Duhok Med J

CONTENTS

Duhok Med J

ADVISORY BOARD

This page is left intentionally

Duhok Med J

EDITORIAL BOARD

Submission of Manuscript:

Manuscripts should be submitted to:
The Editor,
Duhok Medical Journal,
Duhok College of Medicine,
Post address: Nakhoshkhana Road 9, 1014, AM, Duhok, Iraq.
Telephone No.: 00964-62-7224268 EXT 115
E-mail: dmj.med.uod@gmail.com
Electronic submission of articles is also accepted

Duhok Med J

INSTRUCTIONS FOR AUTHORS

Aims and Scope Duhok Medical Journal is a peer reviewed journal issued bi – annually by Duhok College of Medicine. Scientific and clinical researches are the main issues. The journal also publishes short articles, letters to editors, review articles and case reports.

General The Duhok Medical Journal is a signatory journal to the uniform requirement for manuscripts submitted to biomedical journals, February 2006 (http://www.icmje.org).

To present your original work for consideration three manuscript copies written in English together with Kurdish and Arabic abstracts should be submitted to the editor. All authors are required to provide the manuscript on a CD labeled with the name and title of the paper.

Preparation of the manuscript The manuscript should be typed double spaced as normal text on one side of the paper in single column format, font size 14 pt, paper type A4, 1″ margin at each side and each of the following sections should begin on a new page in the following sequence:

1- **Title page**; should include the following: title, font size 16 pt, each author's full name, academic degree(s), scientific title (if available), institutional affiliation, full contact information including emails. If there are more than one author, article should include author to whom correspondence should be addressed including the scientific title (if available), institution affiliation, address, email, telephone.

2- **Structured abstract**; of no more than 250 words including background, objectives, design (methods), results, and conclusions.
3 – 10 keywords or phrases should be put at the end of each abstract. (Printed in bold font; size12 pt).

3- **Body of the text**; structured in an IMRAD style;
(Introduction, Methods, Results and Discussion).

4- **Acknowledgment** (if any.)

5- **References.**

6- **Tables with legends**.

7- **Illustrations with legends**.

8- **Structured Kurdish abstract including title in Kurdish.**

پێشەکی, ئارمانج, ڕێکێن ڤەکولینێ, ئەنجام, دەرئەنجام

9- **Structured Arabic abstract including title in Arabic.**

! !Š!!!!! ! !!!! œ!!!!!! ! ! !!!! !!!! ! !!!!!Ž !!! ! !!!! !!!! !!

Tables Each table must be typed on separate page and should follow the reference list. All the tables must be numbered consecutively in the order of their first citation in the text. Supply a brief title for each on top and place explanatory matter in foot notes not in the heading (if needed). Tables should be simple and not duplicated in the text. Percentages are included with numbers in the same cells but in brackets.

Illustrations Graphs, line drawing, photographs, printed x rays and other illustrations are accepted only if they add to the evidence of the text. They should be of a high quality and suitable for reproduction. They should be numbered consecutively according to the order in which they have been first cited in the text. Supply a brief title beneath each illustration. Graphs should have white background, should be non 3-dimensional figure and non-colored; labels for X and Y axis identified.

Numbers and Units Measurements of length, height, weight and volume should be reported in metric units. Temperature in degrees Celsius, blood pressure should be expressed in mmHg and all hematologic and clinical chemistry measurements in SI units.

Abbreviations should be defined on first use and then applied consistently throughout the article. Avoid abbreviations in the title and abstract.

References should be numbered both in text and in the list of references in the order in which they appear in the text. The punctuation of the Vancouver style should be followed; if the original reference is not verified by the author, it should be given in the list of references followed by (cited by) and the paper it was referring to. The titles of journals should be abbreviated according to the style used in Index Medicus. This can be obtained from website (http://www.nlm.nih.gov/). The author is responsible for the accuracy of references. The following are examples of the three most common types of citations:
The article citation: if six authors or fewer list all; if seven or more authors list the first six and then add "et al":
1- Nuwayhid IA, Yamout B, Azar G, Kambris MA. Narghile (hubble bubble) smoking, low birth weight, and other pregnancy outcomes. Am J Epidemiol 1998;148(4):375-83.
Book citation, noting chapter and authors:
2- Arevalo JA, Nesbitt TS. Medical problems during pregnancy. In: Taylor RB, editor. Family medicine: principles and practice. 6th ed. New York: Springer – Verlag; 2003. p. 109-16.
Electronic source:
3- Garfinkel PE, Lin E, Goering P. Should amenorrhoea be necessary for the diagnosis of anorexia nervosa? Br J Psych [serial online] 1996 [cited 1999 Aug 17];168(4):500-6. Available from: URL:http://biomed.niss.ac.uk

Authorship and consent form All authors must give signed consent, which should accompany the manuscript. The letter should say "this manuscript is an unpublished work, which is not under consideration elsewhere in the record. Authors are requested to state an approximate estimate of their contribution in the study.
Authors must declare if they have any competing interests in the study and to specify any funds given to conduct the study (Form No.1).

Ethical considerations When experiments on humans are being reported the whole work in the manuscript should conform to the ethical standards of the responsible committee on human experimentation.

Submission of manuscript

Manuscripts should be submitted to:
The Editor,
Duhok Medical Journal,
Duhok College of Medicine,
Post address: Nakhoshkhana Road 9, 1014, AM, Duhok, Iraq.
Telephone no.: 00964-62-7224268 EXT 115
E-mail: dmj.med.uod@gmail.com
Electronic submission of articles is also accepted

N.B.

* Accepted manuscripts may be altered by the editorial board to conform to details of the journal publication style.

** The Editorial Board of Duhok Medical Journal accepts no responsibility for statement made by authors in articles published by the journal.

EDITORIAL

MARGINAL ZINC DEFICIENCY: A SIGNIFICANT BUT UNRECOGNIZED PUBLIC HEALTH PROBLEM IN IRAQ

DHIA J. AL-TIMIMI, BSc(Pharam), M.Phil, PhD*

Duhok Med J 2009;3(1):1-3.

Submitted 1 August 2008; accepted 18 March 2009
Key words: Zinc deficiency, Prevention, Public health, Iraq

Zinc is an essential trace element that contributes immensely to human health and development. It is an important structural component of most proteins and contributes to the function of more than 200 enzymes.[1] Zinc also plays a central role in cellular growth and differentiation because of its critical role in RNA and DNA synthesis.[2] Body functions affected by zinc nutriture include growth,[3] Immune system development and function,[4] normal integrity of intestinal mucosa,[5] pregnancy outcome,[6] and neuro-behavioural development.[7]

Zinc deficiency therefore results in adverse consequences on the body, the magnitude of which depends on whether the ensuing deficit is marginal or severe. Marginal zinc deficiency is the most common and, although asymptomatic, it is associated with impaired immune function, anorexia, delayed wound healing, dysfunction of smell and taste, irritability, depression, anger, sleepiness, reduced sperm production in men and decreased mental ability.[8] Severe zinc deficiency, which rarely occurs, is characterized by severely impaired immune function, dermatitis, growth impairment, alopecia, lethargy and recurrent infections such as diarrhea.[9, 10]

Marginal zinc deficiency appears to be an important public health problem in many developing countries, including Iraq, because the commonly consumed staple foods have low contents and are rich in phytates, which inhibit the absorption and utilization of zinc. The problem of mild zinc nutriture and status may be widespread because many studies have reported positive growth response in young children who were administered zinc supplements. The recognition of childhood stunting as an indirect indicator of a population's risk of zinc deficiency supports the proposition that inadequate zinc nutriture is a widespread public health problem.[11] However little is known about the zinc status of the Iraqi population due to a lack of nationally representative data on this micronutrient and the absence of an appropriate indicator for assessing zinc status of individuals. Nevertheless, some studies from different parts of Iraq have suggested that marginal zinc deficiency is common, though these studies used plasma zinc, a measure of

* *Professor of Clinical Biochemistry*
Head of Department of Clinical Biochemistry, Duhok College of Medicine
Email: altmimidj @yahoo.com

zinc status that is affected by the acute phase response, and indirect indicators like stunting. For example, the effect of zinc supplementation in Iraq has reveled that the children with short stature were at lower biochemical zinc status and that zinc supplementation appeared to produce an improvement in growth parameters in a significant number of these children.[12] About 55.7% of healthy population in Baghdad has marginal zinc deficiency, and dietary zinc assessment showed that 74.8% of the population consumed less than the recommended intake.[13]

Furthermore, several studies performed in Iraq have found zinc supplements helpful for reducing the severity and duration of the diarrhea,[14] complications of pregnancy and childbirth,[15] bladder infection,[16] and leishmaniasis.[17]

In a vast and economically compromised country like Iraq, the extent of zinc deficiency is likely to vary from one area to another, depending on several factors such as socioeconomic status, food habits, level of literacy, climate, religion and culture practices. Recently in Duhok city, it was observed that 45.9 % of healthy population had documented marginal zinc deficiency, which was found to be related to inadequate dietary zinc intake.[18] With this observation, several efficacious program interventations for zinc must be considered to address the problem in specific settings, such as supplementation and fortification. More attention should be directed to such a public health problem, at least in young children to reduce childhood infections and potentially its related mortality particularly in resource-poor areas.

REFERENCES

1. Coleman JE. Zinc enzymes. Curr Opin Chem Biol 1998;2(2):222-34.
2. Wu FY, Wu CW. Zinc in DNA replication and transcription. Ann Rev Nutr 1987;7:251-72.
3. Brown KH, Peerson JM, Allen LH. Effect of zinc supplementation on children's growth: a meta-analysis of intervention trials. Bibl Nutr Dieta 1998;(54):76-83.
4. Ripa S, Ripa R. Zinc and Immune Function. Minerva Med 1995; 86(7-8):315-8.
5. Roy SK, Behrens RH, Haider R, Akramuzzaman SM, Mahalanabis D, Wahed MA, et al. Impact of zinc supplementation on intestinal permeability in Bangladeshi children with acute diarrhea and persistent diarrhea syndrome. J Pediatr Gastroenterol Nutr 1992;15(3): 289-96.
6. Goldenberg RL , Tamura T, Neggers Y, Copper RL, Johnston KE, DuBard MB, et al. The effect of zinc supplementation on pregnancy outcome. JAMA 1995; 274(6): 463-68.
7. Black MM. Zinc deficiency and child development. Am J Clin Nutr 1998; 68 (Suppl 2): S464-S9.
8. Osei AK, Hamer DH. Zinc Nutrition and Tribal Health in India. Tribes and Tribals 2008, Special Volume(2):111-9.
9. Sharquie KE, Al-Timimi DJ, Tawfeek

M. Comparison of serum zinc in healthy Iraqi children and patients with acrodermatitis enteropathica. Journal Community Medicine 1992; 5:71-74.

10. Prasad AS. Biochemistry of zinc. New York: Plenum press; 1993.
11. Hotz C, Brown KH. Assessment of the risk of zinc deficiency in populations and options for its control. Food Nutr Bull 2004; 25(1): S132-S62.
12. Al-Timimi DJ, Said NM, Al-Rubaii AY. Zinc deficiency in children with short stature: Effect of zinc supplementation on growth. Journal of the Arab Board of Medical Specialization 2005; 7(4): 338-43.
13. Al-Timimi, DJ, Al-Sharbatti SS, Al-Najjar F. Zinc deficiency among a healthy population in Baghdad, Iraq. Saudi Med J 2005;26(11):1777-81.
14. Said NI, Al-Timimi DJ, Saleem BJ. Current status of serum zinc level in healthy children and in children with chronic diarrhea in Baghdad city. J Fac Med Baghdad 1997; 39(2):169-73.
15. Al-Timimi DJ, Al-Omari W, Clor MM. Zinc in pregnancy; relation to course and outcome. J Fac Med Baghdad 1998;40(2):143-8.
16. Al-Kadi S, Al-Timimi DJ, Al-Azzawi L. The effect of zinc in the repair of recurrent vesicovaginal fistula. A pilot study. J Fac Med Baghdad 2000;24(7):55-7.
17. Sharaquie KE, Nanim RA, Farjou IB, Al-Timimi DJ. Oral zinc sulfate in the treatment of acute cutaneous leishmaniasia. Clin Exp Dermatol 2001; 26:21-6.
18. Haji MR. Zinc Status among smokers and non-smokers [MSc Thesis]. Dohuk, Iraq: College of Medicine, University of Dohuk; 2008.

SONOGRAPHIC EVALUATION OF FETAL FEMUR LENGH IN GESTATIONAL AGE ESTIMATION IN DUHOK-IRAQ

SAGVAN KH. HIDAYAT, MBChB, DMRD*

Submitted 1 September 2008; accepted 4 March 2009

ABSTRACT

Background Femur length is considered one of the most accurate biometric measurements in determining gestational age, most commonly using Hadlock charts based on white middle class population.
Aim Is to verify that Hadlock charts are not always applicable, especially for femur length.
Patients and Methods 251 pregnant women were studied prospectively in Duhok-Iraq during December 2007-April 2008 to determine gestational ages based on femur length, biparietal diameter, head circumference, and lastly on both biparietal diameter and head circumference combined.
Results On average the means of biparietal-based, head circumference-based, and a combined biparietal diameter and head circumference-based gestational ages as compared to femur length-based gestational ages were higher by 1.45, 0.69 and 1.07 weeks, respectively, which is considered statistically and clinically significant.
Conclusion and recommendation A significant difference in gestational ages based on femur length compared to gestational ages derived from biparietal diameter, and head circumference does exist in the territory of Duhok depending on Hadlock charts.
Yet further studies are recommended to support the above mentioned finding.

Duhok Med J 2009;3(1): 4-11.

Key words: Femur length, Obstetric ultrasound, Hadlock charts

Since 1981 on wards femur length (FL) charts for estimation of fetal growth were established,[1] where many authors consider FL comparable to biparietal diameter (BPD) and head circumference (HC) in gestational age estimation and are even more accurate.[2-5]

On the other hand, FL can be used with other parameters, i.e: BPD, HC and abdominal circumference (AC) to give more precise gestational age estimation, and always depending on European charts, therefore any false measurement can influence the final result.[6]

The BPD and HC measurements should follow strict rules to avoid false results.[6]

FL measurement should include the ossified portions of femur diaphysis, and metaphysis, excluding the cartilages.[1,6-8] Though technically FL assessment is considered the easiest measurement, but measurement errors are not rare including false shortening, false lengthening due to excessive gain, inclusion of the proximal, and distal ossification centers, and including distal femur point which represents a specular reflection from the

* *Assistant Lecturer, Department of Radiology, College of Medicine, University of Duhok, Duhok, Kurdistan Region, Department of Radiology, Azadi Teaching Hospital, Duhok, Iraq.*
E-mail: sagvanhida@yahoo.com

lateral surface of the distal epiphysis[6,8,9] (Figure 1).

After more than a decade of work in the field of obstetric ultrasonography, the author has noticed that in this locality (Duhok governorate) FL-based gestational age lags behind gestational age derived from other biometric measurements by a week or more in many occasions.

This study aims to verify the above finding using statistical analysis among a sample of 251 cases.

PATIENTS AND METHODS

A prospective study was performed on 251 pregnant women between 14-32 weeks of gestation from Duhok governorate during December 2007-April 2008.

The criteria for inclusion in the study were singleton gestation, head presentation, absence of fetal anomalies, and no history of chronic diseases: diabetes and/ or hypertension, and no history of abnormal babies, or stillbirths.

FL, BPD, HC, cephalic index (CI)(BPD/fronto-occiptal x100), and femur length/ head circumference x100 (FL/HC x 100) were calculated in each case.

To guard against any head shape abnormality which can affect BPD calculation, a cephalic index (CI) was performed for each individual case, to exclude any abnormal figure.

In order to exclude cases of microcephaly or dwarfism from the study, a (FL/HCx100) was performed too, and any abnormal figure was discarded from the study.

A curved sector array transducer was used (a Shimadzu XL SDU-350 ultrasound machine, Japan).

Gestational age estimation derived from FL was obtained for each case depending on Hadlock charts, the results were compared with gestational ages derived from BPD, HC and both FL-HC combined, respectively. Descriptive statistical analysis and paired t-test were then performed according to Bland and Altman using SPSS version 15.[10]

RESULTS

Two hundred and fifty one pregnant women between 14-32 weeks of gestation were studied by ultrasound, where BPD-based, HC-based and a combined BPD, HC-based gestational ages and FL-based gestational ages were estimated.

The mean value and the standard deviation of the four categories were calculated using Hadlock charts throughout (Table 1).

The means of differences between the first three above mentioned categories and the FL-based gestational ages were 1.45, 0.69 and 1.07 weeks, respectively, i.e: on average all were higher than FL-based gestational ages. The standard error and the 95% confidence interval of mean difference, and p-values were calculated from p-paired t-test and found significant (Table 2).

A histogram of the distribution of the differences between BPD-based gestational ages, and FL-based gestational ages is shown in figure 2.

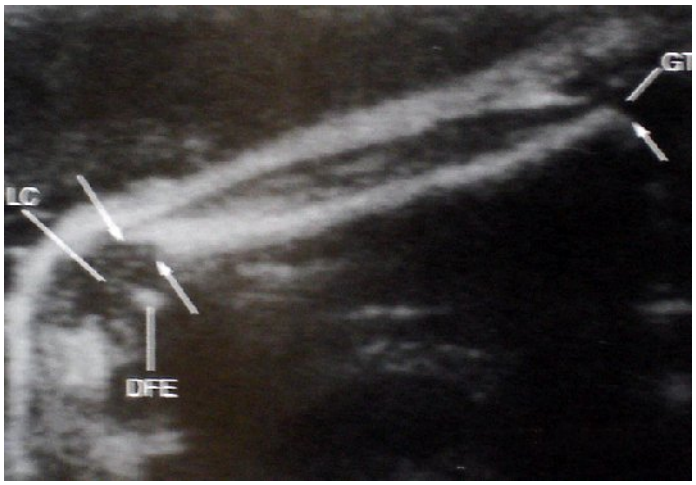

Figure 1. An ideal image of femur for measurement in the middle of third trimester. The two short arrows points to the endpoints where the electronic cursors should be placed. The long arrow points to the so called distal femur point which is not a part of the osseous femur, see the text. Lateral condyle (LC), distal femoral epiphysis (DFE), Greater trochanter (GT).

Table 1. Mean and standard deviation of the four categories of gestational age in weeks for 251 pregnant women in Duhok

	FL-based gestational age	BPD-based gestational age	HC-based gestational age	BPD-HC-based gestational age
Mean Gestational age	28.33	29.78	29.02	29.39
Standard deviation	5.73	5.89	5.90	5.89

Table 2. Mean differences between the four categories in weeks (n=251)

	BPD-based gestational age minus FL-based gestational age	HC-based gestational age minus FL-based gestational age	BPD, HC-based gestational age minus FL-based gestational age.
Mean difference in weeks	**1.45**	**0.69**	**1.07**
Standard error of mean difference	**0.08**	**0.81**	**0.08**
95% confidence interval of mean difference	**1.29-1.61**	**0.53-0.85**	**0.92-1.23**
P-value*	**<0.001**	**<0.001**	**<0.001**

* *calculated from paired t-test.*

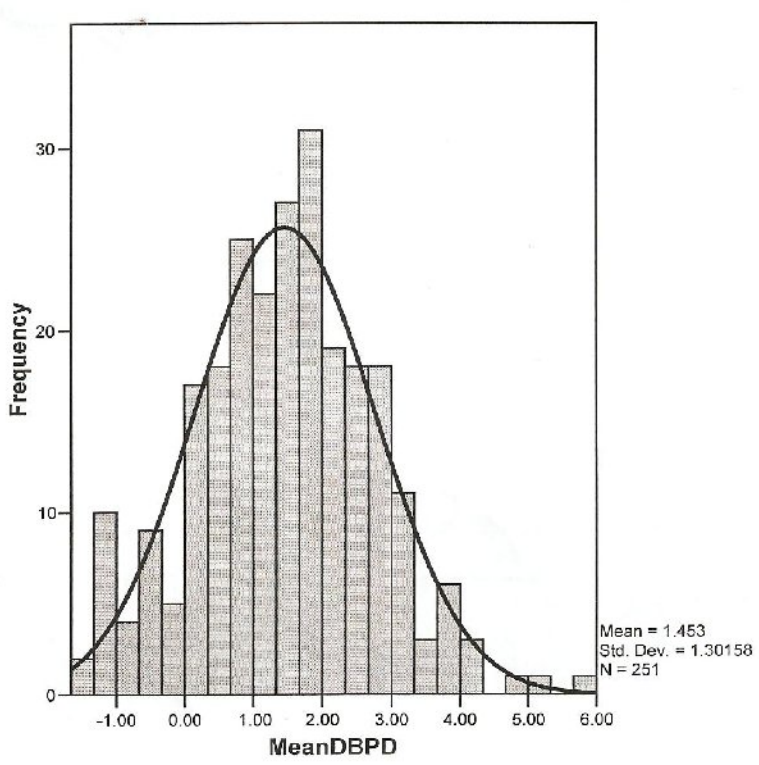

Figure 2. Distribution of the differences between BPD-based gestational ages and FL-based gestational ages

DISCUSSION

Some investigators have found that fetuses of black mothers have longer fetal FL than fetuses of white mothers,[11] and Asian fetuses are suggested to have smaller fetal lengths; others found little racial variation in FL.[1]

In nineteen eighty seven, Hadlock et al. stated in their article that the regression equations developed from white middle class population appeared to be applicable to populations of different socioeconomic and racial characteristics.[12]

In nineteen eighty seven, Rovulo et al. found no statistically significant difference in FL vs. gestational age in a racially mixed population of blacks, Asians, and Caucasians.[8] However, the sample size for each group was small and the chart used was not specified.[7]

In nineteen ninety three, Davis et al conducted a study and concluded that fetal race and sex difference could account for some degree of error in the ultrasound estimation of gestational age.[6]

In nineteen ninety four, a study conducted in Singapore showed that Chinese and Malaysian fetal femur length are apparently shorter than the Indian femur length, therefore, proving existence of differences in ultrasound measurements of femur length in different ethnic groups.[13]

In nineteen ninety sex, a study of 128 cases of Chinese fetuses, found a statistically significant difference in fetal femur length between Chinese population and established femur length nomograms, and the Chinese femur length was shorter by 0.56 mm, which was ultrasonically manifested as a 0.3 weeks difference in gestational age estimation.[7]

This study aimed to evaluate FL measurement in estimation of gestational age in comparison with BPD and HC measurements, therefore, we derived gestational age in each individual case depending on BPD and HC, and to derive a more precise gestational age two parameters of PBD and HC were used in combination,5 while avoiding gestational age estimation based on last menstrual period, for practical purposes.

