THYROID PROFILE AMONG LATE WELL PRETERM NEONATES

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ABSTRACT

Background: *Thyroid hormones are essential for brain development. Transient hypothyroxinemia early in life may increase the risk of neurodevelopment disabilities in preterm infant.*

Objectives: *Examine the characteristics of thyroid function of preterm infants, and to determine the validity of a repeat thyroid function test for preterm infants.*

Methods: *This prospective comparative study was carried out during the period from Septemper 2016, to March 2017, at Al-Hussein University Hospital and Sohag General Hospital (neonatal care unit), done on 50 preterm neonates, their gestational age ranged from 34 to 36 weeks, (group **1),** and 20 prterm neonates their gestational age less than 34 weeks,(group **2**), on randomized base. Initial serum levels of free thyroxine (FT4), free triiodothyronine (FT3), and thyrotropin (TSH) were measured within the first 10 days of life and were repeated every 2 and 4 weeks after the first test. The study was carried out on either gender, delivered vaginally or by cesarean section, to apparently healthy mothers.This Study was carried out at Al-Hussein University Hospital and Sohag General Hospital (neonatal care unit). Factors related to the neonate as gestational age ,birth weight, sex and mode of delivary were studied in relation with the results of thyroid function tests.*

Results: *This study shows that 42 (84%) of preterm neonates in group**1** have normal thyroid function test, and 3 (6%) have transient hypothyroxinemia, and 5 (10%) have transient TSH elevation. In group **2,** our study shows that 13 (65%) of preterm neonates have normal thyroid function test and 3 (15%) have transient hypothyroxinemia and 5 (20%) have transient TSH elevation, the study shows no cases of congenital hypothyroidism in both (two) groups. Statistical analysis was done by using IBM SPSS software package version 20.0.Comparison between different groups regarding categorical variables was tested using Chi-squara test.*

Conclusion: *Although the study shows no statistical relation between gestational age and the weight of neonates with thyroid function test results, but there was statistically significant deference between the elevation in TSH and weight of neonates.*

Keywords*:Thyroid profile, preterm, late preterm, neonates.*

INTRODUCTION

Thyroid hormones are important for stimulation of growth and development of various tissues at critical periods including the central nervous system and skeleton . It is known to regulate neurodevelopment, probably from early fetal life onwards ***(Chan , et al., 2007).***

Thyroid hormone deficiency can cause long term morbidity in terms of behavior, locomotor ability, cognition and hearing ability, if the onset is early in development ***(Macfaul, et al., 2004).***

During fetal life, the thyroid gland develops with production of tetraiodothyronine (T4) and triiodothyronine (T3) and secretion into the serum from about 12 weeks gestation, the levels of which increase to term. Approximately one third of maternal T4 crosses the placenta to the fetus. Maternal T4 may play a role in fetal development, especially that of the brain, before the synthesis of fetal thyroid hormones begins. The fetus of a hypothyroid mother may be at risk for neurologic damage, and a hypothyroid fetus may be partially protected by maternal T4 until delivery ***(Robert, et al., 2007).***

Postnatal thyroid function of preterm infants differs from that of term infants. Blunted postnatal thyrotropin (TSH) and low serum T4 levels are frequently observed in preterm neonates; this is generally referred to as hypothyroxinemia of prematurity ***(Van Wassenaer, et al., 2004).***

In contrast to typical congenital hypothyroidism, a normal TSH level upon initial screening followed by delayed TSH elevation is observed in some preterm infants ***(Mandel, et al., 2000).***

The main factors that influence thyroid function in preterm infants are immaturity of the hypothalamic - pituitary-thyroid axis, immature thyroid hormone synthesis, immature thyroid hormone metabolism, and systemic diseases. Insufficient or excessive iodine intakes also influence preterm thyroid function ***(Van Wassenaer, et al., 2004).***

Postnatal thyroid function in preterm babies is qualitatively similar but quantitatively reduced compared with that of term infants. After preterm birth, FT4 and FT3 levels remain lower than in term born infants during this period during which total and free T4 (and T3) levels are low is generally referred to as transient

hypothyroxinemia of the preterm infant ***(Uhrmann, et al., 2009).***

Although the survival rate of very low birth weight infants has increased in recent years, guidelines for thyroid function monitoring have not been established for preterm infants.

