

Assessment of Thyroid Function during the Three Trimesters of Pregnancy in Alexandria Region, Egypt.

Authors: Fahmy Elsayed Amara (1), Magdy Helmy Zikry Megalaa(1), Yasser Ibrahim Orief (2), Mohamed Abdel raouf Korany (1), Samir Aly Elshiekh (1), Mohamed Fahmy Amara (1)

(1) Department of Internal medicine, Faculty of Medicine, Alexandria University, Egypt.

(2) Department of Obstetrics and Gynecology, Faculty of Medicine, Alexandria University, Egypt.

OBJECTIVES

Undetected and untreated thyroid disorders are associated with adverse maternal and fetal outcomes. There are limited data on the prevalence of newly diagnosed thyroid disease during pregnancy from Egypt Therefore; this study was designed to evaluate the prevalence of thyroid dysfunction during the three trimesters of pregnancy. Pregnancy is associated with significant but reversible changes in thyroid function due to the effect of HCG and estrogen. That might cause maternal and fetal complications so screening is important.

METHODS

The present cross-sectional study was conducted at antenatal clinic of El Chatby Maternity Hospital in Alexandria University. The total sample population comprised of 90 pregnant women divided into 30 women for each trimester compared with 30 non pregnant healthy women regarding thyroid function parameters and anti-TPO by using COBAS analyzer measured by the electrochemiluminescence immunoassay "ECLIA" employs monoclonal antibodies specifically directed against human TSH,FT4,FT3 and anti TPO.

RESULTS

120 ladies were enrolled for this study aged between 20-45years excluding ladies with previous endocrinal anomalies showed significant difference between pregnant and non- pregnant females regarding TSH and FT4 and no significant difference regarding FT3 and anti TPO in all trimesters.

	3 rd trimester (n=30)		2 nd trimester (n=30)		1 st trimester (n=30)		Non Pregnant (n=30)		Test of Sig.
	No.	%	No.	%	No.	%	No.	%	
TSH (uiu/ml)									
Normal (0.27 – 4.2)	23	76.7	24	80.0	24	80.0	24	80.0	$\chi^2=7.432$
Abnormal low	0	0.0	0	0.0	2	6.7	3	10.0	
Abnormal high	7	23.3	6	20.0	4	13.3	3	10.0	
Min. – Max.	0.75 – 6.77		0.59 – 38.30		0.01 – 7.10		0.0 – 7.19		$K^2\chi^2=14.584^*$
Mean \pm SD.	2.90 \pm 1.73		4.08 \pm 6.66		2.51 \pm 1.78		1.75 \pm 1.66		
Median	2.56		2.76		2.14		1.13		
Sig. bet. Grps	p ₁ =0.745, p ₂ =0.363, p ₃ =0.001 [*] , p ₄ =0.211, p ₅ =0.002 [*] , p ₆ =0.026 [*]								

Table (1): Comparison between the ladies groups according to TSH (uiu/ml).

	3 rd trimester (n=30)		2 nd trimester (n=30)		1 st trimester (n=30)		Non Pregnant (n=30)		Test of Sig.	p
	No.	%	No.	%	No.	%	No.	%		
FT4 (ng/dl)										
Normal (0.9 – 1.8)	14	46.7	23	76.7	25	83.3	26	86.7	$\chi^2=31.509^*$	<0.001 [*]
Abnormal low	16	53.3	3	10.0	4	13.3	0	0.0		
Abnormal high	0	0.0	3	10.3	1	3.3	4	13.3		
Sig. bet. Grps	p ₁ =0.0001 [*] , p ₂ =0.0003 [*] , p ₃ =0.0001 [*] , p ₄ =0.703, p ₅ =0.273, p ₆ =0.085									
Min. – Max.	0.58 – 1.70		0.10 – 3.36		0.35 – 2.50		0.92 – 5.20		$K^2\chi^2=25.892^*$	<0.001 [*]
Mean \pm SD.	0.92 \pm 0.24		1.21 \pm 0.56		1.29 \pm 0.48		1.40 \pm 0.78			
Median	0.83		1.10		1.23		1.20			
Sig. bet. Grps	p ₁ =0.0001 [*] , p ₂ =0.0001 [*] , p ₃ =0.0001 [*] , p ₄ =0.166, p ₅ =0.084, p ₆ =0.807									

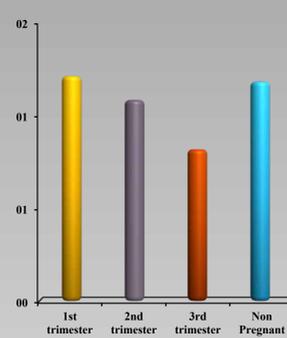
Table (2): Comparison between the studied groups according to FT4 (ng/dl).