The FL-based gestational ages according to Hadlock charts were compared with the above estimated gestational ages, and it was found that the mean differences were 1.45, 0.69 and 1.07 weeks (i.e 10.2 , 4.8, and 7.1 days) higher for the other three categories compared to FL-based estimation, respectively, which are considered statistically and clinically significant, especially when considering that there are already increasing variations in biometric measurements with advancing gestation,5 therefore, an already present variation in a BPD-based gestational age or a FL-based gestational age with advancing gestation might be further augmented by the additional difference found in this study.

However, the above findings have to be further confirmed by other studies using large samples, and confining to a gestational age not exceeding 24 weeks at most, in order to avoid the above mentioned variation with advancing gestational age as much as possible.

AKNOWLEDGEMENT

I would like to thank Dr. Sa'ad Younis for his invaluable help in the statistical work of this study.

REFERENCES

1. Johnsen SL, Rasmussen S, Sollien R, and Kiserud T. Fetal age assessment based on femur length at 10-25 weeks of gestation, and reference ranges for femur length to head circumference ratios. Acta Gynecol Scand 2005;84:725-33.
2. Hadlock FP, Harrist RB, Detter RL, Park SK. A prospective evaluation fetal femur length as a predictor of gestational age. J Ultrasound Med 1983; 2:111- 12.
3. Konje JC, Abrams KR, Bell SC, Tailr DJ. Determination of gestational age after the 24th weeks of gestation from fetal kidney length measurements. Ultrasound Obstet Gynecol 2002; 19: 592-97.
4. Hadlock FP, Harrist RB, Shah Y, SK Park. The femur/head circumference relation in obstetric sonography. J Ultrasound Med 1984; 3:439-42.
5. Hadlock FP, Deter RL, Harrist RB, Park SK. estimating fetal age: computer assisted analysis of multiple fetal growth parameters. Radiology 1984; 152: 497-501.
6. Filly RA, Hadlock FP: Ultrasound determination of menstrual age. In: Callen P, editor. Ultrasonogrphy in obstetrics and gynecology, 4th ed. Philadelphia: WB Saunders, 2000; p 146-70.
7. Lachman Y, Shen B. Sonographic evaluation of the fetal femur length in the Chinese population: Are the established charts reliable for the prediction of gestational age? JDMS 1996;12:127-32.
8. Rovulo KA, Filly FA, Callen PW. Evaluation of fetal femur length for prediction of gestational age in a racially mixed obstetric population. J Ultrasound Med 1987; 6:417.
9. Goldstein RB, Filly RA, Simpson G. Pitfalls in femur length measurements. J Ultrasound Med 1987; 6: 203-7.
10. Bland JM, Altman DG. Statistical methods for assessing agreement between two methods of 8 clinical measurements. Lancet 1986; i: 307-10.
11. Shipp TD, Bromely B, Mascola M, Benacerraf B. variation in fetal femur length with respect to maternal races. J Ultrasound Med 2001; 20:141- 4.
12. Hadlock FP, Harrist RB, Shah YP, King DF, Park SK, Sharman RS. Estimating fetal age using multiple parameters: a prospective evaluation in a racially mixed population. Am J Obstet Gyncol 1987;156: 955-7.
13. Yeo GS, Chan WB, Lun KC, Lai FM. Racial difference in fetal morphometry in Singapore. Ann Acad Med Singapore 1994; 23:371-6.

پوختە

هەلسەنگادنا ب سونارێ یا دریژاهیا هەستیێ رانێ کورپەی د دەست نیشانکرنا دەمێ حەملێ دا ل دهوکێ ، کوردستانا عیراقێ

شەنگستە: دریژاهیا هەستیێ رانی یەکە ژ دروست ترین پیڤەران د دەست نیشانکرنا دەمێ حەملێ دا ل گور خشتەییێن هادلوك ئەوێن ژ ژنێن چەرم سپی هاتینە دانان.

ئارمانج: ژبو چەسپاندنا وێ یەکێ کو خشتەییێن هادلوك نە هەردەم ل بارن ژبو دەستنیشان کرنا دەمێ حەملێ چاخێ هەستیێ رانی دهێتە بکارئینان هەر وەکو دڤێ ڤەکولینێ دا .

ریکێن ڤەکولینێ: 251 ژنێن حامل کەفتنە دڤێ ڤەکولینێ دا ئەوا هاتیە ئەنجامدان ل دهوکێ/ کوردستانا عیراقێ ل هەیڤا کانونا دووێ2007 تاکو نیسانا 2008 داکو دەمێ حەملێ بهێتە دەستنیشان کرن بکارئینانا دریژاهیا هەستیێ رانێ کورپەی، تیرەیا سەری،کەمەرەیا سەری،و تیرە و کەمەرەیا سەری بهەڤرا .

ئەنجام: ناڤینا جوداهییێ د ناڤبەرا ناڤینێ دەمێن حەملێ ئەوێن ژ پیڤانا هەستیێ رانی هاتینە دەرخستن بەرامبەر ئەو دەمێن حەملێ هاتینە دەرخستن ژ تیرەیا سەری،کەمەرەیا سەری،و تیرە و کەمەرەیا سەری ڤێکرا کێمتر بون ب:1.45 ، 0،69 ، و 1.07 هەفتی ، ئەڤ جوداهیە ژ لایێ ئاماری و کلینیکی ڤە دگرنگن.

دەرئەنجام: ل گور خشتەییێن هادلوك جوداهیەکا گرنگ یا هەی د ناڤبەرا دەمێن حەملێ ئەوێن ژ پیڤانا هەستیێ رانی دهێنە دەرخستن ،ئانکو دکێمترن، بەرامبەر ئەو دەمێن حەملێ ئەوێن هاتینە دەرخستن ژ پیڤانا تیرەیا سەری،کەمەرەیا سەری و هەردو تیرە و کەمەرەیا سەری ڤێکرا . د هەر حالی دا؛ پێدڤیە هندە ڤەکولینێن دیتر بهێنە ئەنجامدان داکو ئەڤ دەرئەنجامە بهێتە چەسپاندن.

الخلاصة

تقويم بالأمواج فوق الصوتية لقياس طول عظم الفخذ في تقدير مدة الحمل في منطقة دهوك ، كوردستان العراق

الخلفية: يعد قياس طول عظم الفخذ من أهم المقاييس الدقيقة في تحديد مدة ألحمل مستعيناً في الغالب بجداول هادلوك المستنبطة من حوامل ينتمين إلى الجنس الأبيض.

الهدف:هذا البحث محاولة لإثبات إن جداول هادلوك ليست قابلة للتطبيق دائما خصوصا في حال الاعتماد على قياس طول عظم الفخذ.

المرضى وطرق البحث: تم دراسة 251 امرأة حامل من منطقة دهوك في كوردستان العراق في الفترة من شهر كانون الأول 2007 وحتى نيسان 2008 لتقرير مدة الحمل معتمداً على قياس طول عظم الفخذ ، قطر الرأس ، محيط الرأس، و أيضاً بالأعتماد على قطر الرأس و محيطه مجتمعين.

النتائج: كان معدل الفرق ما بين معدل مدة الحمل المعتمدة على طول عظم الفخذ مقارنة بمعدلات مدة الحمل المعتمدة على قياس قطر الرأس ، محيط الرأس ، و قطر الرأس و محيطه مجتمعين هي أقل ب 1.45 ، 0.69 و 1.07 أسبوعاً على التوالي ، و تعد هذه الفروق مهمة من الناحيتين ألسريرية و الإحصائية .

الاستنتاجات والتوصيات: بالاستعانة بجداول هادلوك هناك فرق ما بين مدة الحمل المعتمدة على قياس طول عظم الفخذ بالمقارنة مع مدة الحمل في حال الاعتماد على قطر الرأس ، محيط الرأس ، و قطر الرأس و محيطه معا ، و ذلك في منطقة دهوك مكان البحث. وعلى كل حال ، نوصي بالمزيد من البحوث في هذا المجال لدعم ما تم التوصل إليه أعلاه.

INTRODUCING CHILD MENTAL HEALTH IN THE MEDICAL CURRICULUM IN DUHOK

ABDULBAGHI AHMAD, MBChB, PhD*

Submitted 3 March 2008; accepted 18 March 2009

ABSTRACT

Background Child mental health and child and adolescent psychiatry is increasingly becoming an indicator for any modern society to bring up child perspectives preparing for prosperous future. This field was lacking as an own medical speciality in the Middle East until the establishment of the Department of Child Mental Health at the College of Medicine, University of Duhok in 20 September 2001.

Objectives To build up local competence in Child Mental Health, and to introduce Child and Adolescent Psychiatry as a modern subject in the curriculums at the College of Medicine, University of Duhok, in the Kurdistan region of Iraq.

Methods The Department of Child Mental Health (CMH) was established at the College of Medicine, University of Duhok, in collaboration with the Department of Neuroscience, Child and Adolescent Psychiatry at the Uppsala University in Sweden. Education programs are delivered from the Uppsala University in Sweden to the College of Medicine, University of Duhok in Iraqi Kurdistan, at three levels; community-based education, undergraduate medical education, and postgraduate education to achieve High Diploma (Master) degree, adjusted to the local system in Kurdistan.

Results The CMH is a unit belonged to the pediatrics at the College of Medicine, and having links to the Directorates of Health, Education and Social Care in Duhok. Lectures in Child and Adolescent Psychiatry are delivered to the fifth year medicine students one week in autumn to be followed by another week of teaching in clinical case discussions in spring every year. The final examination consisting of the means of scores collected during the first theory and the second clinical courses compose 20% of the final pediatric examination. The postgraduate program consists of two-year education, after one-year pediatric residency, to obtain specialist competence in the subject.

Conclusions Transferring up-to-date knowledge on modern subjects from advanced international universities to the universities in Iraq is necessary and possible if modern teaching methods are effectively utilized. The CMH is proved to be a good example of successful collaboration, making the College of Medicine at the University of Duhok as the first school of medicine in the Middle East having Child and Adolescent Psychiatry as an obligatory teaching subject.

Duhok Med J 2009;3(1): 12-24.

Key words: Child mental health, Child and adolescent psychiatry, Medical curriculum, Modern society

The psychosocial consequences of the longstanding man-made disasters in Kurdistan had not been explored previously until the 1990s when the

* *Consulting Child and Adolescent Psychiatrist*
Assisting Professor and Founding Director, Department of Child Mental Health, College of Medicine, University of Duhok, Kurdistan Region–Iraq. Associate Professor, Department of Neuroscience, Child and Adolescent Psychiatry, Uppsala University, SE-751 85 Uppsala, Sweden. Telephone: 0046 18 6112555,
Fax Number: 0046 18 6112565, E-mail: abdulbaghi.ahmad@bupinst.uu.se

current socio-political situation was established under the protection of the United Nations (UN). Although the English system of education was applied in Iraq after the First World War, the rural areas consisting of a self-generating agricultural countryside, a difficult to reach mountainous area and a mentality of feudalism prevented establishment of the foreign traditions such as psychiatry and psychology.

The first evaluation of the psychological symptoms among children in Iraqi Kurdistan was conducted through child interviews after the Mass-Escape Tragedy (MET) of 1991.[1,2] It was to be followed by interviewing the orphans,[3-5] and then the child survivors of the Anfal operations.[6-9] These initial studies composed the beginning of collaboration between the Department of Child and Adolescent Psychiatry at the Uppsala University in Sweden, and the College of Medicine, University of Duhok in the Kurdistan Region of Iraq in order to introduce child psychiatric perspectives for the first time in Iraq.

This paper aims to describe the process of building up local competence in Child Mental Health, and introducing Child and Adolescent Psychiatry as a modern subject in the curriculum at the College of Medicine, University of Duhok, in the Kurdistan region of Iraq.

METHODS

The Target Group:

Children between the ages of 6 and 18 years and their caregivers in the Kurdistan Region of Iraq have been the target population for the activities in this collaborative project. The research samples were consisted of children participating in the MET of 1991, the orphans in the traditional foster care and in the orphanages in Sulaymania and Duhok, the survivors of the Anfal operations living in the camps of Cejnikan near the city of Erbil and the Sumood in Kalar belonging to Sulaymania province. Additionally, four samples were included in an epidemiological study in the city of Duhok: general population, orphans, primary health care visitors and hospital in-patients.

The Activity Domains:

The process of establishment of child mental health in Duhok in Iraqi Kurdistan was consisting of three parallel domains:

1. Screening, Survey and Research: The first stage in investigating the psychological perspectives in the Kurdistan society was to identify the consequences of psychological trauma on children and adolescents. Systematic use of screening instruments was applied in interviews with children and their caregivers. Due to the lack of psychological tradition in the Kurdistan society, either international standardised instruments were used or new instruments were developed for the purpose of the specific studies in Kurdistan.

Screening of traumatic experiences and posttraumatic stress symptoms was carried out among children of the MET. A child-specific instrument for reporting traumatic experiences was developed; The

Harvard – Uppsala Trauma Questionnaire for Children (HUTQ-C),[10-11] and an interview instrument was developed to identify posttraumatic stress symptoms including the diagnoses of Posttraumatic Stress Disorder (PTSD); Posttraumatic Stress Symptoms for Children (PTSS-C).[12] In order to cover a broad-spectrum of mental symptoms in the screening procedures, the Reporting Questionnaire for Children (RQC) of the World Health Organization (WHO) was used in the epidemiological study in Duhok.[13]

A survey of the psychological conditions of the Anfal survivors was accomplished in collaboration with the Swedish Development Project for Kurdistan (Qandil).[9,14] The camps of Cejnikan in Erbil, and that of Sumood in Kalar, were visited. The oldest child was interviewed with the trauma instruments in addition to the Child Behaviour Checklist (CBCL) in order to find out any type of psychopathology among children. The caregiver in the family was interviewed by a specially designed family map (Genogram) to obtain demographic data on each family. The caregiver was also interviewed with the Harvard Trauma Questionnaire (HTQ) for reporting own traumatic experiences and posttraumatic stress symptoms.

Research included all the mentioned instruments in every study plan. The research designs were consisted of randomized samples, cross-sectional data analysis and follow-up designs. Comparison studies were arranged whenever possible to identify group differences and to measure the changes over time. Both retrospective and prospective studies were conducted to cover prevalence and incidence rates of psychopathology and correlates.

2. Teaching Methods: Teaching of the new subject of child mental health in the region was in the forefront of the aims in this collaborative project. The education process covered three levels; a Community-Based Education program to be conducted to the parents and professionals working with children, such as teachers, social workers and health care personnel, an obligatory intensive course for undergraduate teaching for medicine students, and a postgraduate education program for paediatricians to obtain specialist competence in child and adolescent psychiatry. All the three levels of education programs were started simultaneously. However, the Community-Based Education Programs were easier to start first focusing on the training of the trainers. Due to the lack of the infrastructure facilities, the undergraduate and the postgraduate education programs were only consisted of temporary activities at the beginning. Individual training sessions and lectures on different aspects of child mental health were arranged during every visit to Kurdistan, according to the needs expressed by the physicians in Kurdistan. The lack of child perspectives in general and psychological traditions in particular made the early concentration on training and public opinion building a priority of the program. Besides, both the education system and the health services were deficient in these subjects of clinical psychology and multidisciplinary

structures.

Different teaching methods were used in the education process, from the case study presentations to problem-based learning and training of the trainers. Workshops and seminars arranged in collaboration with the local authorities and NGOs were among the most effective interventions to raise the public awareness and to motivate the professionals and local authorities to be concerned.

3. Collaboration Programs: Initially, the collaboration activities composed of limited projects of screening and survey conducted by the project leader (the author) being originally Kurd from Iraq and having been working as a specialist in child and adolescent psychiatry and director of studies at the Uppsala University in Sweden. Collaboration was achieved with the Swedish Save the Children, the Kurdistan Support Foundation in Sweden, the Swedish Program for Development in Kurdistan (Qandil), and the Kurdistan Medical Association in Sweden. The first agreement to start a child mental health program in Kurdistan was signed in 29 July 1992 (HAWAR).[15] Accordingly, children visiting the paediatric department of the Duhok Teaching Hospital for psychosomatic symptoms were to be interviewed with the WHO screening questionnaire (RQC) to find out mental health problems. The positive cases were to be interviewed in depth to identify PTSD. PTSD cases were then to be referred to the Department of Psychiatry at the Erbil Teaching Hospital for treatment. A psychiatrist in Erbil was trained in the recently approved Rewind technique to treat PTSD cases. The HAWAR program was approved by a working plan signed by the project leader, the Head of the Department of Child and Adolescent Psychiatry at the Uppsala University in Sweden, the first Minister of Health and Social Affairs in Kurdistan, and the secretary of Qandil to support the program. However, the HAWAR project could not survive because the Qandil could not provide the promised financial support because of other priorities.

The Department of Neuroscience, Child and Adolescent Psychiatry at the Uppsala University initiated a new collaboration in 1998, this time with the College of Medicine at the University of Duhok. Thanks to the financial support from the Swedish International Development Agency (SIDA); an epidemiological study was conducted on childhood trauma and mental health in the city of Duhok during the time 1998 - 2001. Accordingly, the Dean of the College of Medicine and the President of the University of Duhok were invited to visit the Uppsala University in Sweden in July 2001, which was followed by an agreement for establishment of a Department for Child Mental Health (CMH) at the College of Medicine, University of Duhok that was inaugurated formally in 20 September, 2001.

RESULTS

The results of the research during the ten years of 1991 – 2001 revealed high frequencies of mental health problems

among children of Kurdistan. When these results were presented to 200 randomly selected key persons in the city of Duhok, the response was characterized by surprise, worry and desire of concern by the related authorities. As a result, the president of the University of Duhok, and the Dean of the College of Medicine asked for assistance from the Uppsala University in Sweden to establish a special academic unit for the purpose of education, research and capacity building of experts in this subject in the region. The negotiations resulted in the visit of the Director of the Department of Child and Adolescent Psychiatry at the Uppsala University Hospital to Duhok to open the unit. As a result, the Department of Child Mental Health (CMH) was inaugurated at the College of Medicine, University of Duhok in 20 September 2001. The two collaborating parts agreed on engaging the project leader to act as the Founding Director (FD) of the CMH. At the same time, the University of Duhok provided the FD with the title of Assisting Professor in order to accomplish his duties at the CMH according to the local rules. An Advisory Board consisting of international and local experts was suggested by the FD to be connected to the CMH. Twice a year, at least one representative from the Swedish part visits Kurdistan for the purposes of education (community-based, undergraduate and postgraduate programs), clinical work (investigation, treatment and follow-up of patients), supervision and research.

The main function of the CMH has been to provide education in three levels:

1. Postgraduate Education Program: A two year postgraduate education syllabus has been provided by the FD to qualify for specialist competence in Child and Adolescent Psychiatry similar to that applied at the Uppsala University in Sweden. The degree of the postgraduate education was equalized to the High Diploma which is equivalent to the Master degree according to Law of the High Education at the Regional Kurdistan Government of Iraq. However, the degree has not been recognized by the Uppsala University due to differences in education system of the two universities. While Master degree is considered as a postgraduate education level in Kurdistan, similar to whole Iraq, it is not considered as postgraduate for the clinical sciences at the Uppsala University. We preferred to follow the system in Kurdistan in recognizing the degree, because the students complete their studies in Kurdistan with the ambition to continue working in Kurdistan when the degree is obtained. The contents of the syllabus, the teaching methods and the examination procedure remained keeping the quality standards of the Uppsala University.

