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CONTENTS

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THE ROLE OF SHORT INTENSIVE TASK BASED TRAINING COURSE IN IMPROVING EMERGENCY MEDICINE PERFORMANCE AMONG INTERNS IN DUHOK, KURDISTAN REGION, IRAQ

ABDULLAH J. RAJAB, MBChB, MSc (Community Medicine)*
SAMIM A. AL-DABBAGH, MBChB, DTM&H, D. Phil (Oxford)**

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ABSTRACT

Background and objectives Medical education has witnessed a dramatic change in the way information is delivered to equip students with essential knowledge and skills. In Iraq, emergency medicine has been recognized as a discipline that needs improvement. Task based learning has been shown to be associated with improved competency of health care professionals in performing tasks they face in real life. The aim of the study is to evaluate the role of task based training module program in improving emergency medicine related procedural skills of newly graduated interns.

Methods A quasi-experimental study design was utilized. The study was conducted in June and July 2010. A sample of newly graduated intern from Duhok College of Medicine in the academic year 2008/09 was taken and was divided into 2 groups: intervention and control. Inclusion criterion for being in the intervention group was that interns who had never worked in emergency units/departments in any hospital. Nine essential emergency medicine procedures were selected to be included in the training module. Pre and post assessment of interns in regards to practical skill performance using Objective Structured Clinical Examination tool was done. Mannequins were used for both training and assessment.

Results Low rates of practical skill performance were detected among both control and intervention groups prior to the implementation of the training module (43.3% vs 33.3). After implementation the reverse was noticed. Relevant rates were 43.3% verus 88.6% ($p < 0.001$). Both gender and final graduation mark were not found to have a significant effect on practical skill performance. Overall, participants had a good satisfaction towards the adoption of task based training module approach in learning emergency medicine procedural skills.

Conclusion Task based training as a learning method is found to be effective in teaching emergency medicine procedural skills that are needed to have competent interns in performing their tasks. Such an approach can be adopted both for training undergraduate students and postgraduate doctors to improve their practical skills.

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Key words: Task based, Emergency medicine, Training course, Interns

The experience in developed countries suggests that the modified traditional curricula have not succeeded in improving the quality of medical care available to the public. In the developing countries, where traditional methods of medical teaching have simply been copied regardless of the local circumstances, the results have been catastrophic.[1] Nevertheless, the past several decades has brought about dramatic changes in medical education resulting from the introduction of new educational strategies into the educational process.[2] Novel concepts have prevailed in medical schools like problem based learning (PBL), integrated curriculum, and

* *Director, Department of Continuing Medical Education, General Health Directorate, Duhok.*
** *Professor and Chairman of Department of Family and Community Medicine, School of Medicine, Faculty of Medical Sciences, Duhok University.*

Correspondence author: Abdullah J. Rajab. Email: abdrekani@duhokhealth.org. Telephone: 009647504571423

task based learning (TBL). Studies have shown that in TBL, students can perform tasks which health care professionals are faced with in real life and it was found that it is an effective and efficient strategy for delivering relevant knowledge of the work in health care centers and hospitals.[3,4] It has been found that in most of the medical schools it is possible for a student to qualify as a doctor without even performing practical skills as intravenous cannulation, and then learn it during the internship.[5] Educational research indicates that conventional format of teaching medical students (lecture-based learning) is frequently unstructured, the acquisition of skills is left largely to chance and is subject to little quality control, students are inadequately monitored, and feedback is seldom given. Students passively absorb information rather than actively acquire knowledge. Also, the conventional teaching method separates the first few years of basic science teaching from the clerkships in the clinical years of study.[6]

Recently, the Institute for International Medical Education in the USA has articulated the Global Minimum Essential Requirements expected in the teaching of all physicians regardless of the country. These standards were set to overcome the complexity and variability of rules applied by different countries.[7]

Changing health needs in countries experiencing economic and social growth are creating a greater demand for all types of emergency medical services. Factors contributing to this demand include globalization and rapid urbanization with resultant changes in demographic and disease patterns. Due to these factors, many countries recognize the necessity and value of establishing quality emergency health care systems and are striving to create effective emergency medical programs.[8] The incorporation of a basic level of emergency medical care into health care systems could have a significant positive impact on the well-being of populations. It would respond to the self-perceived needs of populations and decrease the long-term human and economic costs of illness and injury.[9] Injuries constitute one the top ten cause of death in the world[10] and in Kurdistan Region.[11] Trauma is considered one of the top causes of morbidity and mortality in Iraq. In Duhok governorate, 74.02% of trauma cases aged 45 or less. Managing trauma cases partly require health care professionals that are competent in skills essential for performing emergency medicine related procedures.

Emergency medicine was recognized by Iraqi Ministry of Health as one of the important fields that need improvement.[12] Despite that, the undergraduate curriculum has failed to fully meet the needs of emergency departments in the country, including Kurdistan Region. Also, medical doctors in the emergency department complain that the new graduates lack the practical skills necessary for performing emergency medicine procedures. Furthermore, the emergency medicine is not yet formally recognized as a medical speciality[13] and is mostly practiced by inadequately trained clinicians in poorly equipped emergency departments.[14] It should no longer be assumed that the medical house officers are competent in procedural skills. Deliberate methods must be developed and administered to ensure adequate procedural skill educational opportunities with the ultimate goal of improving patient outcomes. Accordingly, medical educators need to consider what graduating medical students should know about the management of acutely sick and injured patients as well as how to best achieve the educational objectives of the medical school.[15]

Because of the potential widespread use of task based learning as a new teaching strategy, it was decided to conduct a study that aimed at assessing the emergency medicine related procedure skill performance of newly graduated junior house officers after being involved in Task Based Training Module (TBTM).

METHODS

This study utilized a quasi-experimental design. It was performed during the months of June and July 2010. Azadi Teaching Hospital in Duhok governorate was chosen to be the place for conducting the training program. It is the main tertiary care hospital with availability of enough teaching facilities, equipment, and convenience of the place to the trainers and trainees.

Participants comprised of newly graduated interns from the Duhok College of Medicine (DCM) for the year 2008-2009. They were divided into two groups: intervention and control. The intervention group included 21 out of 24 eligible interns who had never worked in emergency departments in any hospital. The other 3 did not respond because of improper notification. The 21 participants in the control group were randomly selected out of 29 interns who had already completed their internship in one of the emergency units in Duhok governorate.

Nine procedures were chosen based on the availability of mannequins and the importance of the procedure, including cardiopulmonary resuscitation and cardiac defibrillation, basics of wound management, male urethral catheterization, triage in mass casualty, basics of airway management, endotracheal intubation, naso-gastric intubation, arterial blood gas sampling and puncture, and intravenous cannulation. For all the stations, mannequins (plastic models) were used except for triage in mass casualty in which clinical scenarios, videotapes, and case management protocols were utilized for the assessment. Moreover, lecture handouts, flow charts, and materials on frequently asked questions about the relevant skills and systematic performance checklists which needed to be performed at the stations were given to the trainees. Also, participants were shown professional videotapes for EM procedures. Details on the selected procedures were adopted from accredited sources.[16-31] Each procedure in the training course was facilitated by a senior doctor working in EM departments. In addition to being specialized in their fields, trainers underwent a three-day intensive training program on Basic Assessment and Support in Intensive Care by a visiting team composed of distinguished anesthesiologists and intensivists from Australia, Hong Kong, New Zealand and South Africa.

