J. of al-anbar university for pure science : Vol.2: No.2 : 2008

ISSN: 1991-8941

STUDY SOME PHYSIOLOGICAL VARIABLE OF BLOOD IN THE LACTATING WOMEN (BREASTFEEDING) DURING LACTATION.

Naheda I. Al-Dulaymi * **Mohammed Q. Al-Ani ****

**College of Medicien: Al-anbar university.*
***College of science – Al-Anbar university.*

Received: 10/1/2008 *Accepted:20/6/2008*

ABSTRACT:This study was done on twenty five lactant women and twenty five as control (not marriage) from General Ramadi Hospital to study some biochemical variable such as (PCV, Hb, sugar, cholesterol SGPT, SGOT, S.Alk.ph, and hormone of prolactin) during lactation. The results of this study as following: no significant differences in level of PCV, Hb, SGPT,and cholesterol while significant differences in level of blood sugar, SGOT, and prolactin hormone were recorded in this study.

Key words: lactation , breast feeding , liver enzymes, prolactin, cholesterol

Introduction:

Lactation is a cyclical process of milk production, appears to continue in women so long as the infant is suckled more than one time per day. Two hormones are necessary for this continued production: oxytocin and prolactin (1). The initiation and maintenance of lactation are complex phenomena involving extensive cellular and enzymatic changes(2).

In the human body, iron is present in all cells as carrier of oxygen to tissue in the form of haemoglobin(Hb). Iron deficiency is the most common known form of nutritional deficiency and lead to anemia. Breast-fed infant who do not consume adite adequate in iron after age 6 month who receive insufficient iron form supplementary foods(3).

Cholesterol is an important part in blocked arteries , it is basic building material for cell membrane, bile acid, progesterone and estrogen(4).

The objective of study was designed to know the effect the lactation on some physiological variable of blood in lactating women.

Materials and Methods

This study was done in the General Ramadi Hospital for wemen & children Twenty five breastfeeding women were used, different periods of lactation from one day to two years with different ages of women were observed. Twenty five were used as control(not marriage), for compatible with lactant women.

Blood pulled from vein. One part of blood was withdrawn in EDTA tubes for hematological investigation: PCV (Haematocrit reader), Hb(Drabkin reagent). Other part in plastic tubes separation of serum by centrifuge at 3000

r.p.m. for 15 min. stored at 4c for biochemical investigations: sugar(Biocon kit), cholesterol(cholesterol kit), SGot, SGpt(Randox kit), SAlp (Kind and king), and hormonal estimation prolactin (Ria-kit).

STATISTICAL ANALYSIS : Data analyzed by used Spss and Anova (F-test) (5).

Results and Discussion:

This study was done on the breastfeeding women within different periods of lactation from one day to two years. This study show, there was no significant differences in level of some physiological variable, such as PCV, Hb, cholesterol, SGpt, while significant differences were observed in level of sugar, SGot, S Alk.ph as shown in table(1).

Breastfeeding is a good idea for many reasons, for the body milk is an source of nutrition, provides protective antibodies that infants are not able and improve the response to vaccinations(6).

Table(1) shows a slight changes of some biochemical variable in the studied groups. Its may be due to return some of hormones to normal after delivery lead to slight changes during lactation. This suggestion agreed with Lewis(7). Data in this study shows slight decrease in level of PCV and Hb during lactation, however the differences was statistically not significant($p>0.05$). In the human body, Iron is present in all cells and has serve as carrier of oxygen to tissue in the form of Hb and deficiency of Iron lead to anemia(8). Also in breast feeding infants who do not consume a diet adequate in Iron after age 6 month who receive insufficient Iron from supplementary foods(8).

Our data showed a significant differences($p<0.05$) in level of blood sugar, however this increasing within normal value of blood sugar. This may be due to consuming the glucose for synthesis of milk components, such as glycogen and fats. This finding was supported by Berne(9). Rebecca et al(10), stated that glucose converted to glycogen and fats from muscles of rodents. Other studies found the risk diabetes began to decrease after approximately six month of breast feeding(6). During lactation hyper insulinemic clamp, glucose clearance was increased three fold in lactating rats, suggested that glucose metabolism in mammary gland is affected by insulin(11).

The current study showed decrease level of cholesterol during lactation . It has been suggested that retuning some hormonal interaction to normal level during lactation which led to returned level of cholesterol. Our finding was in agreement with Lewis(7). Level of cholesterol during pregnancy very high , while decrease during lactation, this correlated with hyperlipidemis during pregnancy which required for growth the fetuses(12,13,14,15). Several studies also indicate that babies provided human milk were good cholesterol reading later on in life(16).

Analyzing the pattern of serum liver enzymes abnormalities is helpful in making the diagnosis of liver disorders(17,18,19). There was a slight increase in level of S Got and S Gpt, while high in level of S Alk.ph and this change statistically significant ($P<0.05$). It may be due to some of liver disorders, such as viral hepatitis and other diseases that lead to such changes. This finding is confirmed by Riely(20). In experimental rats found that during first three days of lactation, these was an increase in activities of these enzymes in which Baldwin(21) stated that these enzymes were required for synthesis of milk components.

Table (1): showed increased level of prolactin hormone during lactation, this

chang was statistically significant (P<0.05). This may be as a result of the role of prolactin in development the mammary gland and initiating the lactation(22, 23,24, 25), reported that the prolactin was especially important in activation of lactalbumin gene and thus synthesis of lactose. Campbell(26), showed that the elevation level of prolactin which was present in lactation helped suppress the return of the ovarian cycle.