The prerequisites consist of MBChB and at least one year Paediatric residency. The postgraduate education program consists of two years of full study, one theory and the other practical education to be ended by an officially defended thesis against an opponent and an examination committee. Every year, two paediatricians are to be accepted in the postgraduate program. The topics for the Master theses have been emerged from the current child mental health issues in the region. Among

others, the subjects of the theses have concerned enuresis and psychosocial correlates, positive reinforcement in stead of corporal punishment at schools, psychopathology in street children, maltreatment and correlates, a care model to help children out from institutionalization to the normal life.

2. Undergraduate Obligatory Course for the Medicine Students: Similar to that at the Uppsala University, the FD prepared a syllabus for obligatory education in Child and Adolescent Psychiatry for the medicine students in the fifth year level at the College of Medicine, University of Duhok. An intensive one-week theory course conducted during the autumn semester and completed by another week of intensive training and case discussions during the spring semester. The two weeks education program is ended by a written examination which together with the attendance and discussions at each week determines the degrees for each student. This degree constitutes 20% of the terminal Paediatric examination. The student has to repeat the two courses if not achieved 65 degrees. Between the theory and clinical courses, the students have to study the literature delivered by the FD. Every education moment is ended by an evaluation accomplished by the students.

Students' evaluation showed high degree of satisfaction both regarding general assessment of the course such as the quality and quantity of teaching methods, course literature, lectures, group discussions, and examination, and special assessment of every lecture (Figure 1 A & B).

3. Community-Based Education: The Community-Based Education is aimed to provide training and education in child perspectives including child mental health to the parents, and to the professionals working with the children. The focus has been mainly on training of the trainers. For this purpose, the local authorities in the city of Duhok have appointed representatives to participate at the regular weekly meetings of the CHM. Special courses have been arranged to prepare teachers for psychosocial care of the pupils. Training of the trainers and parent effectiveness training are among the most popular courses. Representatives from the Directorate of Social Care and the Directorate of Education are regularly attending the meetings to receive the education programs, and to come with questions and inquiries from the fields to the meeting. The ambition is to increase the involvement of the representatives of all primary care unites including the primary health care.

As a result of the increasing activities of education programs at all the three levels, the public awareness of child mental health problems is increasing in the society in Kurdistan. The campaign through media such as TV programs, radio and special seminars on child mental health issues has an important rule in this aspect.

Parallel with the increased awareness on mental health problems in the society, the parents, child caregivers, and professionals working with children are increasingly seeking the limited expert resources educated on the subject in the

region. A clinical centre belonged to the Directorate of Health in Duhok is currently running with limited resources despite the increasing demands.

DISCUSSION

For the first time in the Middle East, a special academic unit for child mental health has been established at the College of Medicine, University of Duhok in the Kurdistan Region of Iraq. The unit has been successfully established mostly due to the function of collaboration with the Uppsala University in Sweden. In addition to the continuity and coherence of the project leader, the benefit of connecting an advisory board of experts from Sweden and those of the responsible authorities in Duhok made every step to be modifies according to the local circumstances. The process started with research, making the process to be adjusted to the needs that appeared from the finings of the subsequent studies. The methods of application were derived from those up-to-date effectiveness and efficiency in achieving the results, particularly regarding the teaching methods.

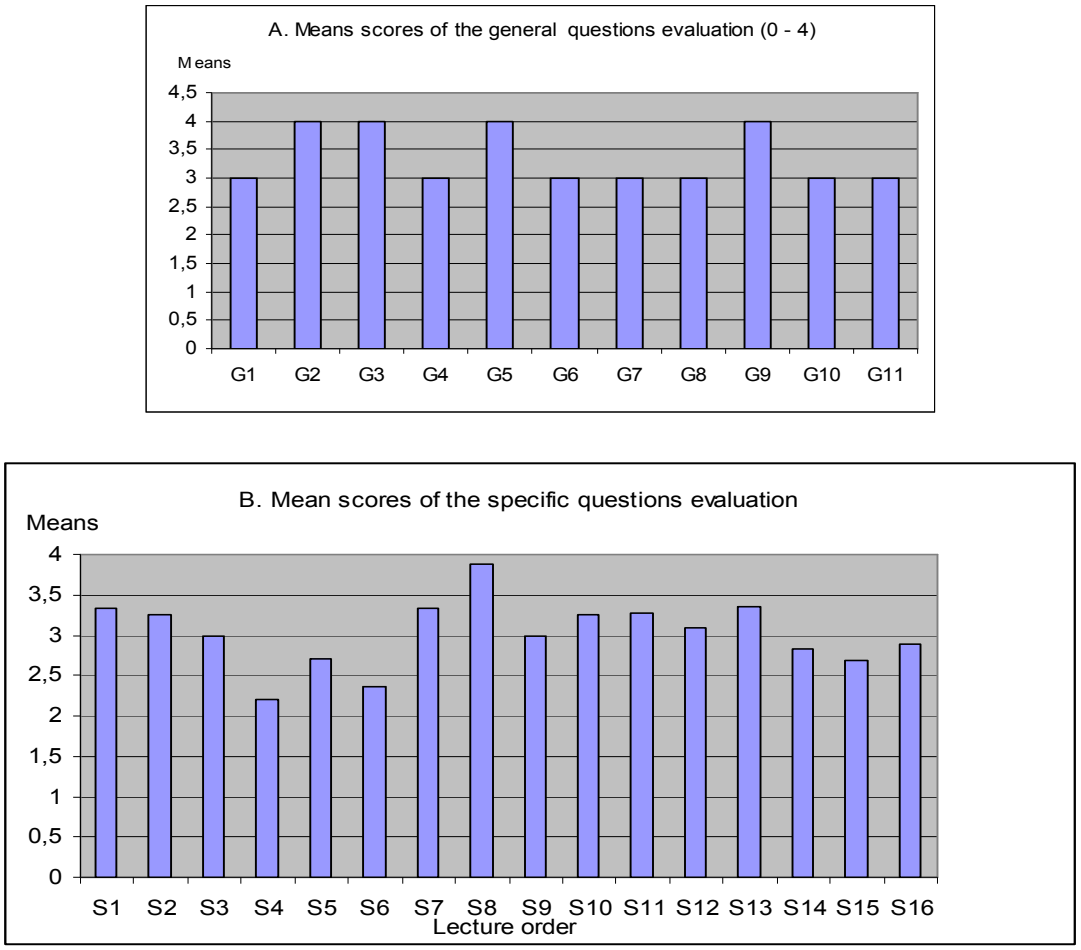

Figure 1. Fifth-year medical students' evaluation of the obligatory undergraduate education course in child and adolescent psychiatry in 2002 (G = general questions, S = specific questions)

The methods of investigation, management and evaluation in the developed societies as in the case of Sweden was not sufficient to be transferred as such to any developing society as our experiences did show. Much has to be adjusted to the local conditions. Starting with research did assist in keeping every step of development to be limited to the local needs. The local authorities usually have other priorities on their agenda that complicated the proceeding of the establishment process. Still, no imported knowledge was able to be applied before going through the bureaucracy of the local authorities and the sieve of the local traditions.

Although the subject of child mental health in general and child and adolescent psychiatry in particular was totally lacking in the region, the new subject proved to be necessary in meeting the needs of the people in Kurdistan. Child mental health problems proved to be highly prevalent in the region, not surprisingly because of the longstanding oppression, underdevelopment, ignorance and continuous war situation. Despite the absence of psychological and psychiatric perspectives, the public opinion was available in the region to digest the research findings, and to work for improvement. Education was the next priority and the natural step applied together with and after the research findings. Applying the education programs at the three levels proved to be the most effective way to introducing the subject in the society by a scientific and well planned way of action. The locally educated personnel directly applied evidence-based knowledge on the subject in their daily work. That was a major factor behind the successful application of the clinical work. Because the activities focused on children, the natural and sound development of adult psychiatry is prepared to build up upon. Unlike the previous psychiatry as a branch of medicine in the early medical education system in Iraq, this system of emerging adult psychiatric service from the currently well established child oriented service will guarantee a scientific and human psychiatric service not only for children but also for adults. In stead of the old fashioned adult psychiatry represented by big mental hospitals as terminal stages to attend psychiatric patients, the primary care psychiatric service emerged from child mental health service will make the adult patients to easily accept visiting the experts for own psychiatric problems, and to keep maintaining child mental health under scientific update.

LIMITATIONS AND PROPOSED IMPROVEMENTS

As expected, there was a lot of preventing factors to hinder the application of every step in this collaborative project. Most of the opposition was caused by the local conditions, particularly the attitude of conspiracy from the local authorities against every thing new that is not got through the leading organs first. Traditionally, the orders come centrally to give permission before any step was to be conducted in the field. Usually these orders come from people who have no

competence on the subject, which makes the process to be exposed to sabotage, corruption or ignorance. Another limiting factor is the non-awareness of the local authorities on the significance of the new subject to be introduced. Usually, they have other priorities that they are struggling with. It is both time consuming and sometimes hopeless to make the responsible authorities to be concerned. When the local authority is aware of the importance of the subject, the difficulties are then how to make the leading positions to understand and support the issue as a priority. Our activities have succeeded in convincing the local authorities about the significance of the child mental health issues. However, neither they nor we have been successful in pushing the issue upwards to be accomplished above the minister levels.

The current local structures in Kurdistan are still not fully suitable for the expansion of the adequate child mental health service. The university system accepts only physicians to work at an education unit, such as the CMH. The College of Medicine at the University of Duhok has not been able to accept education positions for non-doctor professionals despite their interest, competence and long experience. The only reason is that they are not doctors, but teachers, social workers, psychologists and so on. The lack of support to these professionals has made them less active and at last to go back to their usual duties at their respective directorates. The lack of clinical psychologist and sociologist competence among the teaching staff of the CMH is making the subject insufficient to be called child and adolescent psychiatry. It is still more appropriate to be called child mental health.

Currently, we have prepared proposals to be applied for finical support regarding assistance of the paramedical staff at the CMH, to assist in producing special teachers for the schools to take care of the psychosocial conditions of children at school, to provide remedial school service for children with special needs, to assist in building up an integrated mental health centre in Duhok to offer clinical service for children and adults, to assist in build up a health house for maternal and child mental health, and to assist in starting a child mental health program for whole Kurdistan. These proposals have been applied to several ministries and international NGOs without results. Still, we will continue trying; knowing that persistency usually gives results.

CONCLUSIONS

Bringing up new scientific subjects to be transferred from abroad to Iraqi universities seems not only to be possible but also essential to attempt. The experiences of establishment of child mental health at the College of Medicine, University of Duhok are encouraging as collaborative operation. Both facilitating and preventing factors are to be expected without necessarily resulting to give up the scientific methods and the main goals for the benefit of the new generations to build up the modern Iraq. Although much has been achieved in introducing the new

perspectives of child mental health, there is still remaining items to be done in order to achieve the optimal level of child and adolescent psychiatry as in the developed societies.

REFERENCES

1. Ahmad A. Symptoms of post-traumatic stress disorder among displaced Kurdish children in Iraq; victims of a man-made disaster after the Gulf war. Nord J Psychiat 1992;46(5):315-9.
2. Ahmad A, Mohammad H, Ameen N. A 26-month follow-up of posttraumatic stress symptoms in children after Mass-Escape Tragedy in Iraqi Kurdistan. Nord J Psychiat 1998; 52(5):357-66.
3. Ahmad A, Mohamad K. The socioemotional development of orphans in orphanages and traditional foster care in Iraqi Kurdistan. Child Abuse Neglect 1996;20(12):1164-73.
4. Ahmad A, Qahar J, Siddiq A, Majeed A, Rasheed J, Jabar F, et al. One-year follow-up of orphans´ competence and behavior problems in three different care systems in Iraqi Kurdistan. Journal of Duhok University 2006; 8(2):168-74.
5. Ahmad A, Qahar J, Siddiq A, Majeed A, Rasheed J, Jabar F, et al . A two-year follow-up of orphans' competence, social and psychological problems in traditional foster care and orphanages in Iraqi Kurdistan. Child Care Health Dev 2005; 31(2):203-15.
6. Ahmad A. PTSD symptoms among displaced Kurdish children in Iraq: Victims of a man-made disaster after the Gulf war. In: Neumann E, editor. Proceedings of III International Conference: Health, Political Repression and Human Rights; 24-29 November 1991; Santiago de Chile, Chile.
7. Ahmad A. Children of Kurdistan: Survivors of trauma and terror. In: Negash T, Rudebeck L, editors. Dimensions of development. Uppsala, Sweden: Forum for Development Studies, Uppsala University; 1995. p. 221- 37.
8. Ahmad A. Children of Kurdistan: Survivors of trauma and terror. In: Marvasti JA, editor. Child suffering in the world: Child maltreatment by parents, culture and governments in different countries and cultures. New York: Tri-State Litho; 2000. p. 153- 77
9. Ahmad A, Sofi MA, Sundelin-Wahlsten V, von Knorring A-L. Posttraumatic stress disorder in children after the military operation "Anfal" in Iraqi Kurdistan. European Journal of Child and Adolescent Psychiatry 2000;9:235-43.
10. Sundelin-Wahlsten V, Ahmad A, von Knorring A-L. Traumatic experience and posttraumatic stress reactions in children from Kurdistan and Sweden. Acta Paediatrica 2001; 90:563-8.
11. Sundelin-Wahlsten V, Ahmad A, von Knorring A-L. Traumatic experience and posttraumatic stress reactions in children and their parents from Kurdistan and Sweden. Nord J Psychiat 2001;55(3):395-9.

12. Ahmad A, Sundelin-Wahlsten V, Sofi MA, Qahar JA, von Knorring A-L. Reliability and validity of a child specific cross-cultural instrument for assessing posttraumatic stress disorder. Eur J Child Adolesc Psychiatry 2000;9:285-94.
13. Ahmad A, Qahar J, Siddiq A, Majeed A, Rasheed J, Jabar F, et al. Reporting Questionnaire for Children as a screening instrument for child mental health problems in Iraqi Kurdistan. Transcult Psychiatry 2007; 44(1):5-26.
14. Ahmad A. Kurdistan re-visited: a primary report on the situation for children in Kurdistan, presented to the Qandil project (a Swedish program for development in Iraqi Kurdistan), 1993 [Unpublished report].
15. Ahmad A, Mohamed TH. Progress report on the Child Mental Health Program in Iraqi Kurdistan (Hawar Program), Qandil Project 1994 [Unpublished report].

پوختە

داناانا ساخلەمییا دەرونی یا زاوکان وەك بابەتەك نوی د ناڤخاندنا کولیژا پزیشکی دا ل دهوك

پێشەکی: ساخلەمییا دەرونی یا زاوکان بویە نیشانەکا ئاشکرا د هەمی کومەلگەهێن پێشکەفتی دا ژ بو پەروەردەکا ئاڤاکەر بو پاشەروژەکا دلخاز.

ئارمانج: ئاڤەکرنا پێچێبونێن خومالی د بابەتێن ساخلەمییا دەرونی یا زاروکاندا.

ڕێکێن ڤەکولینێ: پشتی ئەنجامێن لێکولینێن زانستی هاتین زانین پشکا ساخلەمییا دەرونی یا زاروکان ل کولیژا پزیشکی یا زانکویا دهوك هاتە دامەزراندن ب هاریکاریا زانکویا ئوپسالا یا سویدی دا کو ل سەر سێ ئاستان وانە گوتن و فێرکرنا پسپور و کادران بێت ئەنجامدان: فێرکرنا پسپورێن کو دگەل زاروکان کاردکەن، خاندەڤانێن کولیژا پزیشکی و خاندنا بلند بو تایبەتمەندییا زاروکا.

ئەنجام: ژمارەك زور ژ پسپورێن زاروکان هاتن فێرکرن. خاندەڤانێن کولیژا پزیشکی ب چاکی وانەدان و فێرکرن هەلسەنگاندن. هەر سال تایبەتمەندێن ماستەرێ ییێن نوی د ڤی بابەتی پەیدا دبن.

دەرئەنجام: گرنکە زانستا پێشکەفتی ژ دەرڤە بو ئیراقێ بینین.

الخلاصة

ادخال مادة الصحة النفسية للطفل فى منهاج كلية الطب فى دهوك

الخلفية: علم الصحه النفسيه للطفل و الطب النفسي للاطفال و الشباب اصبح دليلا متصادعا للتمدن فى اي مجتمع متحضر يسعى الى تربية الاطفال لبناء مستقبل زاهر.

الهدف: لبناء الكفاءة المحلية فى مجال الصحة النفسية للطفل وادخال الطب النفسي للاطفال و الشباب كماده متحضره فى منهاج كلية الطب فى جامعة دهوك، اقليم كردستان العراق.

طرق البحث: بعد اجراء الدراسات الضرورية تم بناء قسم الصحة النفسية للطفل فى كلية الطب، جامعة دهوك، كمشروع تعاوني مشترک بين جامعة دهوک و جامعة اوپسالا فى السويد. برامج تدريس مادةالصحة النفسية للطفل و الطب النفسي للاطفال و الشباب اوتي بها من السويد لتطبيقها على ثلاث مستويات حسب حاجة وظروف مجتمعنا: قاعدة المجتمع، طلبة الطب و التعليم العالى للحصول على الدبلوم العالي (ماستر).

النتائج: تم التوصل الى اتفاق مع فرع الاطفال فى كلية الطب لتدريس طلبة المرحلة الخامسة. تقييم الطلاب جيد. من المفروض قبول طالبين فى برنامج الدبلوم وقد تخرج خمسة اخصصائيين لحد الان. و كذلک تم تعليم و تدريب الكثير من المهنيين الذين يشتغلون مع الاطفال .

الاستنتاجات: من الممكن و من الضروري استيراد العلوم المتطورة و تطبيقها بنجاح فى العراق اذا استعملت وسائل علمية مناسبة.

THROMBOPHILIC MUTATIONS IN BLOOD DONORS IN DUHOK-IRAQ

NASIR A.S. AL-ALLAWI, MBChB, PhD*
JALADET M.S. JUBRAEL, PhD**
NAWRAS K. BABAN, MD***
GEORGE S. GEDEON, PhD****

Submitted 9 July 2008; accepted 18 March 2009

ABSTRACT

Background Thrombophilia is a multifactorial disease due to the interplay between acquired and inherited factors. Factor V Leiden (G1691A), Prothrombin (G20210A) and MTHFR (C677T) are among the important inherited causes. The prevalence of these three thrombophilic mutations has not been addressed collectively in Iraqis, including the population of Duhok.

Objectives Determine the prevalence of thrombophilic mutations among healthy blood donors from Duhok.

Materials and Methods One hundred and fifty random healthy blood donors from the regional blood bank in Duhok-Iraq were investigated using multiplex PCR and reverse hybridization to oligonucleotide specific probes to detect Factor V leiden and MTHFR C677T mutations. While the first hundred donors were also screened using the same technology for Prothrombin G20210A mutation.

Results Factor V Leiden and Prothrombin G20210A carrier states were found in 1.25% and 3% of the individuals screened for them, respectively. The MTHFR C677T homozygous and heterozygous states were confirmed in 8 and 44% respectively.

Conclusions This study demonstrated that while the prevalence of Prothrombin and MTHFR mutations were rather consistent with pattern seen in surrounding countries in the Mediterranean region, Factor V Leiden prevalence was the least ever reported from any other population in the region. The latter finding suggests that the contribution of Factor V leiden to thrombotic states in Northern Iraq may not be as significant as it is in other countries in the region.

Duhok Med J 2009;3(1): 25-32.

Key words: Thrombophilia, Factor V Leiden, Prothrombin G20210A, MTHFR C677T, Iraq

Thrombophilia is a multifactorial disease due to an interplay between a variety of acquired and inherited factors. Among the important inherited factors, are Factor V Leiden G1691A, Prothrombin G20210A and Methylene Tetrahydrofolate

*Professor of Hematology, College of Medicine, University of Duhok, Duhok, Iraq.
**Professor of Molecular Biology, Scientific Research Centre, University of Duhok, Duhok, Iraq.
***Attending Physician, Methodist Medical Center, Oak Ridge, TN, USA.
****Consultant Biochemist, GML Laboratories, Amman, Jordan.

Address for Correspondance:
Prof. Nasir Al-Allawi, Head of Pathology Department, College of Medicine, University of Duhok, Azadi Hospital Street, Duhok, Iraq.
E-mail : nallawi@yahoo.com; telephone : +964 750 455 1494

Reductase (MTHFR C677T) mutations.[1] Factor V Leiden is a mutant form of the coagulation Factor V, rendering it resistant to the action of the natural coagulation inhibitor "Protein C" leading to the phenomenon called "Activated Protein C Resistance". This mutation is associated with 2.4-8.0 fold increase in the risk of venous thrombosis in its carriers, through inducing activated protein C resistance.[2-4] The Prothrombin mutation, is associated with increased coagulation factor II (Prothrombin) and a 2.8 fold increase in venous thrombosis risk.[5] The MTHR C677T mutation, on the other hand, is associated with mild to moderate hyperhomocysteinemia in its homozygous state, with controversial association with both venous and arterial thrombosis.[6]

Several studies have addressed the prevalence of these three mutations in Europe, North America and some Eastern Mediterranean populations,[2,3,5,7-9] but none from Iraq, except for one study on factor V Leiden from the capital Baghdad.[10] In many centers worldwide, screening for thrombophilic mutations has become an integral part of the evaluation of patients with arterial or venous thrombosis. This study was initiated to determine the prevalence of these thrombophilic mutations in this part of northern Iraq. Determining such prevalence rates and comparing the data with those found in other regions, may be helpful in understanding the origin of these mutations, and would also have an impact on the clinical decisions of local physicians in ordering such genetic testing.