Procedural skill performance was measured using Objective Structure Clinical Examination (OSCE). Checklists were developed to be used by the trainers to assess trainees in the nine clinical stations in order to focus on the competence to be evaluated**.** The scores at each station were calculated as the percentage of items for which trainers gave the students full credit. As an objective assessment, a five-point quality type Likert's rating scale was used, ranging from 1 to 5 (1 = not done, 2 = poor, 3 = equivocal, 4 = good, 5 = excellent). Meanwhile, the trainers also gave marks on each of the subtasks in the procedure. These marks were summed up to form the total mark gained by the participants per task. These marks were allocated to the subtasks by the assessor himself according to the importance or the relevance of a certain subtask compared to the others. For example, a certain subtask may worth 20 marks out of 100 while another subtask within the same procedure may worth only 10 marks. Also, the trainers assigned the trainees a global rating (subjective assessment) of overall performance of the participants at each station. The criterion-referenced grading system was used. This system does not compare students to each other in their performance on an assessment. A criterion or “pass” level was established, and anyone who scores at or above that level passes and anyone who scores below, he/she fails. This was accomplished by using the traditional percent correct scale (0-100) where 100 is perfect performance. Competent

performance on the OSCE was operationally defined as 60%. This standard applied to individual tasks as well as to the overall assessment process. The attitude of the participants towards the new task-based approach in EM learning was assessed using a five-point frequency type Likert's scale (5= always, 4= very frequently, 3= occasionally, 2= rarely, and 1= very rarely).The parameters against which the attitude was assessed were attitude to learning, response to advice, iniatives for learning and readiness to share.[32]

Feedback regarding trainee's perceptions on the task-based training approach, training module contents, and OSCE as a training and assessment tool was assessed via a questionnaire form using a five-point agreement type Likert's scale.

Baseline assessment of procedural skill performance was assessed prior to implementation of TBTM. After the preliminary assessment, only the intervention group participated in the training program. After implementation of the program, the skill performance of the intervention group in regard to emergency procedure skills was compared to their performance before TBTM implementation. Skill performance was reassessed between the intervention and control groups after TBTM implementation.

The statistical package for social sciences (SPSS) version 17 was used to enter the data and perform analysis.[33] Data were summarized using mean and standard deviation for continuous variables, and counting and percentages for categorical variables. An independent samples t test was used to assess statistical differences in the mean practical skill performance between the intervention and control groups. Paired t test was used to assess the mean differences in practical skill performance of the intervention group after participation in the training course. Regression analysis was used to determine role of college graduation score and gender in predicting change in the skill performance score among participants in the intervention group.

RESULTS

Variation in the mean total scores for individual tasks between control and intervention groups before and after implementation of TBTM is shown in table 1. The overall mean practical skill performance were low among both groups before TBTM implementation. However, the rate in the control groups was significantly higher than that in the intervention group (43.3% versus 33.3%). The table also demonstrates that the posttest-intervention group had a statistically significant higher overall mean practical skill performance compared to the control group for all the nine EM procedure tasks (88.6% vs. 43.3%, $p < 0.001$).

The intervention group had a statistically significant higher overall mean practical skill performance score for EM procedures after implementation of the TBTM compared to their overall mean score prior to the training course (88.6% vs. 33.3%, $p < 0.001$) (Table 2). Even for the individual task, there was statistically significant difference in the mean practical skill performance score of the intervention group for all the nine EM procedures before and after implementation of TBTM ($p < 0.001$ for each procedure).

The final assessment of participant's attitude towards TBTM showed that posttest-intervention group had a significantly higher mean attitude score compared to the pretest-intervention group for all tested attitude parameters ($p < 0.001$) as shown in table 3. Gender and final college graduation scores had a non significant role in the degree of changes in the practical skills of the intervention group as illustrated in table 4.

As shown in table 5, the opinions of the participants involved in the training

module revealed that the overall acceptance of training module items by the participants was 83.1% which is 23.1% higher than the minimum value of acceptance of 60%. The acceptance values ranged from a minimum of 74.3% for the item (The participants had prior knowledge about the training program) to 95.2% for the item (Overall, would you rate the training program content as beneficial?). Also, it revealed that the participants recognized the OSCE stations as realistic and representative of the real life practice of interns (95.4%). Also, they expressed their will to generalize the training program for the remaining interns (81.9%).

Table 1. Practical skills assessed per EM-tasks by rating scale (intervention (n=21) vs. control group (n=21)) before and after implementation of TBTM

EM procedure task	Study group	Percent of trainees got a rating scale of					Mean (± SD)	P-Value
		1 <20	2 20-39	3 40-59	4 60-79	5 (≥80)		
Basics of airway management	Pre intervent.	42.9	33.3	19.0	4.8	0.0	29.1 (17.8)	0.412
	Post interven.	0.0	9.5	33.3	0.0	57.1	80.1 (14.3)	<0.001
	Control	0.0	81.0	19.0	0.0	0.0	32.5 (5.4)	
Arterial blood gas sampling and puncture	Pre intervent.	81.0	9.5	9.5	0.0	0.0	11.9 (14.9)	<0.001
	Post interven.	9.5	14.3	4.8	23.8	47.6	67.0 (28.2)	0.002
	Control	0.0	19.0	81.0	0.0	0.0	44.4 (4.6)	
Triage in mass casualty	Pre intervent.	4.8	4.8	85.7	4.8	0.0	44.7 (7.7)	<0.001
	Post interven.	0.0	0.0	0.0	9.5	90.5	94.4 (8.1)	<0.001
	Control	0.0	0.0	71.4	28.6	0.0	56.1 (6.0)	
Endotracheal intubation	Pre intervent.	66.7	23.8	4.8	4.8	0.0	14.9 (17.6)	<0.001
	Post interven.	0.0	0.0	0.0	28.6	71.4	87.3 (11.4)	<0.001
	Control	0.0	100.0	0.0	0.0	0.0	31.0 (4.0)	
Intravenous cannulation	Pre intervent.	4.8	28.6	66.7	0.0	0.0	40.7 (10.0)	0.451
	Post interven.	0.0	0.0	4.8	4.8	90.5	92.3 (11.8)	<0.001
	Control	0.0	61.9	38.1	0.0	0.0	38.8 (6.0)	
Naso-gastric intubation	Pre intervent.	0.0	4.8	95.2	0.0	0.0	47.5 (6.0)	0.011
	Post interven.	0.0	0.0	0.0	0.0	100.0	100.0 (0.0)	<0.001
	Control	0.0	9.5	66.7	23.8	0.0	54.1 (9.5)	
Cardiopulmonary resuscitation and cardiac defibrillation	Pre intervent.	42.9	52.4	4.8	0.0	0.0	22.6 (9.4)	<0.001
	Post interven.	0.0	0.0	0.0	0.0	100.0	95.3 (4.8)	<0.001
	Control	4.8	57.1	38.1	0.0	0.0	39.1 (9.8)	
Basics of wound management	Pre intervent.	0.0	14.3	76.2	9.5	0.0	47.0 (7.4)	0.042
	Post interven.	0.0	0.0	0.0	19.0	81.0	83.3 (6.2)	<0.001
	Control	0.0	33.3	66.7	0.0	0.0	41.4 (9.7)	
Male urethral catheterization	Pre intervent.	14.3	33.3	38.1	14.3	0.0	41.2 (16.6)	0.006
	Post interven.	0.0	0.0	0.0	0.0	100.0	97.3 (3.3)	<0.001
	Control	0.0	0.0	100.0	0.0	0.0	52.6 (4.6)	
Total score	Pre interven.	0.0	90.5	9.5	0.0	0.0	33.3 (5.9)	<0.001
	Post interven.	0.0	0.0	0.0	0.0	100.0	88.6 (4.5)	<0.001
	Control	0.0	4.8	95.2	0.0	0.0	43.3 (2.3)	

Pre intervent. = pre intervention; Post intervent. = post intervention

Table 2. Practical skills assessed per EM procedure tasks by rating Scale (Post intervention (n=21) vs. control Group (n=21))