AIM OF THE WORK

The aims of this study were to examine the characteristics of thyroid function of preterm infants, and to determine the validity of a repeat thyroid function test for preterm infants, gather more information for analyzing the thyroid profile in preterm infants and compare the findings with other reports, and to determine the magnitude of transient- hybothyroxinemia among the preterm neonates.

PATIENTS AND METHODS

Ethical Consideration:

1. Patients parent consent.
2. Approval of ethical committee in pediatrics department faculty of medicine, Al Azhar University.
3. No conflict of interest in this study.

Patients

A prospective study were carried out on 70 preterm neonates; 50 preterm neonates with gestational age ranges from 34 to 36 weeks (group 1); and 20 preterm neonates with gestational age from 28 to 33 weeks (group 2). Gestational age were assessed with last menstrual period (LMP), U/S and New Ballard score (***Ballard, et al., 1991)***. This Study was carried out during the period from Septemper 2016, to March 2017, at Al-Hussein University Hospital and Sohag General Hospital (neonatal care unit).The obtained data was tabulated and analyzed.

Inclusion Criteria:

- Gestational age ranges from 34 to 36 weeks for group 1 candidates and from 28 to 33 weeks for group 2 candidates.

Exclusion Criteria:

- Neonates with proved or suspect sepsis.
- Neonates with maternal thyroid diseases.
- Neonates with suspicion of inborn errors of metabolism.
- Neonates with apparent significant congenital malformations.
- Neonates with perinatal asphyxia.

All neonates were be subjected to the following after taking the informed consent of their parents.

1. Complete history taking.
2. Complete clinical examination.
3. Laboratory and radiological investigations according to

clinical indication.

4. Thyroid function assay (Free T3, Free T4, TSH) (**Atlas Medical kits for FT4, FT3and TSH. William James House, Cowley Rd., Cambridge, CB4 OWX, UK**).

Biochemical Estimation

Laboratory Investigations:

The blood samples were taken from peripheral blood. Initial serum levels of free thyroxine (FT4), free triiodothyronine (FT3), and thyrotropin (TSH) were measured within the first 10 days of life using radioimmunoassays and were repeated every 2 and 4 weeks after the first test. TSH level is considered normal if (0.25 – 5.1 μU/ml). FT3 normal value is (3.3–7.5 pmol/dl), and for FT4 is (11.5–27 pmol/dl) ***(Robert , et al., 2007).***

Specimen Collection and Preparation:

The method used for estimation of FT4, FT3 and TSH was Enzyme Linked Immunosorbent Assay (ELISA) technique using **Atlas Medical kits for FT4, FT3 and TSH. William James House, Cowley Rd., Cambridge, CB4 OWX, UK** .

The serum was separated immediately after collection of 3cc venous blood from the neonates then collected in a plain red top venipuncture tube without additives or anticoagulants. Specimens were be stored at 2-8 degree C for 5 days. If storage time exceeds 5 days, they can be frozen at -20 degree C for up to one month.

Statistical analysis of the data

Data were fed to the computer using IBM ***SPSS software package version 20.0.***Qualitative data were described using number and percent. Comparison between different groups regarding categorical variables was tested using Chi-square test. Quantitative data were described using mean and standard deviation for normally distributed data. For normally distributed data, comparison between two independent populations were done using independent t-test, while more than two populations were analyzed F-test (ANOVA)**.**

RESULTS

This study is prospective comparative study carried out on 50 late-well preterm neonates their gestational age ranged from 34-36 weeks (group 1), and 20 preterm neonates their gestational age less than 34 weeks (group 2). The study were carried out on either gender, delivered vaginally or by cesarean section, to apparently healthy mothers. General criteria

of both groups are shown in table (1).

Table (1): General Criteria of the Studied Groups.

	Group (1) n= 50		**Group (2) n = 20**		X^2	P
Sex	No.	%	No.	%		
Male	23	46.0	9	45.0	0.103	0.685
Female	27	54.0	11	55.0		
GA (weeks)						
Range Mean ±S.D.	34 - 36 35.4± 1.10		28 - 33 30.5± 1.76			
Mode of delivery						
NVD	25	50.0	12	60.0	0.698	0.411
C.S.	25	50.0	8	40.0		

No significant statistical difference between both groups regarding sex distribution (P= 0.685) where the mean of the gestational age in group 1 is 35.4 weeks and in group 2 is 30.5 wks.