MATERIALS AND METHODS

A total of 150 healthy blood donors attending the Duhok blood bank in northern Iraq were recruited. The samples were obtained from the first 10 consecutive donors attending the bank on 15 consecutive working days. All included donors were males with a median age of 31 years (range 18-58 years). The study was approved by the ethical committee of the college of medicine, university of Duhok, Iraq. Informed consents were obtained from all enrollees.

All enrollees had their DNA extracted using a chloroform-phenol method. Thereafter all subjects were tested for Factor V Leiden and MTHFR C677T mutations, while the first 100 were also tested for Prothrombin G20210A mutation. All testing employed multiplex amplification followed by detection using reverse hybridization to oligonucleotide specific probes (ViennaLab-Austria).

RESULTS

Two individuals (1.25%) were heterozygous for Factor V Leiden and three (3%) were heterozygous for Prothrombin mutation. Twelve individuals were homozygous for MTHFR mutation (8%), while another 66 (44%) were heterozygous for this mutation (Table 1).

DISCUSSION

The Duhok region stretches over 6,553 square kilometer and lies in a triangle

surrounded by Syria, Turkey and Iran at the north of Iraq. Its population of over 900 000, is mainly of the ethnic Kurdish group, living somewhat isolated in rough mountainous terrain.

The frequency of factor V Leiden mutation reported in this part of Northern Iraq, is the least among those in other Eastern Mediterranean populations. Table 2 clearly demonstrates that our figures are lower than those reported from neighbouring Syria, Turkey or Iran,[9,11,12] and much lower than other countries in Eastern Mediterranean like Lebanon and Jordan, where it is assumed that the mutation arose some 30 000 years ago.[9,13] However our frequency figures are closer to those reported in a previous study from Baghdad-Iraq of 3% and to reports from Saudi Arabia.[10,14] Worldwide, it has been demonstrated that this mutation is almost restricted to Caucasians, while it is almost absent in Africans, those of African origin and Orientals (Table 2).[6,15-19]

The Prothrombin mutation frequency was not different from that reported from neighbouring Iran and Turkey [12,20] or for that matter from the eastern Mediterranean and other Caucasian populations,[7,13,15,21,22] where it generally varies between 1.5 and 3.1% except for Spain where a figure of 6.5% has been reported.[16] However and similar to the Factor V Leiden mutation, it is very rare or absent in Africans and Orientals,[7,18,23] as shown in table 2.

On the other hand, homozygosity for the MTHFR mutation, as outlined in table 2, was intermediate in frequency between reports from Syria and Iran[24,25] and is comparable to that from Jordan, Turkey, and some European populations, although it was slightly lower than other reports from Europe, United states and Japan.[8,13,26] However and in contrast to the above reports, homozygosity for this polymorphism is almost absent in Africans and people of African descent.[8]

The current study has documented that while MTHFR and prothrombin mutations have rather similar frequencies to those reported in other Caucasian populations, factor V Leiden frequency was much less commonly encountered. The importance of this observation lies in the fact that the association of the factor V Leiden mutation with venous thromboembolism in any population is actually a function of its background prevalence in that population. Thus in Eastern Mediterraneans, like the Lebanese, where the factor V Leiden mutation is carried by more than 14% of healthy individuals, the prevalence of the mutation among those with thromboembolic events reaches figures as high as 70%.[27] While the contribution of factor V Leiden mutations to these events is very limited, in populations with low background prevalence like American blacks.[18] Thus it would anticipated that in the population of northern Iraq, and in view of its lower frequency, the relative contribution of Factor V Leiden to venous thromboembolic disease is much less than that seen in other Eastern Mediterranean countries. The latter makes screening for factor V Leiden mutation as a routine local practice unwarranted for a patient with venous thrombosis, except in particular settings.

Finally a basic question remains to be answered, and that is whether the low prevalence of factor V Leiden as documented by the current study, has led to a lower overall incidence of venous thromboembolic events in this population. This question can only be answered upon conducting proper epidemiological studies on the latter events in the population of Iraq, a task which has long been overdue.

FINANCIAL SUPPORT

This Research was funded by a grant from the university of Duhok, Duhok, Iraq.

Table 1. The number and frequency of three thrombophilic mutations found in blood donors from Duhok –Iraq

Mutation	Subjects	Number (%)		
		Homozygous	Heterozygous	Non-Carriers
Factor V Leiden (G1691A)	150	0 (0%)	2 (1.25%)	148 (98.75%)
Prothrombin mutation (G20210A)	100	0 (0%)	3 (3%)	97 (97%)
MTHFR (C677T)	150	12 (8%)	66 (44%)	72 (48%)

Table 2. The frequencies of the three thrombophilic mutations in Eastern Mediterranean and worldwide studies

Location	Factor V Leiden (G1691A) Carrier state (%)	Prothrombin (G20210A) Carrier state (%)	MTHFR (C677T) Homozygous state (%)	References
Eastern Mediterranean Region				
Duhok-Iraq	1.25	3.0	8	Current study
Turkey	9.8	2.7	9.6	11,20,26
Iran	5.6	3.1	5	12,25
Syria	13.6	-	18	9,24
Lebanon	14.2	2.7	-	9,21
Jordan	15	2	8	13
Saudi Arabia	2.5	1.7	-	14,22
Europe	2.6-13.4	1.5-6.5	8-18	6,7,8,15-17
USA	5.3	1.5	13	7,8,18
Africa/African origin	0	0-0.67	0	7,8, 15,18
Japan	0	0	11.5	8,19,23

REFERENCES

1. Rosendaal FR. Venous thrombosis: A multicausal disease. Lancet 1999;353(9159):1167-73.
2. Rosendaal FR, Koster T, Vandenbroucke JP, Reitsma PH. High risk of thrombosis in patients homozygous for factor V leiden (activated Protein C resistance). Blood 1995;85:1504-8.
3. Juul K, Tybjaerg-Hansen A, Schnohr P, Nordestgaard BG. Factor V Leiden and the risk of venous thrombosis in adult Danish population. Ann Intern Med 2004;140:330-7.
4. Bombeli T, Basie A, Fehr J. Prevalence of hereditary thrombophilia in patients with thrombosis in different venous systems . Amer J Hematol 2002;70:126-32.
5. Poort RS, Rosendaal FR, Retsma PH, Bertina PH, Bertina RM. A common genetic variation in the 3'-untranslated region of the prothrombin gene is associated with high plasma prothrombin and increased venous thrombosis. Blood 1996;88:3698-703.
6. Gemmati D, Serino ML, Trivellato C, Fiorini S, Scapoli GL. C677T substitution in the methylenetetrahydrofolate reductase gene as a risk factor for venous thrombosis and arterial disease in selected patients. Haematologica 1999;84:824-8.
7. Rosendaal FR, Diggen CJM, Zivelin A, Arruda VR, Alach M, Siscovick DS, et al. Geographical distribution of the 20210 G to A prothrombin variant. Thromb Haemost 1998; 79: 706-8.
8. Botto L, Yang Q. 5,10-Methylenetetrahydrofolate reductase gene variants and congenital anomalies : A HuGE Review. Amer J Epidemiol 2000; 151: 862-77.
9. Irani-Hakime N, Tamim H, Elias G, Finan RR, Daccache JL, Al-Mawi WY. High prevalence of factor V mutation (Leiden) in Eastern Mediterranean. Clin. Chem 2000; 46(1):134-6.
10. Al-Allawi NA, Jubrael J, Hilmi F. Factor V Leiden in blood donors in Baghdad (Iraq). Clin Chem 2004;50(3):677-8.
11. Akar N., Akar E, DalginG, Omurlu K, Sozuoz A, Cin S. Factor V 1691 G-A mutation in Turkish population. Thromb Hemost 1997; 78:1527.
12. Zeinali S, Duca F, Zarbakhsh B, Tagliabue L, Mannucci PM. Thrombophilic mutations in Iran. Thromb. Haemost 2000;83:351-2.
13. Eid SS, Rihani GR. Prevalence of Factor V Leiden, Prothrombin G20210A and MTHFR C677T mutations in 200 Jordanian healthy individuals. Clin Lab Sci 2004;17:200-2.
14. Dzimiri N, Meyer B. World distribution of factor V Leiden. Lancet 1996; 347: 481-2.
15. Rees DC, Cox M, Clegg JB. World distribution of factor V Leiden. Lancet 1995;346:1133-4.
16. Soria JM, Baiget M, Castano L, Tejada MI, Perez-Nanclares G, Fontcuberta J. Genetic risk factors for thrombosis in a

Basque population and their possible contribution to the analysis of a complex disease such as thrombophilia. Haematologica 2001;86:889-90.

17. Mannucci PM, Dica F, Reyvandi F, Tagliabue L, Merati G, Martinelli I, Cattaneo M. Frequency of factor V Arg506Gln in Italians. Thromb Hemost 1996; 75:964.
18. Folsom AR, Cushman M, Tsai MY, Aleksic N, Heckbert SR, Boland LL, et al. A prospective study of venous thromboembolism in relation to factor V leiden and related factors. Blood 2002; 99:2720-5.
19. Takamiya O, Ishida F, Kodaria H, Kitano K. APC resistance and MnlI genotype (Gln 506) of coagulation factor V are rare in the Japanese population. Thromb Haemost 1995;74:990-7.
20. Akar N, Misirlioglu M, Akar E, Aveu F, Yalcin A, Sozuoz A. Prothrombin gene 20210 G-A mutation in the Turkish population. Am J Hematol 1998;58(3):249.
21. Tamim H, Finan RR, Almawi WY. Prevalence of two thrombophilia predisposing mutations: factor V G1691A (R506Q; Leiden) and Prothrombin G20210A, among healthy Lebanese. Thromb Haemost 2002;88:691-2.
22. Abu-Amero KK, Wyngaard CA, Kambouris M, Dzimiri N. Prevalence of the 20210 G>A prothrombin variant and its association with coronary artery disease in a middle Eastern population. Arch Pathol Lab Med 2002;126(9):1087-90.
23. Miyata T, Kawasaki H, Fujimura H, Uchida K, Tsushima M, Kato H. The prothrombin 20210 G→A mutation is not found among Japanese patients with deep venous thrombosis and healthy individuals. Blood Coagul Fribinol 1998;9:451-2.
24. Herrmann W, Obeid R, Jouma M. Hyperhomocysteinemia and Vitamin B12 deficiency are more striking in Syrians than Germans – Causes and implications. Atherosclerosis 2003;166:143-50.
25. Golbahar J, Fathi Z, Tamadon M. Distribution of 5,10 methylenetetrahydrofolate reductase (C677T) and its association with red blood cell 5-methyltetrahydofolate in healthy Iranians. Clin Nutr 2005;24(1):83-7.
26. Sazci A, Ergul E, Kaya G, Kara I. Genotype and allele frequencies of polymorphic methylenetetrahydrofolate reductase gene in Turkey. Cell Biochem Funct 2005;23(1):51-4.
27. Irani-Hakime N, Tamim H, Elias G, Choueiry S, Kreidy R, Daccache JL, Al-Mawi WY. Factor V R506Q mutation-Leiden: an independent risk factor for venous thrombosis, but not coronary artery disease. J Thromb Thrombolysis 2001;11:111-6.

پوختە

فاکتەرێن میراتگری یێن ترومبوفیلیا خوینێ لجەم خوینبەخشێن ساخلەم ل دهوکێ

پێشەکی: ترومبوفیلیا نەساخییەکا پرفاکتەرییە ژبەر کارلێکرنا دناڤبەرا فاکتەرێن دەستکەفتی و فاکتەرێن میراتگرتی. فاکتەرێن V Leiden (G1691A) و پروترومبین (G20210A) و فاکتەرێ MTHFR (C677T) دهێنە هژمارتن ژ گرنگترین ئەگەرێن میراتگرتی. ریژا بەلاڤبوونا ڤان هەرسێ گهورینا هێشتا ب هەڤرا نەهاتیە دەستنیشانکرن ل عیراقێ و د گەلدا خەلکێ دهوکێ.

ئارمانج: دیارکرنا ریژا بەلاڤبوونا فاکتەرێن میراتگری یێن ترومبوفیلیا خوینێ لجەم خوینبەخشێن ساخلەم ل دهوکێ.

ڕێکێن ڤەکولینێ: سەد وپێنجی خوینبەخشێن ساخلەم ب کورانە ژ بەنکا خوینی ل پارێزگەها دهوکی ل عیراقێ هاتنە تاقیکرن بو دیتنا گهورینێن فاکتەرێ V Leiden و MTHFR C677T ب کارئینانا multiplex PCR و بیژیکرنا بەروڤاژی. هەروەسا هەر سەد خوینبەخشێن ئێکێ هاتنە لێنێرینکرن ب هەمان ڕێك بو دیتنا گهورینا پروترومبینی G20210A.

ئەنجام: حالەتێ هەلگریا فاکتەرێ V Leiden و پروترومبین G20210A هاتە دیتن ل 1.2٪ و 3٪ لدویڤ ئێك ژ وان کەسێن لێنێرین بو هاتیە کرن. حالەتێ هەمان جور و هەمەجور یێ فاکتەرێ MTHFR (C677T) دوپاتبوو ل 8 و 44٪ لدویڤ ئێك.

دەرئەنجام: ڤێ ڤەکولینێ دیارکر کو هەرچەندە ریژا بەلاڤبوونا گهورینا پروترومبینی و MTHFR وەکی وی شێوازی بوو یێ کو هاتیە دیتن ل وەلاتێن دەوروبەر ل دەڤەرا دەریا ناڤەراست, بەلێ ریژا بەلاڤبوونا فاکتەرێ V Leiden ژ هەمی ریژا کێمتر بوو یێن هاتینە دیتن ل هەر وەلاتەکێ ل دەڤەرێ, و ئەڤە رامانا هندێ ددەت کو بەشداریا فاکتەرێ V Leiden د نەساخییێ دا ل باکورێ عیراقێ دبیت وەسا یا گرنگ نەبیت وەکی ل وەلاتێن دی یێن دەڤەرێ.

الخلاصة

الطفرات الوراثية لفرط التخثر في متبرعي الدم في دهوك – العراق

الخلفية: أن فرط التخثر هو حالة مرضية متعددة الأسباب ناتجة عن تداخل العوامل المكتسبة و الوراثية. و يعد العامل الخامس لايدن و البروثرمبين G20210A و MTHFR C677T من العوامل الوراثية المهمة. أن درجة أنتشار هذه العوامل مجتمعة لم يتم دراستها مسبقا" في العراقيين و من ضمنهم سكان دهوك.

الاهداف: تحديد نسبة أنتشار موروثات فرط التخثر في متبرعي الدم الأصحاء في دهوك.

مواد و طرق البحث: تم شمول عينة عشوائية من مائة و خمسون متبرعا" من الأصحاء من مصرف الدم الرئيسي في دهوك-العراق. و قد تم فحص الدنا بطريقة التفاعل التضاعفي لتحديد وجود الطفرات الوراثية المسببة للعامل الخامس لايدن و لل MTHFR C677T . بينما تم فحص المائة عينة الأولى بنفس التقنية للطفرة الوراثية المسببة للبروثرمبين G20210A.

النتائج: وجد أن 1.25% و 3% من المتبرعين المشمولين هم حاملين لصفتي العامل الخامس لايدن و البروثرمبين و بالتتابع. بينما و جد أن 8% و 44% من المتبرعين كانوا حاملين لصفة MTHFR C677T بحالة متشابهة و مختلفة الزيجة بالتتابع.

الاستنتاجات: وجد ان نسبة أنتشار طفرات البروثرمبين و MTHFR تشابه مثيلاتها في الدول المجاورة في منطقة شرق المتوسط.، بينما وجد ان نسبة أنتشار العامل الخامس لايدن أقل من أي مجموعة سكانية مجاورة. أن هذه الملاحظة الاخيرة توحي بأن أهمية أسهام هذه الطفرة في حالات تخثر الأوردة في شمال العراق، قد لايكون بأهميته في بقية دول المنطقة.

ISLAMIC PRAYING AND OSTEOARTHRITIS CHANGES OF WEIGHT BEARING JOINTS

NIAZ J. AL- BARZINJY, MBChB, DRMR*
MAHAMMED T. RASOOL, FRCPG, FRCP, DRMR (London)**
TAHER Q. AL- DABBAGH, FRCP (Ed)***

Submitted 2 August 2008; accepted 18 March 2009

ABSTRACT

Objective Find out whether daily physical activities of Islamic praying predispose to or protect from osteoarthritis (OA) of weight bearing joints.
Methods Comparison of prevalence of primary OA of knees and/or hips between age and weight matched prayers and non-prayers men. Civil official and employees from different establishments in Erbil City (191 Subjects) and (21 Subjects) from out-patient clinics of Rizgary and Erbil Teaching Hospital-Erbil, over a period of eight months starting on Jan.2004. This constituted one hundred and eleven prayers and 101 subjects not practicing Islamic praying. Subjects fulfilling our inclusion criteria underwent clinical evaluation and radiology of their knee and hip joints. We assessed, by Chi-squared test, differences in frequency of OA between prayers and non-prayers, and between the > 20 year prayers who lay hands first on prostrating from erect posture and the same duration prayers who lay their knees first.
Results No single OA of hip was encountered. OA of knees was significantly less ($p. < 0.01$) prevalent among prayers than those who did not practice Islamic praying.differentially, Laying knees first on prostrating from erect posture was associated with significantly ($p. <0.05$) higher frequency of OA of knees as compared with those who lay their hands first on the praying rug(ground).
Conclusion Islamic praying in 46-60 year-old men, of normal or marginal overweight (BMI 20-27kg/m2), protects from primary OA of the knees. Laying palms first on prostrating from standing position appears to preclude a likely harmful effect on the knee joints presumably from repeated "hitting" of ground under the praying rug if laid first on prostration.

Duhok Med J 2009;3(1): 33-44.

Key words: Islamic Praying; Osteoarthritis of knee, Osteoarthritis of hip

Islamic prayers include several physical activities. Each of the no less than 17 daily Raq'aas performed includes standing erect, bowing to a right angle position, standing again, prostrating from standing position, then squatting with the knee

* *Assistant Lecturer of Rheumatology, Department of Medicine, College of Medicine, Hawler Medical University, Erbil - Iraq*
** *Assistant Professor of Rheumatology, Head of Department of Medicine, College of Medicine, University of Duhok, Duhok - Iraq*
*** *Professor, Department of Medicine, College of Medicine, University of Mosul, Mosul-Iraq*

Address for Correspondance:
Mahammed T. Rasool. Head of Department of Medicine, College of Medicine, University of Duhok, Duhok, Iraq.
E-mail: mzakoly@yahoo.com

joints maximally flexed and shins laying in parallel on ground, i.e., deep squatting, prostrating again, then deep squatting again. Raq'aas are no less than two and no more than four in each of the five main daily prayers. Each Raq'aa after the first has to start by standing up from either the position of prostration or from deep squatting position. Each prayer is concluded by rotation of the head and neck to the right and to the left.

Such repeated daily movements for years strengthen the involved exercising muscles. These include muscles that bear the burden, at least 12 times daily, of extending the knee joints against most of the body weight on getting up from prostration or deep squatting positions. Other extensors and flexors of the weight bearing joints are also involved. The movements are generally exercised softly as to maintain joint mobility and elasticity of its surrounding structures.[1-7] Such endurance exercises help to protect the joints from osteoarthritis (OA).[8] Contrariwise, repeated "hitting" of the ground covered by a thin rug when the knees are first laid on prostrating from erect posture involves a likely risk of minor trauma to the underlying tissues of the knee, including the synovial membrane. Such recurrent mild trauma might predispose, over the years, to OA of the knees.[9-11] OA is the most common disorder of joints.[12] Commonly, it results from one or the interplay of several predisposing factors; such OA is designated as secondary OA. The predisposing factors include joint injury, developmental abnormalities, affection of a joint by another disease, or one of several metabolic disorders.[13-16] There are also risk factors, which increase the vulnerability to develop OA. These include older age, obesity, excessive or strenuous physical activity, female sex, race, and poor muscle strength.[13-19]

This study aims mainly at looking for any favorable or unfavorable association between hip and/ or knee OA and the practice of Islamic prayers. We were surprised that, at a time when physical activity has so much been credited as a protective means from several medical disorders including OA,[8,20-25] the repeated physical exercising, though gentle, of Islamic prayers has hardly been evaluated as deduced from lack of such studies on searching the literature. We could only encounter Islamic prayer as a physiotherapeutic means in one study.[26]

SUBJECTS AND METHODS

Co-operative kurdish, male, 46-60 year-old Civil Servants from different establishments in Erbil City(191 Subjects) and (21 Subjects) from out-patient clinics of Rizgary and Erbil Teaching Hospital-Erbil, constituted the source of the sample of subjects included in this study. Each subject was weighted while wearing light clothes and height was measured without shoes. Only subjects with body mass index (BMI) within 20-27kg/m^2 range were included in the study. We also by clinical evaluation and some blood tests excluded subjects:

1) Having sustained previous major trauma to the bones or joints of the

lower limbs.