REFERENCES

1- Wagner CL, Graham EM, Detry PD. Human milk and lactation. Pediatrics, 2004 1-12.

2- Riordan J and Auer Bach KG. Breastfeeding and human lactation. Boston,Mass:Jones apublisher 1993.

3- Choksy NB. What are the dietry recommendation during lactation, 2005

4- Hueseman P. Treating high cholesterol with human identical hormone.Replacement therapy Article.2003.

5- Danial WW. Hypothesis testing .In: Biostatistic afoundation for analysis in the health science. London WileyJ and sons 1983,3rd ed: 161.

6- Robert H and Shmerling MD. News review from Harvard medical school 2005, 1-4.

7- Lewis SM, Bain BJ ,Bates I. Dacie and Lewis partical hematology. London.Churchill Livingston 2001, 9th ed: 1122-1125.

8- Anderson SA. Guideline for the assessment and management of Iron deficiency in women of childboring age 1991.

9- Berne RM and LevyMN. Physiology. Washington: Mosby company 1988, 2nd ed: 860-970.

10- Rebecca A, Simmon S,LoriJ,Templeton. Intrauterine growth retardation leads to the development type 2 diabetes in the rat. Diabetes 2001, 50: 2279-2286.

11-Burnol AF, Leturque A, FerreP, Girard J.Glucose metabolism during lactation in the rat:quantitiv and regulatory aspectAmJ physiology1983,4:1-8.

12- Lewis SM, Bain BJ, Bates I. Dacia and Lewis partical haematology. London: Churchill Livingston 2001, 9th ed: 1122-1125.

13- writing Group for womenś health initiatiative investigators .JAMA 2002,288: 321-333.

14- Jeffery L, Smith R, Leatudy M, Wiliam KO. Effect of pregnancy and lactation on lipoprotein and cholesterol metabolism in the rat. Lipid Research 1998,39:2237-2249.

15- Fard Nooshin M and Mehrabian F. Fat modified diets during pregnancy and lactation and serum lipids after birth. Abstract 2004,71:683-687.

16-Cavaliro K, Lofton M, Hurt M. Human milk . The best gift for future heart health. Media Releases 2002.

17- Jaeger JJ and Hedegard H. Liver enzyme. Hepatitis 2002.

18- Knox TA. Evaluation of abnormal liver function in pregnancy. Prenatal J 1998,22: 98-103.

19- Knox TA and Lori B. Liver diseases in pregnancy. Medicine J 1996, 335:569-576.

20-- Riely CA. Liver diseases in pregnant patient AMJ. Gastroenterology 1999,7:1728-1731.

21- Baldwin RL and Miligan LP. Enzymatic changes associated with the initiation and maintenance of lactation in the rat.Biol chemJ 1966,241:2058-2065.

22- Hurley WL. Mammary gland function during involution J Dairy Sci 1989,72:1637-1646.

23- Bauman DE. Bovine somatotropin.In: review of an emergin animal technologyJ Dairy SCi 1992., 74: 3432-3452.

24- Tucker HA. Lactation and its hormonal control. In: The physiology of reproduction Raven press.1994,2nd ed: 1065-1098.

25- Akers MR. Lactation physiology.In: Aruminan animal perspective protoplasm 1990, 159:96-111.

26- Campbell SD and Mrcog CL. Physiological changes in pregnancy.USA: Gustenbery press Ltd 2000, 17th ed:247-253.

Table(1): Distribution of studied biochemical facter in lactating women.

Variables	Control (Mean ± SD)	Lactants (Mean ± SD)	F -value	Sig.
PCV	35.5 ± 2.9	34 ± 5.6	0.04	P>0.05
Hb	11.6 ±1.5	10.9 ± 2.1	0.012	P>0.05
sugar	85.6 ± 11.8	110.6 ± 15.1	28.8	P<0.05
cholesterol	180 ± 30.3	171.8 ± 63.5	0.68	P>0.05
S.GOT	7.5 ± 3.3	9.8 ± 4.4	4.2	P<0.05
S.GPT	7.3 ± 3.3	7.6 ± 1.7	0.96	P>0.05
S.alp.	6.03 ± 2.5	13.9 ± 5.9	16.2	P<0.05
Prolactin	367.6 95.7	2243.1±1533.2	7.45	P<0.05

دراسة بعض المتغيرات الفسلجية لدم النساء المرضعات (رضاعة طبيعية) خلال فترة الرضاعة.

ناهدة ابراهيم الدليمي محمد قيس العاني

E.mail: drqazan19752002@yahoo.com

الخلاصة:

اجريت الدراسة على ٢٥ امرأة مرضعة و٢٥ امرأة اخرى استعملت كتجربة ضابطة (نساء غير متزوجات) من مستشفى الرمادى للنسائية والاطفال لدراسة بعض المتغيرات الفسلجية للدم شملت (حجم كريات الدم الحمر المضغوط، الهيموكلوبين، سكر الدم ، وتركيز الكوليستيرول وانزيمات المصل شملت SGOT و SGPT و SAlk و هرمون البرولاكتين) خلال فترة الرضاعة. بينت النتائج عدم وجود تغيرات معنوية فى مستوى حجم كريات الدم الحمر المضغوطة ، الهيموكلوبين، والكوليستيرول ، كلوتاميك بايروفيت ترانس امينيز بينما كانت هناك فروقات معنوية (P<0.05) في مستوى السكر و SGOT و SAlk و هرمون البرولاكتين.