Table (2): Comparison Between the Two Studied Groups Regarding the Mean Level of Free T_3 at Different Stages of Follow up

FT3 Pmol/dl	**Group (1)**	**Group (2)**	**t**	**P**
1st 10 days after birth Range Mean±S.D.	3.8-8.1 6.5±0.82	5.2-7.4 6.3±0.65	0.898	0.225
After 15 days Range Mean±S.D.	4.3-7.5 6.4±0.83	4.3-7.6 6.1±1.00	1.12	0.143
After 30 days Range Mean±S.D.	4.34-7.6 6.6±0.62	1.2-7.4 6.2±1.36	1.59	0.082
F	0.68	0.77		
P	0.58	0.485		

No statistical significant difference between the two studied groups regarding the mean level of free T_3 at birth, during the different periods of follow up (P > 0.05).

Table (3): Comparison Between the Two Studied Groups Regarding the Level of Free T_4 at Different Periods of Follow up

FT_4(pmol/dL)	Group (1)	Group (2)	T	P
1s 10 days after birth			0.89	0.253
Range	8.46-25.1	7.6-26.4		
Mean±S.D.	18.4±4.19	17.5±6.31		
After 15 days			0.522	0.485
Range	11.5-24.5	9.3-23.87		
Mean±S.D.	18.0±3.41	18.0±4.22		
After 30 days			1.07	0.110
Range	10.7-25.3	12.3-26.5		
Mean±S.D.	20.8±3.39	19.6±3.96		
F	2.03	2.45		
P	0.331	0.104		

No statistical significant difference between the two studied groups regarding the mean level of free T_4 at birth, and during the different periods of follow up (P >0.05). The mean values of FT_4 is elevated with follow ups in group 2 but without significant statistical difference (P value 0.104).

Table (4): Comparison Between the Two Studied Groups Regarding the Level of TSH at Different Periods of Follow up

TSH (uU/ml)	Group (1)	Group (2)	t	p
1st 10 days after birth			0.988	0.329
Range	0.88-84	1.8-20.1		
Mean±S.D.	5.8±12.29	7.2±5.59		
After 15 days			5.22	0.0087*
Range	1-14.8	1.5-14.7		
Mean±S.D.	3.3±2.75	5.3±3.41		
After 30 days			6.11	0.0003*
Range	0.7-5.1	0.87-6.3		
Mean±S.D.	2.1±1.13	3.4±1.56		
F	9.25	8.01		
P	0.001*	0.003*		

No statistical significant difference between the two studied groups regarding TSH level at 1st 10 days (P < 0.05), while there is significant statistical difference between the two studied groups regarding TSH level after 15, 30 days (P < 0.05) . There is decrease in mean values of TSH level with follow ups (P value for group 1 and group 2 respectively are (0.0001 and 0.003).

Table (5): Comparison Between the Two Studied Groups Regarding the Abnormality in Thyroid Hormones.

	Mean values of abnormal cases in group (1)			**Mean values of abnormal cases in group (2)**		
FT3 Pmol/dl	n=0			n=0		
FT_4(pmol/dL)	n=3			n=3		
	1st reading	2nd reading	3rd reading	1st reading	2nd reading	3rd reading
	11.28	14.4	20.3	**8.6**	**9.3**	13.45
	8.46	**11.5**	15.3	**7.6**	**10.3**	17.1
	10.9	14.8	17.5	**8.53**	**10.9**	14.25
TSH (uU/ml)	n=5			n=4		
	1st reading	2nd reading	3rd reading	1st reading	2nd reading	3rd reading
	14.5	**7.8**	4.5	**13.5**	**6.9**	4.8
	21.5	**12.3**	4.4	**20.1**	**14.7**	**6.3**
	84	1.2	0.9	**17.8**	1.1	4.99
	20.8	**11.3**	4.0	**15.87**	**9.3**	4.8
	22.1	**14.8**	5.1			

No abnormality detected regarding FT_3 between the candidates of group 1 and group 2. Regarding FT_4 there is 3 neonates in group 1 and 3 neonates in group 2 with abnormal lower level of FT_4. All 6 neonates were improved "transient abnormality" on follow up. Regarding TSH, there is 5 neonates in group 1 and 4 neonetes in group 2 with abnormal higher level of TSH. All 9 neonates were improved to the normal level "transient abnormality" on follow up.