2) 2. With known previous or ongoing infective, inflammatory, or metabolic joint disease.
3) Having developmental deformities like acetabular dysplasia, Perthes disease, congenially displaced hip, leg length discrepancy, varus or valgus deformity.
4) With particularly harmful occupation to weight-bearing joints, notably farmers.
5) With ESR > 40mm/hour or abnormally raised serum calcium.

The study extended over a period of eight months, starting on January 2004. Each subject included was interviewed as to whether he regularly or irregularly practices Islamic prayers and the number of years he has been praying, or whether he did not pray. Christians, naturally, were accepted as non-Islamic prayers. Radiology, AP and lateral view, for both hip and knee joints was done.

Diagnosis of OA was according to the American College of Rheumatology (ACR) classification criteria of OA, clinically and radiologically of both hip and knee joints.[13] The criteria for knee OA are:

1) Knee pain.
2) At least one of the following three items: a. age>50 years; b. morning stiffness < 30 minutes; c. crepitus on motion.
3) Osteophytosis by x-ray, AP view.

Subjects were divided into two main groups: prayers and those who did not practice Islamic praying previously. The prayers group was further subdivided into those who have been praying regularly for 20 years or more and those praying irregularly or for less than 20 years. Furthermore, those who have been praying regularly for 20 years or more were interrogated as to whether on prostrating from standing position they first lay their palms (palm-group) or their knees (knee-group) on the praying rug.

The comparable groups and subgroups were computed for statistical evaluation as to the number and percent affection by OA of the knee and/or hip joints by utilizing the Chi-squared test.

RESULTS

The study included 212 subjects, 111 subjects conduct Islamic prayers and 101 did not pray. As we did not encounter any subject with OA of a hip joint, neither among prayers nor among non-prayers, our results, of necessity, shall be confined to OA of the knees. Table 1 compares the frequency of OA among prayers and those who did not pray for the whole study sample and after dividing them into three narrower age ranges.

Among the 111 subjects who have been practicing Islamic prayers, 59 have been praying continuously for > 20 years. The remaining 52 either prayed regularly but for less than 20 years or prayed intermittently. Table 2 compares the frequency of OA between these two categories and subdivided into three narrower age ranges.

Of the 59 regularly praying subjects for > 20 years, 35 subjects prostrate as "palm group" and 24 as "knee group". On

comparing them, a significantly higher prevalence of OA of the knees was encountered among the "knee group"; ($p < 0.05$). When partitioned into three narrower age ranges, only the 56-60 year old subjects maintained the significant difference of the age range 46-60 years, as shown in table 3.

On comparing the subjects having normal weight (BMI= 20-24.9kg/m^2) with the marginally over weight subjects (BMI= 25-27kg/m^2), there was no significant difference in the frequency of OA of the knees between them, as shown in table 4.

DISCUSSION

Has homogeneity of samples for comparison been attained satisfactorily?

Our selection of subjects aimed, not only at excluding secondary OA but also, at obtaining as similar samples as permissible for allowing conduction of the comparisons of the study. Clinically evident predisposing causes were excluded and risk factors were either avoided or allowed as equal a role as possible on comparing groups.

Thus all subjects were derived from a single ethnic stock, (Kurds), and all were males. Exclusion of women was partly because of the monthly hold-up of praying during menstruation and partly to avoid the confounding effect of pregnancies concerning change in weight and physical activity. Exclusion of subjects older than sixty years was imposed, probably wrongly, by the high prevalence of primary OA in such age,[27-30] whereas the younger than 46 years were excluded because of the expected very low prevalence of primary OA in such age.[16] With analogous inferences in mind, we confined the study to subjects with a BMI range of 20-27 kg/m^2.

Moreover, the included subjects were also statistically re-evaluated as three subgroups of narrower age ranges to minimize, if not nullify, the effect of this strongest risk factor. [14,16,27,28,31] However, on comparing the subjects having normal body weight (BMI= 20-24.9kg/m^2) with little overweight subjects (BMI= 25-27kg/m^2), we did not encounter any significant difference in the prevalence of OA between them.

Table 1. Frequency of knee osteoarthritis (OA) among prayer and non-prayer subjects for different age ranges

Age (years)	Prayer		Non-prayer		
	Total No. (%)	Affected by OA No. (%)	Total No. (%)	Affected by OA No. (%)	
46-60	111 (100)	21 (18.91)	101 (100)	36 (35.64)	**
46-50	39 (35.13)	5 (12.8)	34 (33.66)	7 (20.58)	
51-55	36 (32.43)	5 (13.8)	32 (31.68)	11 (34.37)	*
56-60	36 (32.43)	11 (30.5)	35 (34.65)	18 (51.42)	*

*** $p < 0.01$ (highly significant difference)*
** $p < 0.05$ (significant difference)*

Table 2. Frequency of osteoarthritis (OA) of the knee among regular prayers for > 20 years and irregular or shorter duration of praying for different age ranges

Age (years)	Prayer regularly > 20 years		Intermittent or shorter praying period		
	Total No.	Affected by OA No. (%)	Total No.	Affected by OA No. (%)	
46-60	59	7 (11.86)	52	14 (26.92)	*
46-50	25	2 (8)	14	3 (21.42)	
51-55	19	2 (10.52)	17	3 (17.64)	
56-60	15	3 (20)	21	8 (38)	*

* *p < 0.05 (significant difference)*

Table 3. Comparison of the frequency of osteoarthritis (OA) of the knee among the 59 regular and > 20 years prayers as to whether they lay palms (palm group) or knees (knee group) first on prostrating from erect posture

Age (years)	Palm group		Knee group		
	Total No.	Affected by OA No. (%)	Total No.	Affected by OA No. (%)	
46-60	35	1 (2.85)	24	6 (25)	*
46-50	15	0	10	2 (20)	
51-55	12	1 (8.33)	7	1 (14.28)	
56-60	8	0	7	3 (40.85)	**

** *p < 0.01 (highly significant difference)*
* *p < 0.05 (significant difference)*

Table 4. Comparison of the frequency of osteoarthritis (OA) of the knees of normal weight and marginally overweight prayer and non-prayer subjects

Group	Normal weight (BMI= 20-24.9)		Marginally overweight (BMI= 25-27)		
	Total No.	Affected by OA No. (%)	Total No.	Affected by OA No. (%)	
Prayer	91	17 (18.7)	20	4 (20)	*
Non-prayer	86	30 (34.9)	15	6 (40)	*

* *p > 0.05 (Not significant)*

The hip joint:

We did not encounter any single hip OA in all the 212 subjects. This confirms the recognized low prevalence of OA of the hip among Middle Eastern population as found in another study from Saudi Arabia.[32] However, this contrasts with the status in developed countries where hip OA is said to prevail in some 50% of patients having OA of the knees.[33] This in France praying is either protective or has no effective. A larger sample is needed which well verify this point.

Evidence supporting a role of Islamic prayers in protection from OA of the knee joints: Findings from this study strongly favors a protective effect of Islamic praying from OA of the knees by the highly significant ($p < 0.01$) low prevalence of OA among subjects who have been praying. On subdividing the subjects to three narrower age ranges, a significant difference ($p < 0.05$) was maintained except for the 46-50-year age range. Moreover, long term (>20 years) regular daily praying was associated with significantly lower frequency of OA of the knees than praying for less than 20 years or interrupted praying on comparing both the whole sample of prayers and the 55-60 years age range .

One likely mechanism that praying protects from OA of the knee joints is the expected better development, and hence strength, of the muscles that mobilize them.8 Naturally, daily regular exercising leads to hypertrophy of the exercising muscles, particularly the knee extensors which bear the burden of extending the joints against most of the body weight on standing up from prostrating or deep squatting position. Poor muscle strength is a recognized risk factor in the development of OA.[17] A probably as important, if not more important, protective effect of praying is the repeated mobilization of the knees softly as to maintain joint mobility and elasticity of surrounding structures.[1-7] Lower protection in the knee groups among the 59 prayers for twenty years or more without interruptions, the touching of the praying rug first by the palms on prostrating from erect posture was associated with significantly lower frequency of OA of the knees as compared with the "knee group" ($p < 0.05$). It is likely that some prayers might have been "hitting" the ground through a thin rug by their knees. This might induce recurrent minor trauma that contributes, among other risk factors, over the years to the development of OA of the knees[9-11]; laying the palms first presumably damps down the alleged ill-effect on the knees when laid on the rug next to the hands. Nevertheless, even these "knee group" of prayers remain at advantage in having less percentage of OA of the knees on comparison with non-prayers (25 and 35.64% respectively). An aftermath: for likely future similar studies

As the method of this study is apparently unprecedented and is thus very likely to require improvements, we present here a post hoc opinion show significant differences among the 56-60 year but not the 46-50 year age range. This bespeaks that study of subjects older than sixty years could have been more powerful in

projecting Islamic praying and OA of knees interrelationship. This is akin to a concept in diagnostic tests where selection of higher risk groups for screening will increase true positives and hence the predictive value.[34] In other words, higher risk factors, like advanced ages, not only show more OA among non-prayers but, possibly, also show the protective role of praying in counteracting the risk of age. Thus we might have wrongly excluded the more than sixty years old subjects from our study.

Like older age, one might expect more impressive protective effect of Islamic praying among obese subjects than in the weight range of our study. No doubt, study of obese population is worthwhile but, in gross obesity, we suspect that the ill-effect of prostrating first on knees from standing position might surpass the expected overall protective role of praying from the OA of the knees.

CONCLUSION

Islamic praying protects from OA of the knees in the age range of who have 46-60-year-oldmen, normal or mildly overweight (BMI = 20-27 kg/m2).The use of thick rugs or carpets for praying deserves popularization. On protracting from erect posture,toughing the ground first by the palms seems to be more protection against knee OA than first touching by knees. This point mandates educating prayers in this direction.

REFERENCES

1. Alghamdi MA, Olney S, Costigan P. Exercise treatment for osteoarthritis disability. Ann Saudi Med 2004;24(5):326-31.
2. Ettinger WH Jr, Afable R. Physical disability from knee osteoarthritis: The role of exercise as an intervention. Med Sci Sports Exerc 1994;26(12):1435-40.
3. Minor MA. Exercise in the treatment of osteoarthritis. Rheum Dis Clin North Am 1999;25(2):397-415.
4. Maurer BT, Stern AG, Kinossian, Cook KD, Schumacher HR Jr. Osteoarthritis of the knee: Isokinetic quadriceps exercise versus an educational intervention. Arch Phys Med Rehab 1999;80(10):1293-9.
5. van Barr ME. The effectiveness of exercise therapy in patients with osteoarthritis of hip or knee: A randomized clinical trial. J Rheumatol 1998;25(12):2432-9.
6. Palmitier RA, An KN, Scott SG, Chao EY. Kinetic chain exercise in knee rehabilitation. Sports Med 1991;11(6):402-13.
7. Rejeski WJ, Ettinger WH Jr, Schumaker S, James P, Burns R, Elam JT. Assessing performance-related disability in patients with knee osteoarthritis. Osteoarthritis Cartilage 1994;3(3):157-67.
8. US Department of Health and Human Services. Physical activity and health: A report of the Surgeon General. Atlanta, Georgia: US Department of Health and Human Services, Public Health Service, CDC, National Center for Chronic Disease Prevention and Health Promotion; 1996.

9. Rangger C, Kathrein A, Klestil T, Glotzer W. Partial menisectomy and osteoarthritis. Implications for treatment of athletes. Sports Med 1997;23(1):61-8.
10. Macnicol MF, Thomas NP. The knee after meniscectomy. J Bone Joint Surg Br 2000;82(2):157-9.
11. McNicholas MJ, Rowley Dl, McGurty D, Adalberth T, Abdon P, Lindstrand A, et al. Total meniscectomy in adolescence. A thirty-year follow-up. J Bone Joint Surg Br 2000;82(2):217-21.
12. Brandt KD, Doherty M, Lohmander S, editors. Osteoarthritis. New York: Oxford University Press; 1998.
13. Klippel JH. Osteoarthritits: Epidemiology, pathology and pathogenesis. In: Klippel JH, Crofford LL, Stone JH, Weyand CM. Primer on the Rheumatic Diseases. 12th ed. Atlanta, GA: Arthritis foundation as publisher; 2002. p. 285 – 288.
14. Brandt KD. Osteoarthritis. In Braunwald E, Kasper AS, Hauser SL, Longo DL, Jameson JL, editors.: Harrison's principles of internal medicine. 15th ed. New York: Mc Graw-Hill medical publishing division; 2001. p. 1987-94.
15. Doherty M, Lanyon P, Ralston SH. Epidemiology of osteoarthritis. In Haslett C, Chilvers ER, Boon NA, Colledge NR, editors: Davidson's principles and practice of medicine. 19th ed. 2002. Edinburgh, UK: Churchill Livingstone. p.997-8.
16. Schnitzer TJ, Lane NE. Epidemiology of osteoarthritis. In: Goldman L, Ausiello D, editors. Cecil Textbook of Medicine 22nd ed. Philadelphia, PA: W.B. Saunders Company; 2004. p. 1698 -9.
17. Felson DT, Zhang Y. An update on the epidemiology of knee and hip osteoarthritis with a view to prevention. Arthritis Rheum 1998;41(8):1343-55.
18. Felson DT, Lawrence RC, Dieppe PA, Hirsch R, Helmick CG, Jordan JM, et al. Osteoarthritis: New insights. Part 1: The disease and its risk factors. Ann Intern Med 2000;133(8):635-46.
19. Sowers MF. Epidemiology of risk factors for osteoarthritis: systemic factors. Curr Opin Rheumatol 2001;13(5):447-51.
20. Fisher NM, Kame VD Jr, Rouse L, Pendergast DR. Quantitative evaluation of a home exercise program on muscle and functional capacity of patients with osteoarthritis. Am J Phys Med Rehabil 1994;73(6):413-20.
21. Gardner GW. Specificity of strength changes of the exercised and non - exercised limb following isometric training. Res Q 1962;34:98-101.
22. Gardner GW. Effects of isometric and isotonic exercise on joint motion. Arch Phys Med Rehabil 1966;47(1):24-30.
23. Palmoski MJ, Colyer RA, Brandt KD. Joint motion in the absence of normal loading does not maintain normal articular cartilage. Arthritis Rheum 1980;23:325-34.
24. Pollock ML, Mengelkoch LJ, Graves JE. Lowenthal DT, Limacher MC, Foster C, et al. Twenty-year follow-up of aerobic power and body composition of older track athletes. J

Appl Physiol 1997;82(5):1508-16.
25. Lindh M. Increase of muscle strength from isometric quadriceps exercise at different knee angles. Scand J Rehab Med 1979;11(1):33-6.
26. El-Zayat SG. Microsurgical lumbar disk removal (El-Zayat's approach) with islamic prayer therapy. Saudi Med J 1989;10:221-2.
27. Lawrence RC, Helmick CG, Arnett FC, Deyo RA, Felson DT, Giannini EH, et al. Estimates of the prevalence of arthritis and selected musculoskeletal disorders in the United States. Arthritis Rheum 1998;41(5):778-9.
28. Lawrence RC, Hochberg MC, Kelsey JL, McDuffie FC, Medsger TA Jr, Felts WR, et al. Estimates of the prevalence of selected arthritic and musculoskeletal diseases in the United States. J Rheumatol 1989;16(4):427-41.
29. Bagge E, Brooks P. Osteoarthritis in older patients. Optimum treatment. Drugs Aging 1995;7(3):176-83.
30. Manek NJ, Lane NE. Osteoarthritis: Current concepts in diagnosis and management. Am Fam Physician 2000;61(6):1795 -804.
31. Zhang Y, McAlindon TE, Hannan MT, Chaisson CE, Klein R, Wilson PW, et al. Estrogen replacement therapy and worsening of radiographic knee osteoarthritis: The Framingham study. Arthritis Rheum 1998;41(10):1867-73.
32. Moussa M, Ahlberg A. Osteoarthritis of the knee in a Saudi Arabian population. Saudi Med J 1989;10:400-3.
33. Nevitt MC, Xu L, Zhang Y, Lui LY, Yu W, Lane NE, et al. Very low prevalence of hip osteoarthritis among Chinese elderly in Beijing, China, compared with whites in the United States: The Beijing osteoarthritis study. Arthritis Rheum 2002;46(7):1773 -9.
34. Thorner RM, Remein QR. Publ Hlth Monogr. 1961;67.(P H S publication, No 846); cited in J Chamberlain. Population screening. In: Baron DN, editor. Recent advances in medicine. 16th ed. Edinburgh: Churchill Livingstone. 1973. pp 333-64.

پوختە

کارتێکرنا نڤێژا ئیسلامیێ لسەر گەهێن هەلگرێن کێشەی (کماخ هەردوو چوك)

ئارمانج: بەردەوامیا چالاکیا لەشی ل دەمێ نڤێژێ دئیسلامێدا و ژوان چوونا سوجدێ ژ رەوشا راوەستانێ درۆژێدا وپتر ژ هەڤدە جاران وبو چەند سالان وهەر ژ زارۆکینیێ، پێدڤی ڤەکولینەکێیە لدور کارتێکرنا وێ یا نەرێنی یان ئەرێنی لسەر وان گەهان ئەوێن سەنگا لەشی دهەلگرن.

ڕێکێن ڤەکولینێ: ڤەکولین هاتەکرن وەك رەنگەکێ هەڤبەرکرنا کومەکا نموونەیێن نێر ئەوێن نڤێژا دکەن، ژوان ئەوێن ژیێ وان دناڤبەرا 45–60 سالیێ ولێگەریانا لدور گروڤێن نەخۆشیان وئەنجامێن پشکنینا تیرۆزکێ سەبارەت هەبوونا نەخۆشیا مەحیانا گەهێن هەردوو چوکان وگەها کماخێ ژئەوێن سەنگا قەبارێ لەشێ وی (BMI) ژ 27کگم/م2 زێدەتر، هەروەسا ئەوێن هندەك فاکتەرێن دی هەی کو ببنە ئەگەرێ توشبوونێ ب نەخۆشیا مەحیانێ وژڤەکولینێ هاتنە ڤەدەرکرن. نموونە ژ کلینیکا دەرڤە (راوێژکاریا هناڤان) ل نەخۆشخانا رزگاری ل هەڤلێرێ ونەخۆشخانا هەڤلێرێ یا فێرکرنێ ل هەڤلێرێ هاتنە کۆمکرن دگەل سەرەدانا هندەك دەزگەهێن خزمەتکاریێ ییێن سڤیلی بو دەمێ هەشت هەیڤان وهەر ژ کانونا دووێ 2004 . نموونەییێن ڤەکولینێ بخوڤەگرتێن سەد ویازدە بوون ژ ئەوێن نڤێژا ئیسلامی دکەن وسەد نموونە ژ ئەوێن نڤێژا نەکەن. هەر نموونەیەکا مەرجێن پێدڤی تێدا هەین بو ڤەکولینێ پشکنینا نەخۆشیێ وپشکنینا تیرۆزکێ یا گەهێ هەردوو چوکان وگەهێ کماخێ بو هاتەکرن. نموونە هاتنە دابەشکرن لسەر:

- ئەوێن ب رەنگەکێ ب ڕێك وپێك نڤێژێ دکەن وپتر ژ بیست سالان.
- ئەوێن نە ب ڕێك وپێك نڤێژێ دکەن وکێمتر ژ بیست سالان.
- ئەوێن دبنیاتدا نڤێژێ نەکەن.

پرسیار ژ(59) هاتەکرن ژ ئەوێن نڤێژا ب رەنگەکێ ب ڕێك وپێك دکەن کانێ ل بەراهیێ کەفا دەستێن خو یان هەردوو چوکان ددانە سەر جلنڤێژکێ ل دەمێ چوونا سوجدێ وڤەکولینا جیاوازیێ دناڤبەرا کومێن دکەڤنەر بەر هەڤبەرکرنێ دڤەکولینێدا ب ڕێیا (chi-square test) بو زانینا ڕێژا توشبوونێ ب نەخۆشیا مەحیانێ بو هەر کومەکێ.