EM procedures (Task)	Study group	Percent of trainees got a rating scale of					Mean (±SD)	P-Value
		1 <20	2 20-39	3 40-59	4 60-79	5 (≥80)		
Basics of airway management	Post interven.	0.0	9.5	33.3	0.0	57.1	80.1 (14.3)	<0.001
	Control	81.0	19.0	0.0	0.0	0.0	32.5 (5.4)	
Arterial blood gas sampling and puncture	Post interven.	9.5	14.3	4.8	23.8	47.6	67.0 (28.2)	0.002
	Control	0.0	19.0	81.0	0.0	0.0	44.4 (4.6)	
Triage in mass Casualty	Post interven.	0.0	0.0	0.0	9.5	90.5	94.4 (8.1)	<0.001
	Control	0.0	0.0	71.4	28.6	0.0	56.1 (6.0)	
Endotracheal intubation	Post interven.	0.0	0.0	0.0	28.6	71.4	87.3 (11.4)	<0.001
	Control	0.0	100.0	0.0	0.0	0.0	31.0 (4.0)	
Intravenous cannulation	Post interven.	0.0	0.0	4.8	4.8	90.5	92.3 (11.8)	<0.001
	Control	0.0	61.9	38.1	0.0	0.0	38.8 (6.0)	
Naso-gastric intubation	Post interven.	0.0	0.0	0.0	0.0	100.0	100.0 (0.0)	<0.001
	Control	0.0	9.5	66.7	23.8	0.0	54.1 (9.5)	
Cardiopulmonary resuscitation and cardiac Defibrillation	Post interven.	0.0	0.0	0.0	0.0	100.0	95.3 (4.8)	<0.001
	Control	4.8	57.1	38.1	0.0	0.0	39.1 (9.8)	
Basics of wound management	Post interven.	0.0	0.0	0.0%	19.0	81.0	83.3 (6.2)	<0.001
	Control	0.0	33.3	66.7	0.0	0.0	41.4 (9.7)	
Male urethral catheterization	Post interven.	0.0	0.0	0.0	0.0	100.0	97.3 (3.3)	<0.001
	Control	0.0	0.0	100.0	0.0	0.0	52.6 (4.6)	
Overall practical skills Score	Post interven.	0.0	0.0	0.0	0.0	100.0	88.6 (4.5)	<0.001
	Control	0.0	4.8	95.2	0.0	0.0	43.3 (2.3)	

Post intervent. = post intervention

Table 3. Pre-intervention vs post-interventionl assessments of participants' attitude towards the task-based EM training (Intervention group)

Attitude parameters	Pre-intervention assessment Mean (SD)	Post-intervention assessment Mean (SD)	Mean difference	95% C.I.	P value
Attitude to learning	24.2 (4.9)	64. 5 (13.8)	40.3	33.8- 46.7	<0.001
Response to advice	44.2 (8.3)	72.9 (14.9)	28.7	21.1- 36.2	<0.001
Initiative	13.9 (4.1)	62.8 (12.7)	48.9	43.06- 54.7	<0.001
Sharing Ideas	33.2 (10.1)	69.8 (15.9)	36.6	28.2- 44.9	<0.001
Total	29 (4.5)	67.5 (7.1)	38.5	34.7– 42.2	<0.001

Table 4. Regression analysis assessing effects of gender and final graduation mark on the degree of change in practical skills of intervention group

Independent variable	Beta coefficient	Standard error	P value
Gender (female)	-3.278	3.360	0.342
Final college graduation mark	-0.308	0.274	0.277

Table 5. Participant's feedback on training course and OSCE assessment tool

Evaluation item	Satisfaction rating scale					Satisfaction index
	Totally disagree	Disagree	Equivocal	Agree	Totally agree	
The participants had prior knowledge about the training program	2	3	2	6	8	74.3
There was a coherent progression of the training program from beginning to end?	1	2	1	7	10	81.9
Quality of training program outlines was good	2	2	2	8	7	75.2
Statement of program objectives was clear	1	2	2	6	10	81
The training program met my expectations	1	1	2	7	10	82.9
Organizations of training program activities was appropriate	1	1	1	7	11	84.8
Helpfulness of teaching staff was good	1	2	0	6	12	84.8
Availability of training materials was good	0	0	1	8	12	90.5
The training materials were useful	0	0	2	9	10	87.6
Clarity of presentations was good	1	1	1	8	10	83.8
The schedule of the OSCE was appropriate	1	0	1	8	11	86.7
OSCE is an appropriate way to assess knowledge and practical skills in emergency medicine	2	3	1	5	10	77.1
OSCE training in EM to be generalized for remaining interns	1	1	1	10	8	81.9
OSCE stations were realistic and representative of a real-life practice events	1	2	3	5	10	95.4
Overall, would you rate the training program content as beneficial?	0	0	0	5	16	95.2
Overall, would you rate the organization of the training program as well?	0	2	1	6	12	86.7
Overall, would you rate the quality of the teaching as good?	0	0	1	6	14	92.4

Overall satisfaction index 83.1%

DISCUSSION

In this study, we used a quasi experimental study design as it lacks random assignment. This method is the best alternative to randomized trials[34] because it was not feasible to randomly assign newly graduated interns into intervention group and control group because their internship program was set by Duhok Health Authority before the start of TBTM. Mannequins offer realistic clinical challenges that enable assessment of a variety of skills that are inaccessible to traditional methods like oral assessment methods.[35] Also, there are ethical concerns using real patients despite that their use will maximize validity.[36] Because we were the first in using simulated models in training programs in the governorate to assess competency of medical doctors in EM, no pre-trained simulated patients were available in DCM. A similar approach was used in a study in Iran.[37] OSCE tool has been identified as a valid and reliable method of assessing clinical

competency[38] and is found to be particularly appropriate to emergency medicine.[39] Considering that this was the first time of OSCE use in the assessment of an entire cohort of interns, the decision to set 60% as a passing score for each station was arbitrary.[40] Setting standards (defendable passing scores and grades) in an assessment method is a matter of judgement but requires the use of systematic methods. Qualified and unbiased judges were selected to come up with defensible passing scores.[38,41] Only nine procedures were selected for training because of logistic limitations, their importance in the real life.[42,43]

Pre intervention assessment findings indicated that there was a statistical significant difference in the mean overall practical skill performance score between the control and intervention groups (43.3 vs 33.3, $p < 0.001$). On further analysis at the level of individual tasks, the control showed a higher practical performance score in six out of the nine EM procedures (Arterial blood gas sampling, triage in mass casualty, endotracheal intubation, nasogastric intubation, cardiopulmonary resuscitation and male urethral catheterization). The problem of having interns with deficiency in basic clinical skills and performing practical procedures has been addressed in other studies.[44,45] Lack of skills in performing certain procedures but not the others were reported in other studies.[46,47]

As finding shows, the control group might had a higher chance of performing some of the procedures included in the study compared to the intervention group who had not yet have the chance to do the same procedure. We noticed that for the procedures that are more likely to be performed in emergency departments, the control group had much higher mean practical performance score compared to that in the intervention group. In a study, doctors were asked to grade their subjective confidence at performing listed practical skills before and after working in accident and emergency (A&E). There was a significant improvement in confidence for the practical skills after working in A&E.[48]