Table (6): Correlation Between Hormones of Thyroid Profile at Different Periods of Follow up and both G.A and weight

	G.A		Wt	
	R	p-value	r	p-value
FT3 1s 10 day after birth	0.07	0.566	0.123	0.312
FT3 After 15 day	0.177	0.142	0.148	0.22
FT3 After 30 day	0.211	0.08	0.224	0.062
FT4 1s 10 day after birth	0.184	0.127	0.184	0.128
FT4 After 15 day	0.108	0.372	0.14	0.247
FT4 After 30 day	0.223	0.064	0.231	0.055
TSH 1s 10 day after birth	-0.003	0.984	0.028	0.821
TSH After 15 day	-0.326**	0.007	-o.290*	0.016
TSH After 30 day	-o.470**	0.001	-0.408**	0.001

There is significant –ve correlation between TSH at 15 and 30 days with the GA and Weight.

Table (7): Relation Between Results of Thyroid Profile Regarding Sex Distribution and Mode of Delivery of the Candidates

	Normal FT4		Abnormal FT4		X^2	P
Sex	**no**	**%**	**No**	**%**		
Male	27	42.2	5	83.3		
Female	37	57.8	1	16.7	3.74	0.06
Mode of delivery						
NVD	33	51.6	4	66.7	0.502	0.393
CS	31	48.4	2	33.3		
	Normal TSH		**Elevated TSH**			
Sex	**no**	**%**	**No**	**%**		
Male	29	47.5	3	33.3		
Female	32	52.5	6	66.7	0.638	0.33
Mode of delivery						
NVD	35	57.4	2	22.2	3.89	0.05*
CS	26	42.6	7	77.8		

No significant statistical difference between candidates with normal and abnormal FT_4 regarding sex distribution and mode of delivery. There was significant statistical difference between candidates with normal and abnormal TSH reading regarding mode of delivery.

DISCUSSION

The present study was carried out to gather more information for analyzing the thyroid profile in preterm infants in first 8 weeks of life, by repeated follow ups . This Study was carried out during the period from Septemper 2016, to March 2017, at Al-Hussein University Hospital and Sohag General Hospital (neonatal care units).The obtained data were tabulated and analyzed.

The neonates were divided into two groups, **group 1** with 50 well late preterm neonates their gestational age ranged from 34 to 36 weeks, and **group 2** with 20 preterm neonates their gestational age less than 34 weeks. In group **1:** their weight ranged from 1970-2970 (gram) with mean ± S.D. (2486.4±265.07) gram, while in group **2:** their weight ranged from 1300-2200 (gram) with mean ± S.D. (1789.3±256.27) gram.

The present study shows that 84(%), **42** of preterm neonates in group **1** have normal thyroid function tests, and 6(%), 3 have transient hypothyroxinemia, while 10(%), **5** have transient TSH elevation. In group **2,** our study shows that 65(%), **13** of preterm neonates have normal thyroid function tests and **3,** 15(%) have transient hypothyroxinemia while 20(%), **5** have transient TSH elevation, the study shows no permenant hypothyroidism among the neonates of both groups.

In comparison with a study done **by M. Mercado, et al., 2005,** showed that the incidence of transient hypothyroxinemia was 58(%) While in study done by **Hye Rim Chung, et al., 2009**, transient hypothyroxinemia was observed in 28(%) of preterm infants and 12(%) were diagnosed with hypothyroidism.

In another study conducted by **M. Turkaman, et al., 2013** showed that the prevalence of transient hypothyroidism was observed in 13% in preterm infants and 2% had permanent hypothyroidism. In agreement with our study**, Rajaa Jabbar, et al., 2015** that included 50 preterm neonates, their gestational age ranged from (27-36 weeks) showed that 74(%), **37** of preterm

neonates have normal thyroid function tests, 4(%), **2** have transient hypothyroxinemia, 20(%), **10** have Transient ↑TSH (moderate elevation in TSH with normal T4) and only one preterm neonate have permenant hypo-thyroidism .

In these studies, the incidence was higher than our study and this variation could be attributed to the difference in sample size.

In the present study there was no statistically significant deference between the thyroid function tests in the two studied groups and the mode of delivary.

Similarly, **Renee, et al., in 2014**, showed that the mode of delivary was not associated with significant difference in thyroid hormone status among late preterm infants.

In the present study there was no statistically significant relation between the gestational age and the thyroid function test results. While the study done by **V. Wassenaer, et al., 1997,** who stated that the gestational age is the only factor which could affect the thyroid function during the first 8 weeks of life **.**

In the present study there was no statistically significant deference between the result of FT4 and FT3 in relation to the weight of neonates. But there was statistically significant deference between the elevation in TSH regarding the weight of neonates.