ئەنجام: ڤەکولینێ دیارکر کو توشبوون ب نەخۆشیا مەحیانا گەها کماخێ دناڤبەرا دووسەد ودوازدە نموونداندا نینە سەبارەت ڕێژا توشبوونێ ب نەخۆشیا مەحیانا هەردوو چوکان دناڤبەرا ئەوێن نڤێژا دکەن ئەڤێ جیاوازیێ بهایەکێ بەرچاڤ هەبوو (P<0.01) . هەروەسا ئەوێن نڤێژێن وان ب ڕێك وپێك کێمتر توشی نەخۆشیا مەحیانا چوکی دبن ب هەڤبەرکرن دگەل ئەوێن نڤێژێن وان نەرێك وپێك وئەڤ جیاوازیە بەهایەکێ وەرەیی هەیە (P<0.05) . ڕێژا توشبوونێ ب مەحیانێ دناڤبەرا ئەوێن ل بەراهیێ کەفا دەستێن خو ددانە سەر جلنڤێژکێ ل دەمێ چوونا سوجدێ کێمترە (1 ژ 35: 2.8٪) ب هەڤبەرکرن دگەل ئەوێن ل بەراهیێ چوکێن خو ددانە سەر جلنڤێژکێ (6 ژ 24: 25٪) وئەڤ جیاوازیە بەهایەکێ وەرەیی هەیە (P<0.05) .

دەرئەنجام: دشێین ئەو ئەنجامێن گەهشتینێ دڤەکولینێدا ب قێ چەندێ راڤەبکەین:

- کرنا نقێژێ دئیسلامێدا ب رەنگەکێ ب ریك وپێك دێ توشبوونێ ب نەخۆشیا مەحیانا هەردوو چوکان پارێزیت.
- چوونە سوجدێ لسەر جلنقێژکەکێ تەنك ودانانا هەردوو چوکان ل بەراهیێ دێ بتە ئەگەرێ توشبوونێ ب نەخۆشیا مەحیانا هەردوو چوکان.

شیرەت ئەوە کو جلنقێژکەکێ ستویر بهێتە بکارئینان دگەل دانانا کەفا هەردوو دەستا ل بەراهیێ ل دەمێ چوونا سوجدێ ژبو کێمکرنا مەحیانا هەردوو چوکان.

الخلاصة

الصلاة الإسلامية و سوفان المفاصل الحاملة لثقل الجسم

الاهداف: يهدف البحث لدراسة تاثير التكرار اليومى لحركات الجسم أثناء تأدية الصلاة الإسلامية فى الحمايه من او التعريض للاصابه بسوفان المفاصل التى تحمل ثقل الجسم.

طرق البحث: تم شمول عينة عينه من الموظفين والمستخدمين المدنيين ضمت (111) مصلى و (101) من غير المصلين. تم أخذ العينة من مؤسسات مدنية مختلفه فى مدينة اربيل اضافة الى العيادات الخارجية (الإستشارية الباطنية) في مستشفى رزكاري و مستشفى اربيل التعليمي في اربيل لمدة ثمانية أشهر إعتباراً من كانون الثاني 2004 . جرى تقييم الاشخاص الذين استوفوا ضوابط الادخال من خلال الفحص السريرى والشعاعى لمفصلى الركبه والورك لتحديد الاصابه بالسوفان المفصلى ثم قورنت النتائج بين المجاميع المتماثله بالعمر والوزن من المصلين وغير المصلين لمعرفة الفوارق بينها اعتمادا على فحص (Chi-squared test).

النتائج: لم تثبت اى حاله سوفان فى مفصل الورك فى كل عينة البحث. كانت حالات الاصابه بسوفان مفصل الركبه اقل لدى المصلين بالمقارنه مع غير المصلين وبفارق احصائى معنوي ($p. < 0.01$) . كانت الاصابه بسوفان مفصل الركبه لدى المصلين الذين يستقبلون الا رض بايديهم عند السجود اقل منها لدى المصلين الذين يستقبلون الارض بالركب وبفارق احصائى معنوي ($p. <0.05$) .

الاستنتاجات: يمكن تفسير النتائج التي تم التوصل اليها في الدراسة كما يأتي :-

- ان أداء الصلاة الإسلاميه بصورة منتظمة من قبل الرجال بعمر 46- 60 سنه ممن تتراوح كتلة الجسم لديهم بحدود (BMI = 20-27kg / m2) يحمي من الإصابة بمرض سوفان الركبتين.
- ان استقبال الارض باليدين عند السجود يوفر حمايه اكبر لمفصل الركبه من الاذى المحتمل حصوله من الارتطام المتكرر بالارض الامر الذى يستدعى تثقيف المصلين بهذا الاتجاه من خلال التوصيه بتشجيع إستخدام سجادة سميكة مع استقبال الارض باليدين أولاً عند السجود.

PILONIDAL SINUS: COMPARATIVE STUDY - OPEN OR CLOSE PROCEDURE

HAYDER H. IBRAHIM, MBChB, FRCSEd*

Submitted 2 September 2008; accepted 18 March 2009

ABSTRACT

Background Pilonidal disease is a disabling nuisance in young adults, yet its management remains controversial. Ambulatory treatment with minimal morbidity and a rapid return to normal activity is desirable.

Objective Many techniques have been described for the treatment of patients with pilonidal sinus. The aim of this study is to compare two methods of surgical treatment of pilonidal sinus with regard to cure and recurrence rates.

Methods A case series study. All patients were treated as a day case surgery from January 1992- December 2001; divided in two groups: Group A (excision as lay open method) includes 100 patients and group B (excision and primary closure) includes 90 patients.

Results: One hundred ninety patients, 165 males, 25 females were treated for pilonidal sinus over a period of 10 years. 100 patients were managed by excision only and 90 patients were managed by excision and primary closure. Operation for recurrent sinus was performed on 16 patients by open method. All cases treated as day case .The average time for healing following laying open was 45 days while in closed method was 14 days. 15 cases developed recurrence following surgery, 6 in group A (6%), including those already recurrent 16 patients, in whom one patient developed recurrence again and 9 in group B (10%). $P<0.001$. The mean follow up peroid was 1.5 year.

Conclusion The open method has less recurrence rate than closed procedure but the later one has many advantages and more acceptable by the patients.

Duhok Med J 2009;3(1): 45-50.

Key words: Pilonidal sinus, Excision, Excision and closure, Recurrence

Pilonidal sinus is one of the commonest types of sinus seen in general surgical practice, and usually found in natal cleft. It is a serious problem for the patients who are usually active and young. There is no consensus as to the best method of management of this problem.

Allen-Mesh, in a review article of 1990,[1] described outcomes after treatment by a number of methods .

The two surgical operations, which performed in this study were excision with primary closure and laying open / excision with healing by second intention. Excision without primary closure leaves the natal cleft with an open wound for a long period of time.[2-5] This is unacceptable to our youthful patients (mean age 27.6 years), only a clearly demonstrable superiority of excision without closure would justify its inconvenience.

* *Lecturer, Department of surgery, Duhok College of Medicine , Duhok , Iraq*
Email : hayder1950@ yahoo.com

METHODS

Analysis of the charts of patients identified was undertaken over a period of ten years at Alsalam general hospital and Alzahrawy private hospital in Mosul from January 1992- December 2001. In both groups of patients operation performed under general anesthesia, in prone position with elevation of anterior chest wall and pelvis by sand bags, the buttocks were strapped apart and the sinus was probed to outline the track. In group A all tracks were excised including granulation tissues and hairs , skin edges trimmed, bleeding controlled with diathermy and the wound was packed with non adherent soft gauze, the pack was removed on the second postoperative day and then daily dressing with 3% hydrogen peroxide and packed with gauze soaked in saline solution , patients were reviewed after wound healing . In group B patients managed in the same way as in group A but the wound closed by interrupted mattress using monofilament nylon.

Follow up was done in both groups from 6 months-3 years (mean 1.5 years). The comparative study in term of recurrence rate, were done by using Z - test (this test is used as inference based on two large samples comparative study). Pilonidal abscess was excluded from this study.

RESULTS

Between January 1992- December 2001, as shown in table 1, one hundreds ninety patients were treated for pilonidal sinus divided into two groups. Group A consisted of one hundred patients treated by open method, and Group B consisted of ninety patients treated by excision and closure procedure. The patients age range from 14-50 years (mean 27.6 year). There were only 25 female compared to 165 male patients. The number of pits (openings) was from 1-10 pits /patient. In group A 90 patients (90%) achieved healing by second intention within a mean period of 45 days, in contrast to group B patients in which 83 patients (92.2%) achieved primary healing within 14 days. Of the 7 cases of group B (7.8 %) were healed by second intention due to wound infection, compared to group A patients. Recurrence rate in group A 6% and in group B 10%, P value < 0.001.

DISCUSSION

Many articles have been published and many procedures have been advocated but unfortunately no one method has been found to be best, controversy persist regarding the etiology of the condition and its optimal treatment.[6] Most operations can cure the sinus but risk development of recurrence, either in short term (failed wound healing) or long term (new sinus development).[7] The aim in all surgery should be to minimize both financial cost to the community (treatment efficiency) and the cost to the patients in term of time off work, number of dressing, postoperative visits, complications and recurrence (treatment effectiveness) .

This study compared the management and course of two groups of patients,

Table 1. Patients age, sex, postoperative complications and recurrence

Variables	Group A n=100	Group B n=90
Age (year)	14- 50	16-49
Gender M/F	6/1	6.6/1
Number of pits	1-10/patient	1-3/patient
Post-operative bleeding	7%	3.3%
Post-operative sepsis	10%	7.8 %
Mean healing time	45 days in 90%	14 days in 92.2%
Recurrence rate	6%	10%

M=Male; F= Female

excision only healing by second intention in group A, and excision with closure procedure as in group B. The higher incidence of pilonidal sinus in young adult males as in our study have also been noted elsewhere.[1,8,9] Male to female ratio in this study was 6.6:1 compared to reports from western countries where male to female ratio vary between 1.5:1 and 4:1,[1,3] and is due to reluctance among females to seek medical attention due to bashfulness, it may also represent the relative rarity of pilonidal sinus in our female patient population.[10]

The achievement of primary healing in patients treated with primary closure in a mean period of 14 days is significant in comparison with 45 days for patients treated by excision without suture.

Reported figures for healing time for excision without suture varies from 42-90 days.[1,2,4] Postoperative bleeding in group A was 7% compared to 3.3% in group B. Postoperative sepsis in group A was 10% compared to 7.8 % in group B .

Recurrence in group A was noted in six cases (6%) compared to nine patients in group B (10%) (P value <0.001).

Each method of treatment has its advocate but it seems that the lowest recurrence rates (4-6%) following laying open while recurrence rate was 8-25% in excision with primary closure.[1,11,12] Most recurrences in both this study and other series have been found to occur within a short time of surgery (less than 6 months). Excision alone involves prolonged hospitalization or clinic attendance for many painful dressings and take months to heal. Several series have shown that excision with primary closure is preferable to excision with an open wound in many respects ; less bleeding , less wound breakdown, lower infection rate ,reduced wound pain, fewer postoperative visits, short time off work, and faster healing time,[5,7] These advantages outweigh any increase in recurrence rate . Plastic procedures should be reserved for patients who develop recurrence following adequate laying open method.[11]

In conclusion, the closed procedure is

safe and effective method although carries higher recurrence rate than open procedure but has many advantages as mentioned above and should be explained to the patients before operation.

REFFERENCES

1. Allen-Mersh TG. Pilonidal sinus: Finding the right track for treatment. Br J Surg 1990;77(2):123-32
2. AL-Homound SJ, Habib ZS, Abdul Jabbar AS, Isbister WH. Management of sacrococcygeal pilonidal sinus. Saudi Med J 2001;22(9):762-4.
3. Khaira HS, Brown JH. Excision and primary suture of pilonidal sinus. Ann R Coll Surg Engl 1995;77(4):242-4.
4. AL-Hassan HK, Francis IM, Neglen P. Primary closure or secondary granulation after excision of pilonidal sinus? Acta Chir Scand 1990;156(10):695-9.
5. Sondenna K, Anderson E, Soriede JA. Morbidity and short term results in a randomized trial of open compared with closed treatment of chronic pilonidal sinus. Eur J Surg. 1992;158(6-7):351-5.
6. Solla JA, Rothenberger DA. Chronic pilonidal disease. An assessment of 150 cases. Dis Colon Rectum 1990;33(9):758-61.
7. Bissett IP, Isbister WH. The management of patients with pilonidal diseases - a comparative study. ANZ J Surg 1987; 57(12):939-42.
8. Clothier PR, Haywood IR. The natural history of postnatal (pilonidal) sinus. Ann R Coll Surg Engl 1984;66(3):201-3.
9. Klass AA. The so-called pilo-nidal sinus. Can Med Assoc J 1956;75(9):737-42.
10. Chiedozi LC, Al-Rayyes FA, Salem MM, Al-Haddi FH, Al-Bidewi AA. Management of pilonidal sinus. Saudi Med J 2002;23(7):786-8.
11. da Silva JH. Pilonidal cyst: cause and treatment. Dis Colon Rectum 2000;43(8):1146-56.
12. Senapati A, Cripps NPJ, Thompson MR. Bascom's operation in the day-surgical management of symptomatic pilonidal sinus. Br J Surg 2000; 87(8):1067-70.

پوختە

ناسورا کەلێژێ: ڤوکولینەکا هەڤبەرکرنێ – ریکا ڤەکری وداخستی

ئارمانج: هەڤبەرکرنا دوو کۆما ژ نەخوشییێن توشبووی ب ناسورا کەلێژێ هاتنە دابەشکرن لسەر دوو کۆما وب نشتەرگەریێ هاتنە چارەکرن، کۆما ئێکێ ب ریکا ڤەکری وکۆما دووێ ب ریکا داخستی وهاتنە هەڤبەرکرن ژلایێ ساخیێ ڤە وریژا ڤەگەریانا رەوشا نەخوشییێ.

نەخوش و ریکێن ڤەکولینێ: ڤەکولینا زنجیرەکا رەوشا ، ڤەکولین هاتە کرن لسەر دووسەد ونوت نەخوشا وەك رەوشەکا نشتەرگەریا روژانە ژ کانونا دووێ 1992هەتا کانونا ئێکێ 2001 . کوما(أ) پێکهاتبوو ژ سەد نەخوشان وب ریکا ڤەکری هاتنە چارە کرن ، و کومادووێ (ب) پێکهاتبوو ژ نوت نەخوشان وبریکا داخستی هاتنە چارەکرن.

ئەنجام: سەد ونوت نەخوش ، (165)ژ ییت نێر و(25)ژ ییت مێ وب کریارا نشتەرگەریا ناسورا کەلێژێ هاتنە چارەکرن دماوێ دەھ سالاندا ،سەد نەخوش ب ریکا ڤەکری هاتنە چارەکرن ونوت نەخوش ژی ب ریکا داخستی، تێکرایێساخبوونا برینێ د کوما (أ) دا (45) روژ بوون، بەلێ دکۆما (ب) دا(14) روژ بوون. هژمارا رەوشێن ڤەگەریانا نەخوشییێ دکوما (أ) دا 6٪ بوو،بەلێ دکۆما (ب)دا1٪ بوو بەهایێ(ب) کێمتربوو ژ 0, 001، تێکرایێ دەمێ لدویف چوونا نەخوشان دھەردوو کۆماندا سال ونیڤ بوون.

دەرئەنجام: ریژا ڤەگەریانا رەوشا نەخوشییێ دریکا ڤەکریدا کێمتر بوو، بەلێ ریکا داخستی گەلەك مفا هەبوون وەك دەمێ ساخبوونا برینێ کێمتربوو وڤەگەریان بو کاری بلەزتربوو، گەلەك ژنەخوشان پێ درازی بوون.

الخلاصة

الناصور العصعصي: دراسة مقارنة بين الطريقة المفتوحة والطريقة المغلقة

الاهداف: مقارنة مجموعتين من المرضى المصابين بناسور العصعص , قسم إلى مجموعتين وعولجوا جراحيا , المجموعة الأولى بالطريقة المفتوحة والمجموعة الثانية بالطريقة المغلقة وقورنتا من ناحية الشفاء ونسبة رجوع الحالة المرضية.

المرضى و طريقة البحث: دراسة سلسلة حالات . أجريت الدراسة على مائتي وتسعين مريضا كحالة جراحية يومية للفترة من كانون الثاني 1992- ولغاية كانون الاول2001 . المجموعة (أ) مكونة من مائة مريض عولجت بالطريقة المفتوحة والمجموعة الثانية (ب) مكونة من تسعين مريض عولجت بالطريقة المغلقة.

النتائج: مائة وتسعون مريض , (165) من الذكور و(25) من الإناث و عولجوا بالعملية الجراحية لناسور العصعص خلال مدة عشر سنوات . مائة مريض كانت معالجتهم بالطريقة المفتوحة وتسعون مريض بالطريقة المغلقة . معدل مدة التئام الجرح في المجموعة (أ) هي 45 يوم بينما في المجموعة (ب)كانت 14 يوم . عدد حالات رجوع المرض في المجموع (أ) كانت 6% وفي المجموعة (ب) .1 % , فقيمة ب اقل من 0.001 . معدل مدة المتابعة للمرضى في كلا المجموعتين كانت سنة ونصف.

الاستنتاجات: نسبة رجوع الحالة المرضية في الطريقة المفتوحة اقل ولكن الطريقة المغلقة لها فوائد كثيرة كمدة التئام الجرح اقل والرجوع للعمل أسرع ومحبذة لدى الكثير من المرضى.

DEEP VEIN THROMBOSIS OF THE LOWER LIMBS IN DUHOK: A DESCRIPTIVE STUDY USING DOPPLER ULTRASOUND

MOSHEER A.GORAN, MBChB, DMRD*

Submitted 28 September 2008; accepted 18 March 2009

ABSTRACT

Background Deep vein thrombosis (DVT) is a major medical problem, used to be assessed clinically and diagnosed by venography with all its hazards. Doppler Ultrasound (US) has replaced venography as the method of choice in diagnosis DVT of the lower limbs.
Aim This study was carried out to describe DVT cases detected by Doppler US among patients clinically suspected of having DVT.
Patients and methods One hundred and sixty-two patients (86 males and 76 females) with clinically suspected DVT, referred to the Department of Radiology in Azadi Hospital in Duhok, were involved in this study. Color Doppler US was done for all patients in a systematic way, mapping all lower limb veins.
Results DVT was found in 64 (38.1%) patients out of the 162 patients examined. Their ages ranged from 19 - 90 years, with the commonest age group affected being the 30-49(43.7%) year age group. Popliteal vein was the commonest site affected (32.81%), followed by the posterior tibial vein (26.56%), perforators of varicose vein (25%), femoral vein (15.62%)
Conclusion Color Doppler is a reliable method of diagnosis of DVT in symptomatic patients. The color Doppler has become the first line in investigation of DVT in many centers as it provides a non-invasive method of investigation. The technique has some limitations in patients with obesity, pregnancy or swollen edematous legs.

Duhok Med J 2009;3(1): 64-72.

Key words: Deep vein thrombosis, Doppler ultrasound, Duhok

Deep Vein Thrombosis (DVT) is a major medical problem of the lower limb and common clinical disorder that can lead to focal pulmonary emboli & post-phlebotic syndrome.[1]

Venous thrombosis begins in the leg where there is venous stasis, vein trauma, and or hypercoagulability (Virchows' triad). All hospitalized patients with bed rest are at high risk for DVT.[2]

Surgical patients are particularly subjected to DVT because they are immobilized in operation room for hours and are commonly confined to bed after surgery.

Total knee and hip replacement are associated with high incidence of DVT because of the combination of all factors in Virchows' triad. Other risk factors for DVT include: advanced age, limb trauma, prior history of DVT, varicose vein, underlying malignancy, heart failure and hypercoagulability state.[2]

The soleal sinuses are thought to be the most common site of origin of DVT. Valve cusps are also sites at which

* *Assistant Lecturer, Department of Radiology, College of Medicine, University of Duhok, Duhok, Iraq*
Email: Goran1951@yahoo.com

thrombus originates. An area of stasis exists between the cusps and the vein wall which is thought to be the initiating site of thrombosis. The diagnosis of DVT must be confirmed by an objective test such as venography, Doppler US or plethsmography.[2]

The vein of lower limb extremity includes superficial and deep venous system, as well as, communicating veins in the calf. The deep veins include the common superficial and deep femoral veins, the popliteal vein, the anterior tibial, the peroneal and the posterior tibial veins of the calf.[3] The superficial and deep venous systems are connected by communication veins. The deep veins follow the course of femoral artery and its branches.[3]

Contrast venography was the gold standard for diagnosis of DVT but on the other hand its uses potentially hazardous agent.[4]

B-mode compression sonography with Doppler imaging has became the method of choice in detection of DVT of lower extremity and so intravenous phlebography had lost its importance and now indicated in rare instances.[5]

This study was carried out to describe cases of DVT detected by Doppler US among patients with suspected deep vein thrombosis in Duhok city and to compare the results with other studies.

PATIENTS AND METHODS

Azadi Teaching Hospital is the main general referral hospital in Duhok governorate with 400 beds. One hundred and sixty-two patients with suspected DVT were referred to the Department of Radiology in Azadi Hospital during the period of September 2006 to June 2008. They were examined using Philips ATL 1500 HDI color Doppler machine 7.5 MHZ. Out of the 162 patients, 86 (53%) were males & 76(47%) were females. All of them underwent complete assessment of venous systems of the lower limb. The examination begins in prone position; the popliteal, posterior tibial & peroneal veins were examined. Then we examine the patients in supine position with lateral rotation of thigh to examine the common femoral vein, superficial femoral vein, greater saphenous vein and anterior tibial vein. For checking of valves whether they are competent or not, we examined the patients in standing position for those with varicose vein.[6]

The following criteria were followed in this study for DVT diagnosis[2]:

1. Visualization of thrombus.
2. Vein compressibility.
3. Vein size.
4. Respiratory changes.

The veins were evaluated for[3]:

1. Absent or reduced compressibility of the vein.
2. Thrombus in the vein, static echoes in complete color fill in full expansion of vein.
3. Static valve leaflets.
4. Absent flow on spectral color Doppler.
5. Impaired or absent augmentation of flow.
6. Loss of spontaneous and respiratory variation.
7. Increased flow in controlled canal.