After the implementation of TBTM, the intervention group had gotten significant improvement in their clinical skills (both overall and for all individual tasks). And for some tasks, the differences in the mean scores for the intervention group were double or triple of that of the control group. A study that was conducted in the Medical City Teaching Hospital in Baghdad during the period January – September 2006 about training 92 doctors on cardiac and trauma life support. The study found that no one gained the pass mark in the Advanced Cardiac Life Support, Basic Trauma Life Support and Advanced Trauma Life Support questions before giving the lectures. After the lectures, all participants succeeded in gaining the pass mark for the same questions.[49] Other studies have also shown improvement in the procedural skill performance of doctors after being exposed to training.[50,51] Regression analysis showed that both gender and final college graduation mark had a non significant role in the degree of improvement in the practical skills among the intervention group. This further may ascertain that the improvement could be solely attributed to the effect of the task based training approach in medical education. Our findings were unlike a study that evaluated competency of medical interns in Shiraz that used OSCE for assessment which showed that in spite of the fact that these students' performance in medical knowledge and clinical judgment were favourable, they functioned incompetently in clinical skills. Moreover, the results of their finding examination correlated with the participants final grade point averages. Namely, the top students in OSCE were also the top students in their medical education. Male interns performed better than females in this examination.[52]

In general, task based training of

medical doctors in EM procedure using simulation like mannequin was found to be successful in improving interns' competency in performing essential EM procedures. Similar findings have been found in another study.[53] A study performed by Al-Dabbagh and Al-Taee to evaluate a task-based community oriented teaching model of family medicine found out that the task-based teaching model in family medicine significantly improved performance skills of the study participants. Also, the participants were found eager to learn a greater variety of skills and to examine a large number of cases if readily accessible.[54]

In regard to attitude of the intervention group towards the task based training approach as an innovative style of learning process in DCM, participants had a better impression on this approach after its implementation. The significant positive shift in the participants' attitude towards the task based training approach adopted in the training course may be because this is a new method as we mentioned or the training course was well-organized and addressed the areas that the participants had concerns or weakness. These could further be explained by the finding of a satisfaction score of 83.1% as a feedback from the training course participants about the usefulness of task based training program and also of OSCE. The positive feedback on TBL approach is consistent with other studies.[55,56] A multimodular concept of training, including such simulator-based techniques, may relieve the widespread shortage in clinical experience, and hence greatly facilitate improvement of quality of care and patient safety.[57]

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پوختە

رولێ خولێن فێرکرنێ بێن کورت و چر ل سەر پێشێخستنا کارێ نوزدارێن نشتەجێن خولا ل نوزداریا تەنگاڤیا ل دهوکێ–هەرێما کوردستانا عیراقێ

پێشەکی و ئارمانج: یا دیارە کو گهورینێن زور بەرجاف ل فێرکرنا بزیشکی ل سەرانسەرێ جیهانێ بێ هاتینە ریدان. هەر وەسا یا دیارە کو نوژداریا تەنگاڤیا ل عیراقێ پێتڤی پێشئیخستنێ یە. فێرکرنا پزیشکی ب شێوازی بجهینانا کارا یا هاتیە دوپاتکرن کو یا ب هێزە ل دور بلندکرنا ئاستی زانینێ و پراکتیکرنی ل نیک کارمەندێن تەندروستی. ئارمانجا ڤێ فەکولینێ ئەوە کو هەلسەنگاندنا بروگرامێن فێرکرنێ ب شێوازی ب جهینانا کارا لدور ب هێزکرنا شیانێن زانستی و پراکتیکی ل دەڤ دەرچوویێن کولیجا بزیشکی یا دهوکی ل سالا 2009–2010.

ریکێن ڤەکولینێ: شیواژێ ڤەکولینیێن (وەک تەجریبی) هاتە بکار ئینان بو بجهئینانا ڤێ ڤەکولینێ. گروبەکێ نوژدارێن نشتەجی و خولا ئەوێن کاردکەن ل نەخوشخانێن دهوکێ ب مەرجەکێ کو هێشتا کار نە کربیت ل نەخوشخانا تەنگاڤیا و ل پشکێن تەنگاڤیا ل نەخوشخانێن دی. نەهـ کریارین نوزداریا تەنگاڤیا بێن فەر کو بێنە زانین هاتنە ژێگرتن وەک پروگرام بو چێکرنا پەرتوکەکا فێرکرنێ و دا ل خولا مەشقکرنا نوژدارێن نشتەجی وخولا هاتینە دەست نیشانکرن بو ڤێ ڤەکولینی. هەروەسا گروبەکێ دی ژوان نوژدارێن نشتجی و خولا ئەوێن کاری خو ل جهێن نافبری تە مامکری هاتینە ژیگرتن وەک کونترول. ئامرازی أوسکی OSCE هاتە ژێگرتن بو هەلسەنگاندن و تاقیکرنا شیانین پراکتیکی لدەڤ نوژدارێن نیشتەجی و خولا.

ئەنجام: ڤێ ڤەکولینێ دیارکر کو ئاستێ هەردو گروپا بێ نزم بو بەری خولا مەشقکرنێ دەست پێ بکەت (43.3٪ موقابل 33.3٪). بەلێ ئەنجامێن بەروڤاژی دیاربوون بشتی خولا مەشقکرنێ بدیماهی هاتی (88.6٪ مو قابل 33.3٪). هەروەسا دیاربوو کو نە جەندەرێ پشکدارا و نە نمرا وانا یا دەرچونێ ل کولیجا پزیشکی ئەگەرەک هەبوو ل سەر ئەنجامێن خولێ. بشکدارا شێوازێ فێرکرنا پزیشکی ل دور نوژداریا تەنگاڤیا ئەوا هاتیە ئەنجامدان ل خولێ ب باشی قەلەم دا.

دەرئەنجام: ڤەکولینێ دیارکر کو فێرکرنا نوژداریا تەنگاڤیا ب ریکا ب کارئینانا شێوازێ (فێرکرنا پالپشت ب کاری) ل نیک قوتابیێن کولیژێن بزیشکی، و نوژدارێن نشتجی و خولا و هەروەسا ل نیک خواندەڤانێن خاندنا بلند یا پر بهایە و جهێ باوەرێیە.

الخلاصة

دور الدورات التدريبية المكثفة، القصيرة الأمد و المعتمدة على المهام في تطوير اداء المقيمين الدوريين في طب الطوارئ في دهوك–اقليم كوردستان العراق

خلفية واهداف البحث: لقد شهد التعليم الطبي تغييرات دراماتيكية في كيفية ايصال المعلومة اللازمة لتاهيل الطلبة بالمهارات المعرفية والادائية. في العراق تم اعتبار طب الطوارئ من المواضيع التي تحتاج الى تطوير. لقد تم التيقن من ان التدريب الطبي المعتمد على المهام مرتبط بتحسن اداء الكوادر الصحية و الطبية في انجاز المهام التي تواجهم في حياتهم الوظيفية. ان الهدف من هذه الدراسة هو تقييم دور البرامج التدريبية و التعليمية المعتمدة على المهام في تطوير اداء المتخرجين الجدد من كليات الطب في مجال تنفيذ الاجراءات الطبية العاجلة في مجال طب الطوارئ.

طرق البحث: لقد اعتمدت طريقة البحث شبه التجريبي في تصميم هذه الدراسة التي نفذت خلال شهري حزيران و تموز من العام 2010 في دهوك. البحث اعتمد على عينة من الطلبة المتخرجين سنة 2009–2010 من كلية طب دهوك و الذين بدورهم قسموا الى مجموعتين: مجموعة التدخل و المجموعة الضابطة. العوامل التي حددت مجموعة التدخل هو ان لا يكون الطبيب المقيم الدوري قد اكمل تدريبه في مستشفى الطوارئ او اي من الوحدات او الاقسام الخاصة باستقبال الحالات الطارئة في مستشفيات دهوك الاخرى. لقد تم اختيار تسعة من الاجراءات المستخدمة في طب الطوارئ بكثافة لتكون المادة التدريبية النظرية و العملية للكتيب التدريبي التي استخدم لاحقاً كمنهج تدريبي للاطباء المقيمين المشمولين بالبحث. كذلك فقد تم اختيار الفحص السريري الهادف و المنظم في اختبار المهارات المعرفية و الادائية للعينة موضوع البحث قبل و بعد البدء بالبرنامج التدريبي.