	3 rd trimester (n=30)		2 nd trimester (n=30)		1 st trimester (n=30)		Non Pregnant (n=30)		χ^2	p
	No.	%	No.	%	No.	%	No.	%		
Anti-TPO										
Negative	20	66.7	25	83.3	26	86.7	27	90.0	6.456	0.091
Positive	10	33.3	5	16.7	4	13.3	3	10.0		
Sig. bet. Grps	p ₁ =0.233, p ₂ =0.125, p ₃ =0.028 [*] , p ₄ =1.000, p ₅ =0.706, p ₆ =1.000									

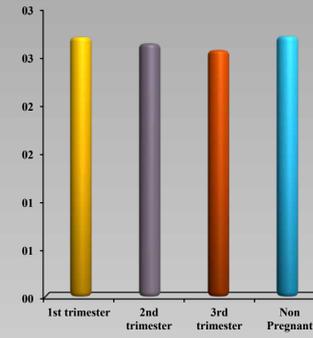
Table (3): Comparison between the studied groups according to anti-TPO

	3 rd trimester (n=30)		2 nd trimester (n=30)		1 st trimester (n=30)		Total in pregnancy	
	No.	%	No.	%	No.	%	NO	%
Thyroid function								
Normal	14	46.7	21	70.0	23	76.7	58	64.4
Normal with anti TPO	1	3.3	2	6.7	1	3.3	4	4.4
Hypothyroidism	6	20.0	1	3.3	0	0.0	7	7.7
Hyperthyroidism	3	10.0	1	3.3	1	3.3	5	5.5
Hypothyroidism with +ve anti TPO	4	13.3	3	10.0	0	0.0	7	7.7
SUBCLINICAL Hypothyroidism	2	6.7	1	3.3	3	10.0	6	6.6
Subclinical hypo with anti TPO	0	0.0	1	3.3	2	6.7	3	3.3
Subclinical hyperthyroidism	0	0.0	0	0.0	0	0.0	0	0.0

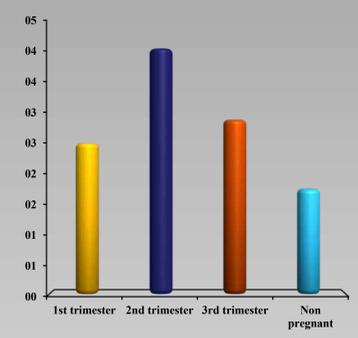
Table (4): the difference between thyroid functions in the four groups.



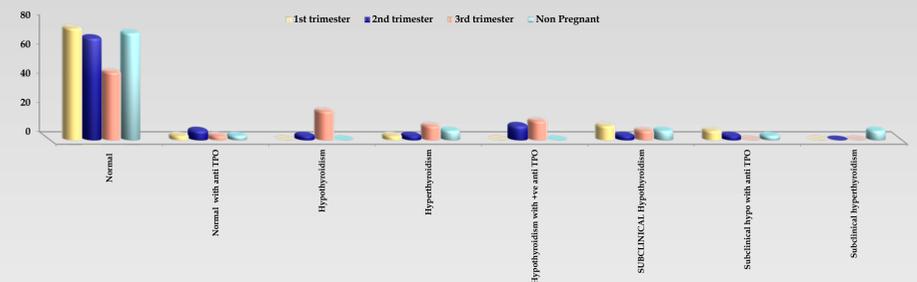
Comparison between the studied groups according to FT4 (ng/dl).



Comparison between the studied groups according to FT3 (pg./ml).



Comparison between the studied groups according to TSH (uiu/ml)



Comparison between the studied groups according to thyroid function and presence of anti TPO.

CONCLUSIONS

- 1- In our study 21.6% of the studied subjects were having hypothyroidism; 88.42 % of them were pregnant
- 2- 7.5% of the studied subjects were having hyperthyroidism; 55.5 % of them were pregnant
- 3- The study showed no significant correlation between age & thyroid parameter
- 4- The study showed significant difference between pregnant women and non pregnant regarding TSH & FT4
- 5- The study showed no significant difference between pregnant and non pregnant regarding FT3 but the mean FT3 showed decline in pregnancy
- 6- There was discrepancy between FT4 & TSH in pregnancy due to presence of stimulatory and inhibitory factors in pregnancy
- 7- However the increase in anti TPO titer in pregnancy was not significant in relation to non pregnant, it showed significant increase during 3rd trimester
- 8- 3rd trimester recorded most of thyroid abnormalities and this might increase risk of fetal anomalies