RESULTS

The incidence of DVT in clinically suspected DVT was 38.1% (64 patients out of 162 patients examined). The highest incidence was among the age group 30-39 years (23.4%) followed by the age group 20-29 years (20.3%) as table 1 displays. Males constituted 59.37%, while females were 40.63%. In 68.75% cases the left lower limb was affected. Regarding the anatomical distribution of thrombosis, the highest incidence was in the popliteal vein (32.81%), followed by the posterior tibial vein (26.56%) and the perforators of the calf and around the knee (25%); as shown in table 2.

In 48.4% of cases, it was possible to relate DVT to some predisposing factors, but in 51.56% no clear cause was identified. The predisposing factors of DVT are summarized in table 3.

Table 1. Distribution of DVT in lower extremities according to patient's age

Age of in years	No. (%)
10-19	3 (4.6)
20-29	13 (20.3)
30-39	15 (23.4)
40-49	12 (18.75)
50-59	12 (18.75)
60-69	8 (12.4)
70-79	0
80-89	1 (1.56)
Total	64 (100)

Table 2. Anatomical distribution of Thrombus

Vein involved in DVT	No. (%)
Common femoral vein	10 (15.62)
Popliteal vein	21 (32.81)
Perforator veins (popliteal and calf)	16 (25)
Posterior tibial vein	17 (26.56)
More than one vein	16 (22.8)
Total*	64 (100)

** more one vein was not included in the total number*

Table 3. Predisposing factors of DVT

Predisposing factors	No. (%)
Trauma	7 (22.58)
Immobilization	7 (22.58)
Surgery	4 (12.9)
Pregnancy	3 (9.68)
Snake Bite	3 (9.68)
Chronic collagen disease (Bahjat disease)	2 (6.45)
Malignancy (abdominal lymphoma)	1 (3.22)
Recurrent DVT	4 (12.9)
Total	31 (100)

DISCUSSION

This study aimed at describing patients with suspected DVT in Duhok. Ninety-eight (59.75%) patients were negative by color Doppler US, out of the 162 suspected DVT patients. Salcuni et al found that about 70% of patients with clinically suspected DVT are negative and he considered phlebography as still the gold standard in the diagnosis of peripheral DVT.[7] Armstrong et al found Doppler US positive in 77% of total 256 patients,[8] while Lennox et al found among 200 patients, 46 patient (23%) had acute DVT on Doppler, 28 patients (61%) had proximal DVT and in 18 patients (39%) DVT was confined to the calf.[9] In our study, 17 (26.56%) patients out of 64 patients had DVT confined to the calf.

Labropoulos et al examined 5250 patients aged from 22-93 years with clinical suspicion of DVT. With color Doppler US, all superficial and deeps veins of the calf were imaged; DVT was detected in 282 limbs of 251 patients (4.8%), with no significant sex (114 men versus 137 women) or limb preference (145 left limb versus 137 right limb).[10] In our study we also did not find sex difference as in Labropoulos et al study, but we found significant difference between the left compared to the right limb; left limb was involved in 44 patients and right limb in 20 patient. This might be explained that left common iliac vein is crossed by right common iliac common artery.

Regarding the distribution of thrombi, we found in our study 32.81% of them in

the popliteal vein, 26.56% in the posterior tibial vein, 25% in perforators, 15.62% in common femoral vein. More than one vein were affected in 25% of the cases (posterior tibial, popliteal and common femoral). Maki studied 2704 lower extremities by color Doppler US; acute DVT was identified in 296 (9.9%) limbs. In the same study, the remaining cases 209 (77.7%) showed thrombus extending to common femoral vein or popliteal or both.[11] while in our study, more than one vein were involved in only 16 (25%) out of 64 patients.

Regarding the predisposing factors in this study, was identified onlys in 31 patients (48.4 %). The risk factors were surgery, immobilization, pregnancy, snake bite, chronic collagen disease (Bahjet disease), malignancy and previous DVT. In a study by Balbarini et al, risk factors found were previous surgery, immobilization, trauma and tumor.[12]

Joseph et al found that in DVT of femoro-popliteal systems, loss of compressibility of thrombus filled vein had emerged as single most useful diagnostic criteria.[13] In our study also we found that all veins filled with thrombus whether partial or complete loss of compressibility, augmentation test was negative in all thrombosed veins.

In our study we were unable to detect any case of DVT of the lesser saphenous vein by Doppler because of small thrombus. Which was diagnosed by venography?

Foleys et al had reported the results of color Doppler US in a study of 475 patients with suspected DVT; occlusive and non-occlusive thrombi of the femoral, popliteal veins were detected in 200 patients (42%). Conventional venography was performed in 47 patients. Color Doppler US and venographic finding agreed in all (2 positive and & 35 negative cases involving the femoral veins 100% sensitivity and specificity).[14]

Fuest et al have prospectively compared Doppler US and venography by examining a total of 102 extremities with the diagnosis of femoro-popliteal thrombosis. Color Doppler US achieved a sensitivity of 95% and a specificity of 99%.[15]In another prospective study by Miller et al, 216 patients with 220 limbs suspected of having acute deep vein thrombosis, underwent color Doppler US followed after 24 hours by ascending venography. They found the sensitivity and specificity of color Doppler US at above-knee level were 98.7% and 100%, respectively, while corresponding values were 85.2% and 99.2% at below knee level.[16]

CONCLUSION

We conclude from this study that Doppler US is the examination of choice for suspected DVT as it provides a non-invasive method of investigation, in spite of some difficulties in examining obese, pregnant and severe tense edematous limbs, as well as severely injured patient.

REFERENCES

1. Barloon TJ, Bergus GR, Seabold JE. Diagnostic imaging of lower limb deep

venous thrombosis. Am Fam Physician 1997; 56(3): 791-801.

2. Zwiebel WJ. Introduction to vascular ultrasonography. 3rd ed. Philadelphia: WB Saunders Company; 1992.
3. Allan PL, Dubbins PA, Pozniak MA, McDicken WN. Clinical doppler ultrasound. London: Churchill Livingstone; 2000.
4. Wells PS, Lensing AW, Davidson BL, Prins MH, Hirsh J. Accuracy of ultrasound for the diagnosis of deep venous thrombosis in asymptomatic patient after orthopedic surgery: a meta-analysis. Ann Intern Med 1995;122(1):47-53.
5. Simanowski JH. Ultrasound diagnosis of venous thrombosis of leg. Orthopade 2002;31(3):314-6. [Article in Germany]
6. Merritt CB. Doppler color imaging. New York: Churchill Livingstone; 1992.
7. Salcuni M, Fiorentino P, Pedicelli A, Di Stasi C. Diagnostic imaging of deep vein thrombosis of the limbs. Rays 1996; 21(3):328-39.
8. Armstrong PA, Peoples JB, Vitello WA, Lemmon GW. Improved selection criteria for ordering stat venous ultrasound from the emergency department. Am J Surg 1998;176(2):226-8.
9. Lennox AF, Delis KT, Serunkuma S, Zarka ZA, Daskalopoulou SE, Necolaides AN. Combination of a clinical risk assessment score and rapid whole blood D-Dimer testing in the diagnosis of deep vein thrombosis in symptomatic patient. J Vasc Surg 1999;30(5):794-803.
10. Labropoulos N, Webb KM, Kang SS, Mansour MA, Filliung DR, Size GP, et al. Patterns and distribution of isolated calf deep vein thrombosis. J Vasc Surg 1999;30(5):787-91.
11. Maki DD, Kumar N, Nguyen B, Langer JE, Miller WT Jr, Gefer WB. Distribution of thrombi in acute lower extremity deep venous thrombosis: Implication for sonography and CT and MR venography. AJR Am J Roentgenol 2000;175(5):1299-301.
12. Balbarini A, Rugolotto M, Buttitta F, Mariotti R, Strata G, Mariani M. Deep venous thrombosis: Epidemiologic, diagnostic and therapeutic aspects. Cardiologia 1998; 43(6): 605-15. [Article in Italian]
13. Polak JF, Culter S, O'Leary DH. Deep vein of the calf: Assessment with color Doppler flow imaging. Radiology 1989;171(2):481-5.
14. Foley WD, Middleton WD, Lawson TL, Erickson S, Quiroz FA, Macrander S. Color Doppler ultrasound imaging

of lower-extremity venous disease. AJR Am J Roentgenol 1989; 152(2): 371-6.

15. Fuest G, Kuhn FP, Trappe RP. Modern diagnostic der tiefen Bein – venethrom Farb-Doppler sonographic venous phlebo graphie. ROFO 1990;152:151.
16. Miller N, Satin R, Tousignant L, Sheiner NM. A prospective study comparing duplex scan and venography for diagnosis of lower-extremity deep vein thrombosis. Cardiovasc-surg 1996;4(4):505-8.

پوختە

توێژینەوەیەکی وەسفی (باسکردن) لەسەر مەیینی خوێنی ناو خوێنهێنەرە قوولەکانی پەلی خوارەوە

پێشەکی: مەیینی خوێنی ناو خوێنهێنەرە قوولەکانی پەلی خوارەوە: دادەنرێت بە یەکێك لە گرفتە پزیشکیەکان کەپێشتر دەستنیشان دەکرا لە ڕێگەی بەکارهێنانی تیشك و ڕەنگ کردنی بۆریەکانی خوێنەوە , ئەم شێوازەی دەستنیشان کردنە تەنها ڕێگەیەك بوو بۆ ئەم مەبەستە . بەڵام ئێستا دەتوانرێت ئەم نەخۆشیە دیاری بکرێت لەڕێگەی پشکنین بەیارمەتی دوپلەری ڕەنگا و ڕەنگەوە .

مەبەست: مەبەست لەم لێکۆڵینەوەیە بەراوەردکردنە لەگەڵ ئەو توێژینەوانەی کەکراوە لە مەڵبەندە پزیشکیەکانی تردا .

نەخۆشەکان وە شێوازی لێکۆڵینەوەکە: لە کۆپی (162) نەخۆش , (86) نەخۆش پیاو بوون و (76) نەخۆش ژن بوون . کەگومانی مەیینی خوێنی ناو خوێنهێنەرە قووڵەکانی پەلی خوارەوەیان لێ دەکرا , کەپشکنینان بۆکرا بەو شێوازەی ئێستا کە هاووتایە لەگەڵ ئەو شێوازەی کەلە مەڵبەندە پزیشکیەکانی تردا دەکرێت .

ئەنجام: تێکرایی تەمەنی نەخۆشەکان لەنێوان (19-90) ساڵێ دا بوون , هەموو نەخۆشەکان نێردرابوون لەڕێگەیی پزیشکانەوە , وە دەرکەوت لەنێوەند ئەوانەدا (64)نەخۆشیان توشبوبون بە مە یینی خوێنی ناو خوێهێنەرەکان لە سەرجەمی (162) نەخۆش . ڕێژەی توشبوونی خوێنهێنەرەکان بەم شێوازەی خوارەوە بوو: زۆرترین 32.81٪ بۆ خوێنهێنەری ژێرئەژنۆ , وەپاش ئەو خوێنهێنەری پشتەوەی قامیشە دێت بەڕێژەی 26.56٪ , وەپاش ئەویش شینە دەمار (خوێن بوریە گەورێ لاق) دێت بەڕێژەی 25٪ , وە دواتر خوێنهێنەری بن ڕان دێت بەڕێژەی 15.62 .

دەرئەنجام: بەهۆی ئەم لێکۆڵینەوەیە بۆمان دەرکەوت بەوەی کەپشکنین لەڕێگەی دوپلەرەوە دەتوانرێت موتمانەی پێ بکرێت بۆ دیاری کردنی مەیینی خوێنی ناو خوێنهێنەرە قووڵەکانی پەلی خوارەوە بۆ ئەو نەخۆشانەی کە گیرۆدەی ئەو نەخۆشیەن وتوشبوون بە خوێن مەین چونکە پشکنین لە ڕێگەی دوپلەرەوە بووە بە یەکێك لەو پشکنینە موتمانە پێکراوانەی کە بەکاردێت بۆ دەستنیشان کردنی ئەو نەخۆشییە لە مەڵبەندە پزیشکیەکانی دوونیا دا .

الخلاصة

دراسة وصفيه لتخثر الدم في الأطراف السفلى

الخلفية: يعتبر تخثر الدم في الأوعية أليوريديه للإطراف السفلى من المشاكل الطبية التي كانت تشخص سريرياً بمساعدة فحص الأوردة بالأشعة و ألصبغه ألملونه التي كانت تعد سابقاً الفحص الوحيد . أما ألان يمكن تشخيص المرض بواسطة فحص الدوبلر الملون .

الهدف: أما الهدف من الدراسة فهو تقييم آ لتشخيص عن طريق الدوبلر الملون مع التشخيص السريري ومن ثم مقارنته مع الدرا سا ت التي أجريت في المراكز الطبية الأخرى .

المرضى و طريقة البحث : تم فحص (162)مريضاً منهم (86) رجلا و (76) امرأة للاشتباه بإصابتهم بتخثر الدم فى أوردة الأطراف السفلى حيث إن جميع المرضى قد فحصوا حسب الطريقة المتبعة في باقي المراكز الطبية .

النتيجة: تراوحت أعمار المرضى بين 19-90 سنة و 64 مريضا كانوا مصابين بتخثر الدم الوريدي من مجموع 162 مريضا . وتوزعت إصابات الأوردة على النسب التالية : النسبة الأعلى 32.81% الوريد ألركبي ويليه الوريد الشطي الخلفي فكانت بنسبة 26.56% . و الأوردة المتخثرة الدواليه فكانت بنسبة 25% ويلي بعده الوريد الفخذي 15.62% .

الاستنتاج: تبين من هذه الدراسة أن فحص الدوبلر يمكن الاعتماد عليه في تشخيص التخثر الدموي للأطراف السفلى للمرضى الذين يعانون ً من أعراض الإصابة بتخثر الدم الوريدي حيث أن فحص الدوبلر أصبح من الفحوصات المعتمدة لتشخيص المرض في المراكز الطبية في العالم .

PREVALENC AND RELATED FACTORS OF ASYMPTOMATIC HYPERGLYCEMIA AMONG KURD IN DUHOK, IRAQ

DHIA J. AL-TIMIMI, MPhil, PhD*
SHERWAN F. SALEH, MBChB **

Submitted 8 November 2008; accepted 18 March 2009

ABSTRACT

Background Detection of the unknown cases of diabetes mellitus and its related risk factors is of great medical and public health interest.
Objective To estimate the prevalence of and the environmental risk factors associated with asymptomatic hyperglycemia in apparently healthy adults of the general population of Duhok city, northern Iraq.
Materials and methods This is a cross sectional survey conducted on a representative sample of the population of Duhok city. The target population for this study were relatives of patients seen at surgical outpatient Clinics located in Azadi Teaching Hospital during one year period, out of the 5,302 contacted healthy adult subjects, 941(17.9%) were inclusive.
Results The prevalence of previously undiagnosed diabetes mellitus was 10.9% and impaired glucose homeostasis (impaired glucose tolerance and impaired fasting glucose) was 14.3%. A large proportion of subjects had increased body weight (69.2%), sedentary lifestyle (67.7%), married (83.6%), and illiterate (66.5%) and nearly one third (33.0%) had positive family history of diabetes mellitus. The prevalence rate of glucose intolerance was higher in subjects with overweight and obese (52.1%), positive family history of diabetes mellitus (36.1%), no physical activity (32.5%),low educational level(29.9%), and married(28.9%)versus normal weight(9.3%),negative family history of diabetes mellitus(19.9%), , physical activity(10.2%), high educational level(19.2%)and unmarried(6.5%) respectively ($p<0.01$) for all parameters .
Conclusions Data of this study has highlighted the risk factors and draws attention to the need for large-scale screening, followed up by appropriate management measures.

Duhok Med J 2009;3(1): 73-83.

Key words: Diabetes mellitus, Asymptomatic subjects, Risk factors

Diabetes mellitus is a group of metabolic disease characterized by hyperglycemia resulting from defect in insulin secretion, insulin action, or both.[1] Type 2 diabetes is the most prevalent form of the disease and is often asymptomatic in its early stages and can remain undiagnosed for many years.[2] Detection of the unknown cases of diabetes mellitus is of great medical and public health interest.[3] Several studies have indicated that the prevalence of undetected diabetes is about 50% of all patients with diabetes,[4] an observation that underlines the importance of detecting

* *Professor of Clinical Biochemistry, Department of Clinical Biochemistry, Duhok College of Medicine, Duhok, Iraq*
** *Practitioner, Department of Clinical Biochemistry, Teaching Laboratories, Azadi Teaching Hospital, Duhok, Iraq*

Address of Correspondence:
Dhia J. Al-Timimi, Department of Clinical Biochemistry, Duhok College of Medicine, Duhok, Iraq
Phone: +9647504228908. Email: altmimidj@yahoo.com

type 2 diabetes as early as possible.

Impaired glucose tolerance, typically characterized by hyperglycemia and insulin resistance has been reported to be a stage in the development of type 2 diabetes. According to The DECODE study group,[5] a prevalence of impaired glucose tolerance in Western populations about 17% and varies markedly throughout various populations.[6,7] However, there are little data available about the prevalence of asymptomatic hyperglycemia and related factors among Kurd populations. The aim of this study was to estimate the prevalence of and the environmental risk associated with asymptomatic hyperglycemia among Kurd population in Duhok city.

METHODS

In this cross sectional survey, we recruited apparently healthy subjects who were relatives to patients seen at surgical outpatient clinics located in Azadi Teaching Hospital. The survey was conducted from 2 January through 30 December 2007. A total of 5,302 were contacted and 941 (346 males and 595 females) were potentially eligible (no history of diabetes, age 20years and older, resident of city center>5 years, ethnic-Kurd). The participants were invited to health examination that included oral glucose tolerance test and each enrolled subject completed a survey questionnaire and underwent anthropometric measurements, The questionnaire including questions on personal health, age, sex, place of residence, education level, physical activity, marital status, smoking habit, family history of diabetes mellitus and other chronic disease. Weight was measured using a portable scale; height was measured using a special tape with an accuracy of 0.1 cm. The Body Mass Index (BMI) was computed using weight (in kilogram) divided by the square of the height (in meter square). After the aim of study was explained, informed consent was obtained from each subject.

The 1999 definition of diabetes provided by the World Health Organization was used.[8] Diabetes was diagnosed as fasting plasma glucose (FPG) level >7.0 mmol/l(>126 mg/dl) or 2-h post load- plasma glucose level >11.1 mmol/l(>200 mg/dl), and Impaired Glucose Tolerance(IGT) as fasting plasma glucose level 6.1-7.0 mmol/l(110-125 mg/dl) and 2-hour post load- plasma glucose level >7.8 mmol/l (>140 mg/dl) but less than 11.1 mmol/l(<200mg/dl). Subjects with fasting plasma glucose <6.1 mmol/l (110 mg/dl) and/ or 2-hours post load-plasma glucose<7.8 mmol/l (140mg/dl) were considered as having normal glucose tolerance.

The body mass index was used to classify participants into three groups. Normal weight, overweight and obese, corresponding to BMI < 25, 25-29.9 and ≥30 respectively.[9]

Educational levels of subjects were grouped into three categories, low education, which include illiterate and those who could read or write; middle education which included those who had primary and intermediate education, and high education, which included those who

had secondary and university education.[10] Smoking behavior was classified into two categories, current smokers (those who smoked ≥ 20 cigarette per day) and current non-smokers, including ex-smokers.[11] Physical activity was defined on two point scales; sedentary and heavy physical activity, heavy activity several times per week.[12]

Marital status was classified as currently unmarried and currently married, and socioeconomic status was graded as low, moderate and high, based on crowding index. Family history of diabetes was considered positive if at least one parent or one sibling had diabetes.[13]

Participants were asked to fast for 12 h before venipuncture. Blood samples were collected in fluoride/oxalate containers, for the fasting blood glucose level and for the oral glucose tolerance test. A glucose load equivalent to 75 g anhydrous glucose was given in a total water volume of 250-300 ml. A further blood sample was collected 2 h after the glucose load had been given, then analysis was carried out within one hour. Plasma glucose was determined using glucose oxidase method. Assay for glucose was performed on clinical chemistry system. (Compolyse 450, Tokyo, Japan).The biochemical assays were carried out in Azadi clinical laboratory-Azadi Teaching Hospital.

Statistical analysis was performed utilizing the statistical package for social sciences (SPSS) software version 10.5. Student's t-test or chi-squared test was performed where applicable.