النتائج: لقد سجلت مستويات متدنية في اداء كلا المجموعتين التدخلية و الضابطة في تنفيذ المهارات الادائية للاجراءات الطبية العاجلة في مجال طب الطوارئ قبل البدء بالبرنامج التدريبي. (34.3% مقابل 33.3%)، ولكن النتائج ظهرت معكوسة تماماً بعد تطبيق البرنامج التدريبي للاطباء العينة (88.6% مقابل 33.3%). كما تبين ان كلاً من الجندر و معدل التخرج النهائي من الكلية لا تاثر لهما على اداء اطباء العينة في البرنامج التدريبي. كما تلقى البرنامج التدريبي قبولاً جيداً من الاطباء العينة في اعتماد الاسلوب التدريبي المعتمد على المهام في التدريب على اداء الاجراءات العاجلة في طب الطوارئ.

الاستنتاج: ثبت ان الاسلوب التعليمي المعتمد على المهام فعال في تدريب و رفع الكفاءات الأدائية للاجراءات الطبية العاجلة في مجال طب الطوارئ لدى الاطباء المقيمين الدوريين. و يمكن الاعتماد و التوثق من فعالية هذا الاسلوب أيضاً في تدريب طلبة الكليات الطبية و كذلك طلبة الدراسات العليا على الاجراءات العاجلة الخاصة بطب الطوارئ.

VALIDITY OF PATHERGY TEST IN PATIENTS WITH BEHÇET'S DISEASE

CHINAR A. HUSSEIN, MBChB, DRMR*
MOHAMMED T. RASOOL, MBChB, FRCPG, FRCP, DRMR (London)**

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ABSTRACT

Background and objectives Behçet's disease is a chronic relapsing multi-system disease with a high prevalent rate and of severe form in countries along the silk route. For diagnosis, a set of criteria has been adopted. Pathergy test, a unique skin lesion of disease, is an important criterion for diagnosis and classification of it. The aim of study was to assess pathergy test in patients diagnosed as Behçet's disease according to the International Study Group criteria.

Methods The study was conducted in two years between October 2005 and October 2007. Cases were diagnosed as having Behçet's disease based on the International Study Group criteria for the diagnosis of Behçet's disease. All cases were patients attending Duhok Center for Rheumatic Diseases and Rehabilitation. Controls were volunteers and persons who attended the center for consultation of non specific mechanical strain or sprain and with no history of orogenital ulceration.

Results Majority of patients were in the fourth decade of life and in most of them the disease had started in the third decade. The male to female ratio was 1.12:1. History of oral ulcer has been reported by 84.3 % at disease onset and the percentage was 100% at diagnosis. Statistically significant difference in the rate of positive pathergy test during exacerbation and remission of disease was obtained and of high specificity for disease. Gender played no role in the positive rate during phases of disease. Age extremities and disease duration less than 10 years were associated with a drop in the positive rate during remission.

Conclusion Pathergy phenomenon occured in about one half of patients with Behçet's disease and it is recommended to be performed in every patients of Behçet's disease especially those with incomplete manifestations for diagnosis as it is one of criteria required diagnostic set.

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Key words: Validity, Behçet's disease, Pathergy test

Behçet's disease is a chronic systemic disease which consists of varying combinations of mucocutaneous, ocular, neurologic, cardiovascular, pulmonary, gastrointestinal, and other manifestations.[1] The disease tends to wax and wane, the frequency and duration of exacerbations being unpredictable.[2] The disease generally runs an improving or stable course after the first five years with clinical complications generally recurring at longer intervals.[3] Hence the prognosis of patients with Behçet's disease is generally favorable, once the initial insult abates.[4] However, central nervous system involvement and mojar vessels disease are exception, since their onset may occur 5-10 years in to the course of the disease .

Several aspects of the immunopathogenesis are considered but its accurate etiology and pathogenesis are still unknown.[1] An autoimmune reaction

** Rheumatologist, PhD student. Tianjin University of Traditional Chinese Medicine; 88Yuquan Road, Nankai district, Tianjin300193, P.R.China.*
*** Assistant professor. Chairman, Department of Internal Medicine, School of Medicine, Faculty of Medical Sciences, Duhok University, Kurdistan Region, Iraq.*
Correspondence author: Chinar A. Hussein. Telephone: 86- 13102191740; 86-22-23051087. Email: wailianb@tjutcm.edu.cn, eva99099@yahoo.com

triggered by an infectious or environmental agents (possibly local to a geographic region) in a genetically predisposed individual seems most likely.[2]

Behçet's disease is most frequent in countries along the ancient silk route from Japan to the Middle East and Mediterranean basin.[5] The highest prevalence of the disease is reported for Turks living in Anatolia with 370 patients per 100 000 inhibitance.[6] In Iraq the prevalence is 17: 100 000,[7] and in Iran the prevalence is 16.7: 100000.[8]

Diagnosis has always depended on the grouping together of sufficient features in the individual patient to satisfy the physician that a secure diagnosis can be made,[9] so sets of criteria are used to diagnosis the disease depending on disease manifestations. Pathergy test, which is one of the unique skin lesions in Behçet's disease, is an important criterion for the modern diagnosis and classification criteria of Behçet'sdisease.[10] And pathergy phenomenon is a non specific neutrophil hyperactivity reaction in response to minor cutaneous trauma in Behçet's disease.[2] It is manifested as the development of a papulo-pustular lesion around a puncture site on the skin, 24-48 hours after the injection of a sterile substance.[11] Pathergy reaction is considered highly sensitive and specific for Behçet's disease in patients originating from Turkey, the Middle East, Japan and Korea.[12] It is positive in 57-65 % of patients from the Middle East and Turkey.[13-15] A positive skin test for pathergy reaction is considered an important criterion of International Study Group for the Diagnosis of Behçet`s Disease.[16,17]

The aim of this study was to assess pathergy reaction in patients diagnosed as having Behçet's disease according to the International Study Group criteria among those with recurrent oral ulcerations. Also, the study aimed at comparing the rate of positivity of pathergy test among patients with Behçet's disease during exacerbation and remission phases and examining the relationship of age, gender and duration of the disease to the difference in positivity of pathergy test.

METHODS

The study was conducted between October 2005 and October 2007. Cases were diagnosed according to the international study group criteria for diagnosis of Behçet's disease. This included patients with a history of recurrent oral ulceration on three or more occasions for more than one year plus two of recurrent genital ulcerations, eye lesions and/or skin lesions.[18] All cases were patients attending Duhok Center for Rheumatic Diseases and Rehabilitation. This center is the only specialized center in Duhok governorate which is responsible for dealing with rheumatologic problems. Controls were volunteers and persons who attended the center for consultation of non specific mechanical strain or sprain and with no history of orogenital ulceration. Controls were matched with cases for age (±2 years) and sex. A total of 70 cases with a similar number of controls were included in the study.

Consent of each patient and control was taken followed by data collection. Data were collected using a questionnaire form that included demographic and clinical information. Clinical data included history of first presentation of the disease and its duration; history of orogenital ulceration, eye lesions, Also, smoking and diet history including spicy food and family history of recurrent oral ulcers and/or Behçet's disease were taken. Pathergy test was done for the participants during exacerbation and remission phases .

Pathergy test was performed by first cleaning the puncture site by 0.9% normal saline then using a sterile, sharp, 23 gauge disposable needle that was inserted perpendicularly to the skin and subcutaneous tissue of volar aspect of forearm to the depth of 0.5 cm, rotated briefly on its axis, and then removed.