This is not in agreement with the previous study done by **M.Turkaman et al., 2013** that showed statistically significant deference between theresult of FT4 and FT3 regarding the weight of neonates.

Our study show no statistically significant deference between the result of thyroid function test in tow studied groups regarding the sex of neonates. This is in agreement with the results of the study done by **Rajaa Jabbar, et al., 2015,** which found that no statistically significant deference between the thyroid function test regarding the sex of neonates

According to our results, Postnatal thyroid function in preterm babies is qualitatively similar to normal reference range of term infants. After preterm birth, some of them show transient thyroid profile irregularities during the 1st few weeks of life. This period during which free T4 (and FT3) levels are low and level of TSH is high is generally referred to as transient hypo-thyroxinemia of the preterm infant and transient TSH elevation of the preterm infants, respectively.

The benefits of thyroid hormone treatment for transient hypothyroxinemia in preterm infants remain unknown and the optimal follow-up duration has not been determined. Therefore, it is unclear whether the administration of thyroid hormone in preterm infants reduces neonatal morbidity and mortality or improves neurodevelopmental outcome ***(Seth, et al., 2012 ;*Macfaul, et al., 2004**).

CONCLUSION

Although the study shows no statistical relation between gestational age and the weight of neonates with thyroid function test results, but there was statistically significant deference between the elevation in TSH and weight of neonates. Since there is improvement in the care of preterm and low birth weight infants lead to improvement of their survival rate and in order to decrease their disabilities as a results of complications of prematurity we have to take into consideration the state of thyroid function since thyroid hormone is important in brain development and prematurity and its complication affect thyroid function.

RECOMMENDATION

1. We recommend a routine second screening test in preterm infants. This second test should be performed between two and four weeks of age, then a third routine test is recommended between two and four weeks after the second screening test. This protocol reduces the risk of false negative screening results.
2. The threshold birth weight or gestational age for which this second (or third) screening test is performed varies among screening programs.
3. Effort should be concentrated on the health of pregnant women to decrease the incidence of preterm delivery &it's complications.
4. Further studies to be done on a larger sample of neonates with follow up of their outcome is recommended.

REFERENCES

1. Chan S, Kachilele S, McCabe C, J et al., 2007. Early expression of thyroid hormone de-iodinases and receptors in human fetal cerebral cortex.Dev Brain Res, 2007;**138:** 109-116**.**

2. Macfaul R, Dorner S, Brett E M, and Grant D B., 2004. Neurological abnormalities in patients treated for hypothyroidism from early life. *Arch Dis Child* 2004**; 53:** 611-619.

3. Robert M. Kliegman, Bonita F. Stanton, Joseph W. St., Geme lll, Nina F. Schor, and Richard E. Bahrman 2007. The Endocrine System. **In** Nelson Text book of Pediatrics, 18th ed**. P**: 2316-2332, Philadelphia, Elseveir Health sciences, 2007.

4. **Mandel SJ, Hermos RJ, Larson CA, Prigozhin AB, Rojas DA, and Mitchell ML., 2000**. Atypical hypothyroidism and the very low birth weight infant. Thyroid;10:693-5.

5. **Van Wassenaer AG, and Kok JH., 2004**. Hypothyroxinaemia and thyroid function after preterm birth. Semin Neonatol 2004; 9: 3-11.

6. **Uhrmann S, Marks K H, Maisels M J, et al., 2009.** Thyroid function in the preterm infant: A longitudinal assessment. J Pediatr 2009**; 92:** 968-973**.**

7. **Ballard, JL; Khoury, JC; Wedig, K; Wang, L; Eilers-Walsman, BL; and Lipp, R., September 1991.** "New Ballard Score, expanded to include extremely premature infants." *The Journal of Pediatrics. **119** (3): 417–23.*

8. **Fagela Domingo C, and Padilla CD., 2003**. Newborn screening for congenital hypothyroidism in early discharged infants.Southeast Asian J Trop Med Public Health. 2003; 34 (suppl 3): 165-69.

9. **Rajaa Jabbar kadhum, 2015**. Thyroid Function Test in Sick Premature Infants. KUFA JOURNAL FOR NURSING SCIENCES Vol.5 No.3 Sept. through Dec. 2015

10. **M. Mercado ,V.Y.H. Yu, I. Francis, W. Swymonowicz, H., 2005.** L-Thyroxine treatment of preterm newborn: clinical &endocrine effect. Gold Department of Pediatrics, *pediatric research 2*005**, 42,**87-92.

