29.0 $\pm$ 5.1	29.3 $\pm$ 4.9	NS
Mean number of pregnancy	2.2	2.4	2.7	NS
history of complicated pregnancy (n)	12	18	14	NS
Weight (kg)	69.9 $\pm$ 13.9	68.7 $\pm$ 14.5	60.7 $\pm$ 11.5 <sup>a,b</sup>	<0.005
SBP (mmHg)	111.5 $\pm$ 12.5	111.7 $\pm$ 11.9	130.5 $\pm$ 13.7	NS
DBP (mmHg)	73.2 $\pm$ 8.9	72.3 $\pm$ 9.1	71.4 $\pm$ 10.7	NS
TSH( $\mu$ IU/L)	1.04 $\pm$ 0.7	6.7 $\pm$ 10.7 <sup>a,c</sup>	0.02 $\pm$ 0.02	<0.001
FT4(ng/dL)	1.13 $\pm$ 0.21	1.17 $\pm$ 0.54	1.7 $\pm$ 0.80 <sup>a,b</sup>	<0.001
FT3 (pg/mL)	2.93 $\pm$ 0.33	2.78 $\pm$ 0.53	4.84 $\pm$ 2.04 <sup>a,b</sup>	<0.001
TPOAb (U/mL)	189.9 $\pm$ 352.6	563.8 $\pm$ 576.5 <sup>c</sup>	158.8 $\pm$ 308.8	<0.001
TGAb(U/mL)	71.1 $\pm$ 111.5	164.7 $\pm$ 159.0 <sup>c</sup>	123.7 $\pm$ 311.2	<0.05
PRL( ng/mL)	57.4 $\pm$ 49.4	69.6 $\pm$ 74.8	54.7 $\pm$ 68.7	NS
macroPRL (n)	1	1	-	NA
monoPRL %	90.6 $\pm$ 8.7	91.5 $\pm$ 9.2	88.9 $\pm$ 10.9	NS

## RESULTS

Macroprolactinemia was found only in two patients (1.4%). One of these patients was euthyroid while the other was hypothyroid, and basal prolactin levels in these patients were 400 and 403 ng/mL respectively. Referring to all patients, there was no correlation between PRL, macroPRL or monoPRL % with thyroid hormone status ( $p>0.05$ ). There was also no correlation between the serum levels of thyroid antibodies with PRL and monoPRL % ( $p>0.05$ ). A positive correlation was observed between the serum levels of PRL with TSH ( $p=0.014$  and  $r=0.219$ ), while a negative correlation was found with FT4 ( $p=0.011$  and  $r=-0.227$ ). Regardless of thyroid status, even if patients were grouped according to the presence of TPOAb alone, the negative tendency continued and neither prolactin nor monoPRL % levels were different between the patients with positive and negative TPOAb ( $p>0.05$ )

## CONCLUSIONS

Despite the fact that serum prolactin levels were found to be high during pregnancy, the contribution of macroprolactinemia to this hyperprolactinemia was found to be insignificant in our study. Unlike other auto immune diseases, we could not find any relationship between thyroid autoimmunity and PRL, macroPRL or monoPRL %. These results confirmed that measured prolactin was quite homogeneous and there was no correlation between thyroid autoimmunity and the molecular size of this hormone during pregnancy.

## References

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