Then, the site of puncture in encircled by a pen mark and after 24-48 hours, the skin lesion that appeared at the site of the puncture was measured using a tape measure. The appearance of an erythematous papule, pustule, or erythema of more than 2mm was considered positive.[2]

Categorical data were presented as count (%). Z test for two proportions was used to test for difference in the proportions. Level of significance was set at 0.05. For purpose of avoiding cells with zero frequencies, 0.1 was added to all cells.[19]

RESULTS

During the period of two years study, 70 patients were registered, 37 males and 33 female, and the male to female ratio was 1.12:1. Their ages were ranged from 4-61 years and the mean age was 35 years at presentation. Figure 1 shows age and gender distribution of the patients. Fifteen out of 37 (40.5%) of male patients were aged 30-39 years compared to 11 out of 33 (33.3%) of female patients.

The duration of the disease or the symptoms since the onset of disease was varied between patients from one year to more than 25 years and the mean duration was 8.4 years. Thirty (42.9%) patients had the disease for 1-4 years and 19 (27.1%) patients had symptoms for 5-9 years.

At the onset of disease the first presentation was oral ulcer in 59 (84.3%) patients while 7.1% presented with genital ulcer. Thrombophlebitis, arthritis, and uveitis each accounted for 2.9% of first presentations.

When cases and controls were tested for pathergy reaction, all the controls were negatives for pathergy reaction, while it was positive in 48 of cases during the disease flare, but the positive rate of test dropped to 27 of cases when the test was repeated during remission of disease (Table 1). When Z test applied, a statistically significant difference in positivity of pathergy test between the cases in exacerbation and remission was obtained at p value of < 0.001.

There was no significant difference in the positivity of test between males and females during exacerbation and remission (Table 2).

Figure 2 shows that patients with

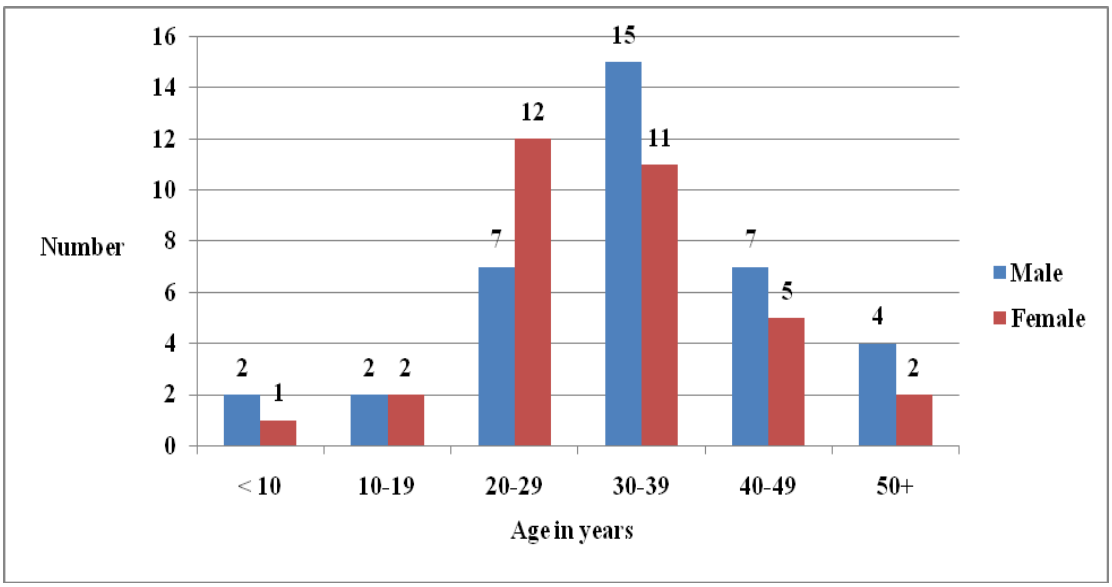


Figure 1. Age-gender distribution of patients with Behçet's disease in Dohuk province, 2005-2007

Table 1. Pathergy test outcome in cases of Behçet's disease during exacerbation and remission of disease, and in control in Dohuk province, 2005-2007

Pathergy test outcome during phases of disease	Exacerbation		Remission	
	Cases	Control	Cases	Control
Positive	48	0	27	0
Negative	22	70	43	70

Table 2. Gender distribution of pathergy test during exacerbation and remission in patients with Behçet's disease in Dohuk province, 2005-2007

	Male (n = 37)	Female (n = 33)	p value*
Positive pathergy test during exacerbation	25 (67.6)	23 (69.7)	> 0.05
Positive pathergy test during remission	14 (37.8)	13 (39.4)	> 0.05

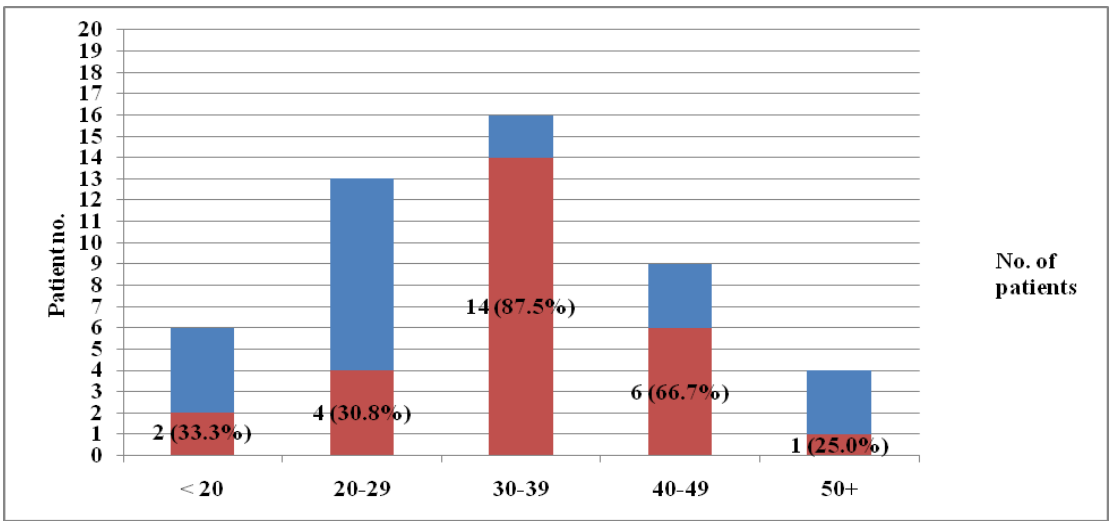
** Z test for two proportions was used*

positive pathergy test during the exacerbation period in age group of 30-39 and 40-49 were still positive for the test during the remission period (87.5% and 66.7%, respectively).

Most patients affected by the differences in positive pathergy reaction rate during exacerbation and remission were those who had disease duration of less than 10 years (Table 3).

The test shows its great specificity in patients with Behçet's disease and during both exacerbation and remission whiles the sensitivity, though was abed variable during phases of disease but was reliable to be applied specially during exacerbation.

The specificity of the test was 99.9% during exacerbation and remission. The positive predictive value was 99.8% and 99.6% during exacerbation and remission, respectively. The sensitivity and negative predictive value were 68.5% and 76% respectively during exacerbation and were 38.6% and 61.9% respectively during remission (Table 4 A and B).



Percentage indicate rate of positivity of pathergy test during the remission period among patients who were positive also during the exacerbation period.