11. **M. Turkaman, F. Ghasemi, A. Saburi., 2013**.Thyroid function test in preterm neonates during the first five weeks of life, *international journal of preventive medicine* 2013; Nov.; 4**(11):**1271-1276.

12. **Hye Rim Chung,1Choong Ho Shin, 2 Sei Won Yang, et al., 2009**. High Incidence of Thyroid Dysfunction in Preterm Infants, *J Korean Med Sci*. 2009 August; 24**(4):** 627–631**.**

13. **Renee M. Behme, Amy B. Mackley, Louis Bartoshesky and David A. Paul., 2014**. Thyroid function in late preterm infants in relation to mode of delivery and respiratory support. J Pediatr Endocr Met 2014; 27(5-6): 425–430

14. **V. Wassenaer AG, Kok JH, and Dekker FW., 1997.** Thyroid function in very preterm infants: influence of gestational age & disease .*pediatr*. *Res*.1997; **42:**604-9**.**

15. **Osborn DA, and Hunt RW., 2007**. Prophylactic postnatal thyroid hormones for prevention of morbidity and mortality in preterm infants. Cochrane Database Syst Rev; (1):CD005948

16. **Seth A., 2012**. Transient hypothyroxinemia of prematurity does it have clinical relevance? Indian Pediatr; 49:703-4.

وظائف الغدة الدرقية بين الأطفال الخدج حديثى الولادة الأصحاء

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الهدف: هرمون الغدة الدرقية مهم لنمو و تطور الدماغ و خاصة لدى الأطفال الخدج , و ذلك لأنهم معرضون لمضاعفات مستقبلية فى تطور الجهاز العصبى. أجريت هذه الدراسة لمعرفة وظائف الغدة الدرقية لدى الأطفال الخدج و العوامل المؤثرة عليها.

المنهجية: أجريت دراسة على خمسين طفل خديج مولود بين الأسبوع 34 و الأسبوع 36 من العمر الرحمى كمجموعة 1 , بالاضافة الى عشرين طفل خديج مولود قبل الأسبوع 34 من العمر الرحمى كمجموعة 2 . أخذت عينة من الدم خلال العشرة أيام الأولى بعد الولادة, ثم تكرر أخذ العينة بعد أسبوعين و بعد أربع أسابيع من وقت العينة الأولى, تم إجراء الدراسة فى وحدة رعاية الأطفال الخدج فى مستشفى الحسن الجامعى وفى مستشفى سوهاج العام. تم دراسة وظائف الغدة الدرقية لدى هذه المجموعة و تأثير كلا من العمر الرحمى , و الوزن , و نوع الجنس, و طريقة الولادة عليها . و تمت مقارنة نتائج المجموعتين .

النتائج: أظهرت الدراسة بالنسبة للمجموعة الأولى أن 6% لديهم نقص مؤقت فى هرمون الثايروكسين , وأن 10% من الأطفال لديهم ارتفاع معتدل للعرمون المحفز للغدة الدرقية , أما باقى الأطفال 84% فكانت نتيجة الغدة الدرقية طبيعية . أما بالنسبة للمجموعة الثانية فكانت النتائج كالتالى, 15 % لديهم نقص مؤقت فى هرمون الثايروكسين , وأن 20% من الأطفال لديهم أرتفاع معتدل للعرمون المحفز للغدة الدرقية , أما باقى الأطفال 65% فكانت نتيجة الغدة الدرقية طبيعية . كما أظهرت الدراسة أن المجموعتين لا يوجد بهم أى طفل يعانى من نقص فى عمل الغدة الدرقية .

الأستنتاج: يجب التعاطى مع وظيفة الغدة الدرقية بنظر الاعتبار لدى الأطفال الخدج, و ذلك لضمان تطور طبيعى و حياة طبيعية فى المستقبل .

التوصيات: ننصح بتكرار الفحص الروتينى لوظائف الغدة الدرقية خصوصا للأطفال الخدج حديثى الولادة ذوى الأوزان القليلة , فى الأسابيع الثمانية الأولى بعد الولادة , و ذلك لضمان تلافى النتائج السلبية الغير حقيقية فى المسح الروتينى لوظائف الغدة الدرقية لحديثى الولادة .