RESULTS

Table 1 shows the general features of the participants, high prevalence of increased body weight, married, sedentary, high socioeconomic status and low educational level was observed. The age -standardized prevalence of previously undiagnosed diabetes mellitus (PU-DM) and impaired glucose tolerance (IGT) as defined by WHO criteria was 10.9% and 14.3%, respectively.

The prevalence rate of glucose intolerance increased with age in both genders (Table 2). The highest prevalence of IGT was seen in the 41-50 age groups (21.2%), whereas the highest prevalence of PU-DM was seen in the 51-60 age groups (24.1%). Overall, the IGT was more common in younger age group (≤50 years) than PU-DM (12.5% versus 5.9%, $P<0.001$).

According to the body weight assessment, IGT and PU-DM was observed in 21.0% and 16.7% of obese groups compared to 5.5% and 3.8% of normal weight groups, and there was obvious difference between them ($P<0.01$). Overweight subjects had also high prevalence rate of IGT and PU-DM. No sex difference was detected in this prevalence.

The current prevalence rate of family history for diabetes mellitus, body mass index, education level, marital status, physical activity and socioeconomic status is presented in table 3. 18.5% of participants with positive family history of DM had previously undiagnosed diabetes mellitus and 17.6% had impaired glucose

tolerance. Hyperglycemic status occurred more frequently in positive family history of DM, increased body weight, illiterate, married, and lack of physical activity subjects than in negative family history for DM, higher education level, unmarried, and on regular exercise practice.

The current prevalence rate of family history for diabetes mellitus, body mass index, education level, marital status, physical activity and socioeconomic status is presented in table 3. 18.5% of participants with positive family history of DM had previously undiagnosed diabetes mellitus and 17.6% had impaired glucose tolerance. Hyperglycemic status occurred more frequently in positive family history of DM, increased body weight, illiterate, married, and lack of physical activity subjects than in negative family history for DM, higher education level, unmarried, and on regular exercise practice.

Table 4 shows the prevalence of glucose intolerance among participants who had normal fasting glucose. Eight hundred and three (803) out of 941(85.0%) were found with fasting plasma glucose <110 mg/dl (6.1 mmol/l), and the prevalence of IGT and PU-DM among those subjects was 13.1% and 3.9% respectively, overall, 136(17.0%) had glucose intolerance based on OGTT. When the level of fasting glucose reduced to <5.5 mmol/l (100mg/dl), 10.0 %(n=80) had IGT and 1.8 %(n=15) had PU-DM.

The relationship between hyperglycemic status and related variable is presented in table 5. There was a significant positive correlation between the prevalence of both IGT and PU-DM with age, family history of diabetes mellitus, education level, marital status, physical activity and BMI, (P<0.001) for all parameters.

Table 1. Characteristics of participants (n=941)

Characteristics	Proportion No. (%)
Age(years)	
21-30	**257 (27.3)**
31-40	**201 (21.4)**
41-50	**226 (24.0)**
51-60	**257 (27.3)**
Male sex	**346 (36.8)**
Body Mass Index (Kg/m2)	
Overweight	**262 (27.8)**
Obese	**390 (41.4)**
Positive family history of DM	**313 (33.3)**
Married	**787 (83.6)**
Smoker	**167 (17.7)**
Sedentary	**637 (67.7)**
Low education	**626 (66.5)**
Socioeconomic (high)	**685 (72.8)**
Impaired glucose tolerance	**135 (14.3)**
Previously undiagnosed DM	**103 (10.9)**

Table 2. Distribution of participants according to related variables

Variable	Number	NGM No. (%)	IGT No. (%)	PU-DM No. (%)
Age (years)				
21-30	257	239 (93)	16 (6.2)	2 (0.8)
31-40	201	167 (83.1)	22 (10.9)	12 (6.0)
41-50	226	151 (66.8)	48 (21.2)	27 (11.9)
51-60	257	146 (56.8)	49 (19.1)	62 (24.1)
Sex				
Male	346	271 (78.3)	38 (11.0)	37 (10.7)
Female	595	432 (72.6)	97 (16.3)	66 (11.1)
Body mass index				
Normal	289	262 (90.7)	16 (5.5)	11 (3.8)
Overweight	262	198 (75.6)	37 (14.1)*	27 (10.3)*
Obese	390	243 (62.3)	82 (21.0)*	65 (16.7)*

*Qualitative variable were analyzed by x2. *p<0.01.*

Table 3. Prevalence of IGT and PU-DM among the participants

Variable	Number	NGM No. (%)	IGT No. (%)	PU-DM No. (%)
Family history of DM				
Positive	313	200 (63.9)	55 (17.6)*	58 (18.5)**
Negative	628	503 (80.1)	80 (12.7)	45 (7.2)
Body mass index				
≥25 Kg/m2	652	441 (68)	119 (18.0)**	92 (14.0)**
< 25 KG/m2	289	262 (90.7)	16 (5.5)	11 (3.8)
Education level				
Low	626	439 (70.1)	104 (16.6)*	83 (13.3)**
Middle	216	184 (85.6)	18 (8.0)	14 (6.4)
High	99	80 (80.8)	13 (13.1)	6 (6.1)
Smoking habit				
Smokers	167	130 (77.8)	16 (9.6)	21 (12.6)
Non-smokers	774	573 (74.0)	119 (15.4)	82 (10.6)
Physical activity				
Sedentary	637	430 (67.5)	119 (18.7)**	88 (13.8)**
Heavy activity	304	273 (89.8)	16 (5.3)	15 (4.9)
Martial status				
Married	787	559 (71.0)	127 (16.1)**	101 (12.8)**
Unmarried	154	144 (93.5)	8 (5.2)	2 (1.3)
Socioeconomic status				
Low	256	187 (73.2)	41 (16.0)	28 (10.9)
Moderate	424	319 (75.2)	60 (14.2)	45 (10.6)
High	261	197 (75.5)	34 (13.0)	30 (11.5)

*Qualitative variable were analyzed by x2. *p<0.05, **p<0.01.*

Table 4. Prevalence of IGT and PU-DM among subjects with normal fasting plasma glucose (N=803)

Fasting plasma glucose (mg/dl)	IGT	PU-DM	Glucose intolerance
	No. (%)	No. (%)	No. (%)
< 100 mg/dl	80 (10.0)	15 (1.8)	95 (11.8)
<110 mg/dl	105 (13.1)	31 (3.9)	136 (17.0)

Table 5. Relationship between hyperglycemic status and related variables (N=941)

Variable	Pearson Chi-square	P Values
Age	112.475	<0.001
Gender	1.818	0.178
Family history for DM	35.229	<0.001
Education level	10.513	<0.01
Marital status	18.126	<0.001
Smoking habit	0.102	0.749
Physical activity	44.412	<0.001
Socioeconomic status	0.099	0.753
Body mass index	62.725	<0.001

DISCUSSION

Two important findings were obtained from this study. First, asymptomatic Kurd populations had high rates of undiagnosed DM and IGT.. Second, the prevalence of undiagnosed diabetes and IGT were associated with rising age, BMI, familial diabetes and sedentary lifestyle.

Epidemiologic studies have shown that the prevalence of undiagnosed diabetes and impaired glucose tolerance varies markedly throughout various populations.

In Baghdad, the frequency of undiagnosed diabetes and impaired glucose tolerance were 3.7% and 17.8%, respectively.[14] However, among Arabian and other populations, the undiagnosed diabetes and impaired glucose tolerance were less frequent ,e.g., the combined prevalence of diagnosed and undiagnosed diabetes in the Egyptian population> 20 years of age was estimated to be 9.3%. Approximately half the cases of diabetes were diagnosed and the other half was previously undiagnosed.[15] In Turkey, total prevalence of diabetes was 11.6%. The screening process identified previously undiagnosed diabetes in 4.2% of individuals and impaired glucose tolerance in an additional 4.3% of subjects.[16] In Kashmir Valley of the Indian subcontinent, 4.25% of the general

population have undiagnosed diabetes and 8.09% have impaired glucose tolerance test; making the total load of abnormal glucose tolerance 14.2% in Kashmir Valley.[17] The discrepancy in a variety of ethnic groups is likely due to the difference in lifestyle and nutritional habits. In the present study, the prevalence of total glucose intolerance (undiagnosed diabetes mellitus and impaired glucose tolerance) was 25.2%.This high prevalence reported in our study could be attributed to the great change in dietary patterns and the decrease in strength of physical activity due to the rapid economic development. We observed that a large proportion of participants had increased body weight, lack physical activity, good socioeconomic status and nearly one third had positive family history of diabetes. Other authors have also reported the effect of obesity and Physical activity on the prevalence of glucose intolerance.[18,19] In addition it has been reported that BMI, family history of diabetes, sedentary lifestyle and place of residence are significant predicators of glucose intolerance. In our study, 37.7% of obese and 24.4% of overweight subjects had glucose intolerance. We observed that a large proportion of subjects with lower physical activity had glucose intolerance (32.5%), and a large proportion (36.1%) of subjects had positive family history of diabetes.

We also observed that older age subjects showed significantly higher prevalence of glucose intolerance compared with younger age. Subjects aged over 50 showed more rise in the undiagnosed diabetes and IGT than those aged below 50 years. Others have also reported the effect of age on the prevalence of glucose intolerance.[20,21] Interestingly we found that marital status of subjects was a positive risk factor for impaired glucose tolerance and undiagnosed diabetes, the prevalence of glucose intolerance was 28.9% in married subjects, while in the unmarried was 6.5%($P<0.001$). In addition, we observed a significant correlation between educational level and glucose intolerance ($P<0.001$). Indeed, the majority were over weight or obese, married, illiterate and low physical activity, factors were the component of the glucose intolerance most often observed. It should be noted that our results might not be indicative of the Duhok population as a whole because we selected urban population in city center instead of including both sexes living in the urban and rural areas. However, this population represented a large inhabitant group with various living condition, physical activities, health awareness, and educational background in big cities.

In our study we also ascertained that normal fasting glucose level less than 6.1 mmol/l(<110 mg/dl) can not exclude asymptomatic post glucose load hyperglycemia, certainly OGTT still needed to diagnose preventable causes of DM and IGT in which the only manifestation of the disease is an abnormal 2 hour glucose value. However, in this study we noticed that 17.0% of participants with normal fasting glucose had asymptomatic hyperglycemia. Moreover, 15 participants (1.8%) were found with FPG<5.6mmol/l (100mg/dl) a

level suggested by others to exclude DM.[22] This finding may lead us to suggest further reduction in FPG level as a tool for diagnosis of diabetes mellitus. Though, increased prevalence of asymptomatic hyperglycemia could be attributed to proper assessment of DM, as observed in the present study.

CONCLUSIONS

The main findings in this study include an observed high prevalence rate of the asymptomatic hyperglycemia and its related risk factors in Duhok urban population. Heredity was an important factor, while obesity and sedentary lifestyle were major environmental factors.

ACKNOWLEDGEMENTS

This work was part of a thesis submitted in partial fulfillment of the requirement of a fellowship of the Iraqi board for medical specialization in chemical pathology.

REFERENCES

1. American Diabetes Association. Report of the expert committee on the diagnosis and classification of diabetes mellitus. Diabetes Care 1997;20(7):1183-97.
2. Tuomilehto J, Lindstrom J, Eriksson JG, Valle TT, Hamalainen H, Ilanne-Parikka P, et al. Prevention of type 2 diabetes mellitus by changing in lifestyle among subjects with impaired glucose tolerance. New Engl J Med, 2001;344(18):1343-50.
3. Mokdad AH, Bowman BA, Ford ES, Vinicor F, Marks JS, Koplan JP et al. The continuing epidemics of obesity and diabetes in the United States. *JAMA* 2001; 286:1195-200.
4. Meyer C, Pimenta W, Woerle HJ, Haeften TV, Szoke E, Mitrakou A, et al. Different mechanism for impaired fasting glucose and impaired postprandial glucose tolerance in human. Diabetes Care 2006;29 (8):1909-14.
5. The DECODA Study Group. Age and sex specific prevalence of diabetes and impaired glucose regulation in 11 Asian cohorts. Diabetes Care 2003; 26(6):1770-80.
6. Jørgensen ME, Bjeregaard P, Borch-Johnsen K, Backer V, Becker U, Jørgensen T, et al. Diabetes and impaired glucose tolerance among the Inuit population of Greenland. Diabetic Care 2002;25(7):1766-71.
7. The DECODE Study Group. Age and sex specific prevalence of diabetes and impaired glucose regulation in 13 European cohorts. Diabetes Care 2003; 26(1):61-9.
8. World Health Organization. Definition, diagnosis and classification of diabetes mellitus and its complications: report of a WHO consultation. Part 1: diagnosis and classification of diabetes mellitus. Geneva: World Health Organization; 1999.
9. Wilson C, Gilliland S, Moore K, Acton k. The epidemic of extreme obesity among American Indian and Alaska Native adults with Diabetes. Prev Chronic Dis 2007;4(1):A06.

10. Maty SC, Everson-Rose SA, Haan MN, Raghunathan TE, Kaplan GA. Education, income, occupation, and the 34-year incidence (1965–99) of Type 2 diabetes in the Alameda County Study. Int J Epidemiol 2005; 34(6):1274–81.
11. Glümer C, Jørgensen T, Borch-Johnsen K. Prevalence of diabetes and impaired glucose regulation in a Danish population: The Inter99 study. Diabetic Care 2003;26(8):2335-40.
12. Lindström J, Louheranta A, Mannelin M, Rastas M, Salminen V, Eriksson J, et al. The Finnish Diabetes Prevention Study (DPS): Lifestyle intervention and 3-year results on diet and physical activity. Diabetes Care 2003;26(12): 3230-6.
13. Diabetes Prevention Program Research Group. Strategies to identify adults at high risk for type 2 diabetes: The Diabetes Prevention Program. Diabetes Care 2005;28(1):150-6.
14. Al-Timimi DJ, Al-Ubaidy AK. The frequency of 2 hours post glucose load hyperglycemia in subjects with normal fasting glucose. Duhok Medical Journal 2007;1(1):105-11.
15. Herman WH, Ali MA, Aubert RE, Engelgau MM, Kenny SJ, Gunter EW,et al. Diabetes mellitus in Egypt: risk factors and prevalence. Diabet Med 1995;12(12):1126-31.
16. Satman I, Yilmaz T, Sengül A, Salman S, Salman F, Uygur S, et al. Population based study of diabetes and risk characteristic in Turkey. Diabetic Care 2002;25:1551-6.
17. Zarger A, Khan A, Masoodi S, Laway B, Wani A, Bashir M, et al. Prevalence of type 2 diabetes mellitus and impaired glucose tolerance in the Kashmir valley of the Indian subcontinent. Diabetes Res Clin Pract 2000;47(2):135-46.
18. Bener A, Zirie M, Al-Rikabi A. Genetics, obesity, and environmental risk factors associated with type 2 diabetes. Croat Med J 2005;46(2):302-7.
19. Ko G, Chan J, Chow C, Yeung V, Chan W, So W, et al. Effect of obesity on the conversion from normal glucose tolerance to diabetes in Hong Kong Chinese. Obes Res 2004;12(6):889-95.
20. Basu R, Breda E, Oberg A, Powell C, Man C, Basu A, et al. Mechanism of the age-associated deterioration in glucose tolerance: contribution of alteration in insulin secretion, action, and clearance. Diabetes 2003; 52:1738-1748.
21. Perrini S, Laviola L, Natalicchio A, Giorgino F. Associated hormonal decline in aging: DHEAS. J Endocrinal Invest 2005;283(3 Suppl):85-93.
22. Zhang P, Engelgau M, Valdez R, Cadwell B, Benjamin S, Narayan N. Efficient cutoff points for three screening tests for detecting undiagnosed diabetes and pre-diabetes. Diabetes Care 2005;28:1321-5.

پوختە

بە لافبوون و فاکتە رین کریداي بزیدەبوونا شەکرا خوینی بیت بی سیمایی تووشبونی دەف کوردا وناف بازیری دهوکی، عیراق

پێشەکی: دیارکرنا ریزا بەلافبوون وفاکتەرین ترسناك کوبیت کریدای بە زیدەبوونا شەکرا خوینی کرینکیەکامەزن زی لاي بزیشکی وتەندروستیا یا گشتی.

ئارمانج: بومەزن دەکرنا ریزا بەلاف بوونا شەکرا خوینی یابی سیماین تووشبونی ئەکەرین زینکەهی کوبەیوەندی هەی بەکەنجا وئەف ئامارە زی کەشتیا خەلکی بازیری دهوکی.

ریکا فەکولینی: مەدەریئخست ریزا بەلافبوون وفاکتەرین زینکەهی کوبەیوەندی هەی بزیدەبوونا شەکرا خوینی یابی سیمایی تووشبووونی لدەف 941کەسا زی کەنجا کوامارەکادیارکری بووزی لای خەلکی دهوکی.ئەف تەخامەبەستدار کومەهەلبزارتی زی خزمین نەساخا بوون کومەدیتت کلینیکن نەشتەکریا زی دەرفە لە نەخوشخانا ئازادی یافیرکرنی بودە می یەك سال.

ئەنجام: بەلافبوون نەساخیا شەکری ئە وانە بشکینکرنی بەری نووکە کەهشتیە 10.9% جیکیربوونا شەکرا لاواز(کیم بوونا بەرەنکاریا شەکرا لاواز وشەکرا روزیکری لاواز 14.3% کوئەفە ریزاکامەزنبو زی خەلکی کو تووشی زیدەبوونا کیشی کر بریزا 69.2% ونەبوونا جالاکین لە شی بریزا 67.7% وسیکیا وان نزیکی 33.0% کوئەفان میزوویەکا خیزانی هەبوو لی کەل نەخوشیا شە کری ئەوریزا بەلافبوونا کیمیا بەرەنکاریا شەکری کەلەکا بلنبوو دەف وان کەسا ئەوین میزوویەکا خیزانی دی کەل نەخوشیا شەکری یاهەین وکوکەهشتیە 36.1% وئەوین جالاکین سروشتی نەبن کەهشتە 32.5% وەوین بزین کەهشتە 28.9% بەراوردی دی کەل ئەوین میزوویا خیزانی دی کەل نەخوشیا شەکری نەبوین کەهشتە 19.9% وئەوین جالاکین لەشی هەین کەهشتە 10.2%وئەوین زکورت کەهشتە 6.5% (سەریەك p=<0.01, بوهەمی کەسان).

دەرئەنجام: ئەو ئەنجامین مە بدە ستفە ئینایین لفی فەکولینی دا جەخت کریە کوریزا بلند بوبەلافبوونا نەخوشیا شەکری کوسیماین تووشبوونی دیارنینە وفاکتەرین ترسناك ل دەف خەلکی بازیرا لی بازیری دهوکی دیاردبی .بوماوە دی هیتە هزمارتن ز فاکتەرین کرنك لی قەلەوی وشیوازی زیانا بی بزاف وجالاکی ز فاکتەرین زینکەهی یت سەرەکی.

الخلاصة

الانتشار والعوامل ذات العلاقة بفرط سكر الدم العديم الاعراض لدى الكورد في مدينة دهوك,العراق

الخلفية: كشف معدل انتشار وعوامل الاخطار ذات العلاقة بفرط سكر الدم له اهمية كبيرة من الناحية الطبية والصحة العامة.
الهدف: لتقدير نسبة انتشار سكر الدم العديم الاعراض والاسباب البيئية ذات العلاقة عند البالغين للاصحاء ضاهريا من عامة الناس من مدينة دهوك.
مواد و طرق البحث: استقصينا معدل انتشار وعوامل الاخطار البيئيةذات العلاقة بفرط سكر الدم العديم الاعراض عند 941 شخص من البالغين الاصحاء ضاهريا من سكان مدينة دهوك. الفئة المستهدفة التي تم اختيارها كانت من اقارب المرضى التي تم رويتهم في العيادات الجراحية الخارجية في مستشفى ازادي التعليمي خلال عام واحد.
النتائج: كان انتشار داء السكر الغير مشخص سابقا 10.9% واستتباب السكر الضعيف **(**قلة تحمل السكر الضعيف والسكر الصائم الضعيف**)** 14.3% . نسبة عالية من الناس يعانون من زيادة الوزن 69.2% وانعدام النشاط البدني 67.7% وثلثهم تقريبا 33.0% كان لديهم تاريخ عائلي لداء السكر, ان معدل انتشار قلة تحمل السكر كان اعلى عند الاشخاص الذين لديهم تاريخ عائلي لداء السكر 36.1% وعند عديمي النشاط الطبيعي 32.5% والمتزوجون 28.9%مقارنة مع الذين ليس لديهم تاريخ عائلي لداء السكر 19.9% والذين لديهم نشاط بدني 10.2% وغير المتزوجين 6.5% على التوالي (p=<0.01 لجميع الاعمار).
الاستنتاج: تؤكد النتائج المستحصلة في هذا البحث اعلى نسبة لانتشار لداء السكر العديم الاعراض وعواملها الخطيرة لدى سكان المتحضرين لمدينة دهوك.تعتبر الوراثة من العوامل المهمة بينما البدانة (السمنة) واسلوب حياة العديم الحركة من العوامل البيئية الرئيسية.