Figure 2. Rate of positivity of pathergy test during the remission period among patients with Behçet's disease who were positive also during the exacerbation period in Dohuk province, 2005-2007

Table 3. Distribution of years since onset of disease to positive pathergy test during exacerbation and remission in patients with Behçet's disease in Dohuk province, 2005-2007

Duration in years No. (%)	Positive pathergy test		Total
	During exacerbation	During remission	
1-4	19 (39.6)	6 (22.2)	30 (42.9)
5-9	13 (27.1)	9 (33.3)	19 (27.1)
10-14	3 (6.3)	3 (11.1)	5 (7.1)
15-19	3 (6.3)	2 (7.4)	3 (4.3)
20-24	7 (14.6)	6 (22.2)	9 (12.9)
25+	3 (6.3)	1 (3.7)	4 (5.7)
Total	48 (100.0)	27 (100.0)	70 (100.0)

Table 4 A and B. Sensitivity, Specificity, positive predictive value and negative predictive value during exacerbation and remission*

A. During exacerbation

Pathergy test	Cases	Control	Total
+ve	48.1	0.1	48.2
-ve	22.1	70.1	92.2
Total	70.2	70.2	

Sensitivity 68.5%, Specificity 99.9%, positive predictive value 99.8%, negative predictive value 76%.
For purpose of avoiding cells with zero frequencies, 0.1 was added to all cells.

B. During remission

Pathergy test	Cases	Control	Total
+ve	27.1	0.1	27.2
-ve	43.1	70.1	113.2
Total	70.2	70.2	

Sensitivity 38.6%, Specificity 99.9 positive predictive value 99.6%, negative predictive value 61.9%.
For purpose of avoiding cells with zero frequencies, 0.1 was added to all cells.

DISCUSSION

From the list of manifestations it can be seen that patients may be referred from primary care, or may present, to about a dozen different medical or surgical specialties, so that not only is this a multi-system condition, but it also requires multi-disciplinary co-operation.

Nevertheless, the most common feature is recurrent oral ulceration. Therefore, although oral aphthous ulceration has been shown to occur in up to 20 % of the normal Western population, its presence may be considered to be an essential enquiry in history intake.[9,20] But the unique feature of Behçet's disease is the pathergy reaction which is listed among the major manifestations of Behçet's disease and according to the International Study Group is among the major criteria required for the diagnosis of the disease. However, different positive pathergy reaction rates and intensity in Behçet's disease have been reported worldwide.[21] And North of Iraq is among the countries of high expected prevalence and high expected rate of positive pathergy reaction recording as it is among the countries along the silk route and without much informations about the disease and pathergy reaction. So we conducted this study to evaluate the prevalence of pathergy reaction among patients of Behçet's disease in Dohuk province and its relation to the flare and remission of the disease. Although, pathergy test has often proved to be a problem in terms of the way in which it is performed, its specificity and its geographical variability, it is now recommended internationally that the test should be performed by insertion of a 20

gauge needle through the skin under sterile conditions, without injection of saline. The high rate of positive test is reported in countries along the silk route and this rate becomes low outside this geographic basin. During distribution of positive pathergy rates in both phases of the disease according to the sex, age and duration, we were unable to find such conducted studies for comparing with this study for the differences or similarity between them.

According to gender distribution, the percentage and the rate of positive test of each gender were affected similarly by the drop during remission or there was no difference in the drop rate between male and female during the phases of disease apart from a higher rate of a positive test among male than female and in both phases of disease but not to a significant difference. In one study conducted by Yazici et al concluded that the male patients have a stronger pathergy reaction than matched age and duration of disease female patients and to a significant difference[22] but not comments on the rate of positive test in either gender.

In regard to the relation of a positive test in both phases of disease to the age of patients, the study revealed that all age groups are affected by drop in positive test during remission and to different rates among age groups. Although the high rate of positive reaction and in both exacerbation and remission were observed among the age groups between 20-29 years and those between age of 30-39 years, this might reflect that the bulk of the sample were those age groups. But the most age groups affected by the drop rate of positive test when disease remits were in age extremities. The explanation of this drop in test in early age onset of disease is that the patients may have a more severe disease in early age onset than adult patients.[22] But this not explained in adult who have more stable course of disease.

Patients with history of disease duration less than 10 years have higher rate of positive reaction during phases of disease and most period of disease affected by drop in the rate of positive reaction during remission, which might be due to that the disease is more severe in the first 5-10 years and the disease tend to improve or become more stable over time.[4]

Pathergy phenomenon is an important feature of Behçet's disease that occur in about one half of patients with Behçet's disease and it is recommended to be performed in every patients with Behçet's disease and especially those with incomplete manifestations for diagnosis as it is one of criteria required diagnostic set. The sensitivity of the test is decreased when the disease remits and it is important to be performed and repeated for every patient with Behçet's disease during flare of disease as many patients become positive for reaction during this period and especially in extreme ages and those of less than 10 years duration. Further extended studies required for more assessment and evaluation of other aspects of the disease and its management as we are in a locality with a high prevalence for Behçet's disease.

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پوخته

هەلسانگاندنا تاقیکرنا بژارجی لسەر نەخوشیێن بەهجەت

پێشەکی و ئارمانج: نەخوشیا بەهجەت ئێك ژ نەساخییێن دومدرێژە و کاتیکرنێ ل هەموو کوئەندامێن لەشی دکەت. ئەڤە نەخوشیەکا بەربەلاڤە ل وان دەولەتێن کو دکەڤنە لسەر رێکا حەریرێ کو نەخوشییێن ژ جورێ دژوارتر پەیدا دبن.جوندین سالوخەت دهێنە بکارئینان. تاقیکرنا بژارجی ئێك ژ رێکێن گرنکە ژ بو دەستنیشانکرنا نەخوشیا بەهجەت. ئارمانج ژ ڤێ ڤەکولینێ هەلسانگاندنا کارلێکرنا بژارجی ل نەخوشێن کو تووشی نەخوشیا بەهجەت بووین.

ریکێن ڤەکولینێ: ئەڤ ڤەکولینە هاتە کرن ل پارێزگەها دهوکێ ژ کانینا دووێ 2005 تا کانینا دووێ 2007. د ڤی ماوەی دا حەفتێ نەخوشێن کو تووشی نەخوشیا بەهجەت بووین هاتنە وەرگرتن. هەرورسا حەفتێ کەسێن کو تووشی نەخوشیا بەهجەت نە بووین کو سەردانا سەنتەرێ ڤەژاندنا هەستیکا ل دهوکێ کرین هاتنە وەرگرتن.

ئەنجام: د ڤەکولینی دا دیاربوو کو رێژا رەگەزێ نێر بەرامبەر مێ 1.12:1 بوو. پرانیا نەخوشا د ژیێ 40 سالیدا بوون. کولك ل دەڤێ 84.3٪ ژ نەخوشا هەبوون ل دەستپێکا نەخوشیێ. هەروەسا دیاربوو کو کارلێکرنا بژارجی یا بوزەتیڤ بوو ل ژ نەخوشا د دەمێ ڤەگەریانا نەخوشیێ و ل دەمێ نەمانا نەخوشیێ. ژیێ نەخوشی و ماوێ نەخوشیێ کێمتر ژ 10 سالان رول هەبوو د کێمکرنا رێژا بوزەتیڤ یا کارلێکرنا بژارجی بەلێ رەگەز هیچ رول نەبوو.

دەرئەنجام: کارلێکرنا بژارجی یا گرنگە د دەستنیشانکرنا نەخوشیا بەهجەت و لدەڤ نیڤەك ژ نەخوشا پەیدا دبیت. و ئەم پشنیاردکەین کو بهێتە کرن لسەر هەمی نەخوشا تایبەت ئەگەر هەمی سالوخەتێن نەخوشیێ پەیدا نەبن.

الخلاصة

تقييم اختبار بثارجي للمرضى المصابين بمرض بهجت

خلفية واهداف البحث: مرض بهجت من الأمراض المزمنة ذات انتكاسات على أعضاء الجسم المتعددة. و يكثر انتشارها في المناطق التي تقع على الطريق الحريري القديم. من السمات الفريدة للمرض هو ظهور بثور جلدي أو تقيحي أو احمرار جلدي في موقع الحقن و تدعى تفاعل بثارجي. الهدف من الدراسة هو تقييم ايجابية اختبار بثارجي لدى المرضى المصابين بمرض بهجت.

طرق البحث: أجريت الدراسة في محافظة دهوك خلال فترة زمنية امتدت من كانون الثاني 2005 و الى كانون الثاني 2007. حيث تم جمع 70 حالة من المصابين بمرض بهجت و 70 من المتطوعين الذين ليس لديهم مرض بهجت. وتم اجراء اختبار بثارجي عليهم.

النتائج: تبين من الدراسة أن نسبة الذكور الى الاناث هي 1.12:1. معظم المرضى كانوا في العقد الرابع. كانت لدى 84.3% من المرضى تقرحات فموية و شفوية منذ بداية المرض. كما أظهرت الدراسة سالبية اختبار بثارجي لدى جميع المتطوعين. كان هناك اختلاف في نسبة ايجابية بثارجي خلال فترة الانتكاس و الركود. الجنس لم يكن له دور في تقليل نسبة الايجابية لاختبار بثارجي اثناء فترة الركود. من جانب آخر، كانت لطرفي العمر وفترة مراضة أقل من 10 سنوات دور في تقليل نسبة الايجابية أثناء فترة الركود.

الاستنتاج: اختبار بثارجي مهم في تشخيص مرض بهجت حيث تظهر في حوالي نصف المرضى. لذا نقترح اجراء اختبار بثارجي لكافة المرضى الذين لديهم مرض بهجت و خاصة المرضى الذين تكون أعراضهم غير كافية للتشخيص.

ASSOCIATION OF SERUM URIC ACID LEVEL WITH OSTEOARTHRITIS OF KNEE JOINT

SAUD A. ABDURRAHMAN, MBChB*
MOHAMMED T. RASOOL, FRCP (Glasc), FRCP, DMRD (London)**

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ABSTRACT

Background and objectives Previous studies have shown an association between serum uric acid and generalized osteoarthritis, but the evidence of an association between serum uric acid and knee joint osteoarthritis is limited. The objective of the study is to determine the existence of association between serum uric acid level and osteoarthritis of the knee joint and its significance.

Methods A Case-control study was done at rheumatology outpatient clinic at Duhok center for rheumatologic diseases and medical rehabilitation. Two hundred (200) participants aged 31-69 years were recruited; one hundred were patients with unilateral or bilateral knee joint osteoarthritis and 100 were healthy controls. Detailed medical history was obtained at interview. Both patients and controls underwent clinical examination, radiography and fasting blood analysis of uric acid, urea, creatinine, sugar, total cholesterol and triglycerides.

Results A significant positive association was found between serum uric acid levels and presence of the knee joint osteoarthritis [highest (third) tertile versus lowest (first) tertile of serum uric acid odd Ratio =4.10, 95% confidence interval (1.73-9.70), P-value < 0.05]. Also a significant positive association was found between serum uric acid levels and progression of the knee joint osteoarthritis [highest (third) tertile versus lowest (first) tertile of serum uric acid odd ratio=2.18, 95% confidence interval (1.03-4.61), P-value < 0.05].

Conclusion The results suggest a significant positive association between serum uric acid levels and knee joint osteoarthritis.

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Key words: Osteoarthritis, Knee joint, Serum uric acid

Osteoarthritis (OA) is the most common type of arthritis. Its high prevalence, especially in elderly, and the high rate of disability related to disease makes it a leading cause of disability in the elderly.[1]

The knee is the largest of the human joints in area of articular cartilage and synovial membrane and it is the site of predilection of many diseases including OA, crystal related diseases and inflammatory joint diseases.[2]

Uric acid is the final breakdown product of nucleic acid and purine catabolism in human.[3] Serum uric acid levels are distributed in the community as a continuous variable and are higher in men than women.[4]

An early epidemiological study reported by Acheson and Collart found that hyperuricemia was significantly associated with OA of multiple joints.[5] A positive association between knee OA and uric acid was found in a study done by university of California in 1988 albeit a small one not reaching significant level.[6]

Serum uric acid relationship with OA was specifically investigated in another study and concluded that although uric acid was associated with generalized OA (GOA) [defined as the simultaneous presence of radiographic changes of knee

* *Iraqi BOARD student, Department of Internal Medicine, Azadi Hospital, Duhok, Iraq*
** *Assistant professor of Rheumatology, School of Medicine, Faculty of Medical Sciences, University of Duhok*

Correspondence author: Mohammed T. Rasool. Telephone: 07504552497. Email: mzakoly@yahoo.com

and hand OA][7] in patients undergoing hip replacement, there were no associations with knee OA or bilateral hip and knee OA; the results suggested a possible role of elevated serum uric acid in the multifactorial etiology of GOA.[8]

Other studies accounted for serum uric acid found no association between it and OA,[9,10] while a study done in Saudi Arabia in 1998-1999 found a possible association between hyperuricemia and knee and GOA.[11]

METHODS

A questionnaire was filled for every patient and control and the patients were examined at the rheumatology outpatient clinic of the Duhok Center for Rheumatologic Diseases and Medical Rehabilitation.

The patients and controls were tested for fasting serum uric acid, blood urea and serum creatinine, fasting blood sugar, fasting serum cholesterol and triglycerides.

Recent x-rays of the knee joints and of other joints that suspected to have OA were inspected. Grading of OA of the knee joint according to radiological findings was done depending on Kellgren and Lawrence grading scheme,[12] (Table 1).

Table 1. Grading of osteoarthritis of the knee joint according to radiological finding by Kellgren and Lawrence grading scheme

Grade	Description
Grade 0	Normal
Grade I	Minimal osteophytes, normal joint space
Grade II	Definite osteophytes, possible joint space narrowing
Grade III	Definite osteophytes and joint space narrowing
Grade IV	Definite osteophytes and joint space narrowing with sclerosis and abnormal joint contour

The association between levels of serum uric acid and the presence (versus absence) of the knee OA (unilateral or bilateral) was assessed. Serum uric acid levels in both groups (cases and controls) were divided into tertiles according to the observed distribution of values (tertile 1 up to 4mg/dl, tertile 2 from 4.1mg/dl to 7mg/dl and tertile 3 above 7mg/dl). The cases in each uric acid tertile were compared to the controls in the same tertile and the crude odd ratio (OR) was calculated for the higher two tertiles in reference to the first (the lowest). This was then adjusted for age, sex, body mass index (BMI), fasting total serum cholesterol and fasting serum triglycerides. The adjustment of OR was done by using Mantel-Haenszel stratified analysis method.[13]

Also the patients having knee joint radiological grades III and IV (advanced OA) in each uric acid tertile were compared to the patients having grades I and II (early OA) in the same tertile. The crude OR was calculated for the higher two tertiles in reference to the first (the lowest) and then adjusted for age, sex, BMI, serum cholesterol and serum triglycerides using Mantel-Haenszel stratified analysis method.

RESULTS

Distribution of patients and controls according to the uric acid tertiles is shown in table 2. The crude OR was above unity in the relationship between presence of knee OA and the third uric acid tertile (OR 4.73, 95% CI 2.05-10.92, p-value < 0.05).

Table 2. Distribution of patients and controls according to the uric acid tertiles

Uric acid tertiles (mg/dl)	Patients (n=100)	Controls (n=100)
1 (≤ 4)	18	17
2 (4.1-7)	75	82
3 (>7)	7	1

After adjustment for potential confounding variables (age, sex, BMI, serum cholesterol and serum triglycerides),

the OR did not changed significantly from its crude value (Adjusted OR 4.10, 95% CI 1.73-9.70, p-value < 0.05). This suggests a positive association between third uric acid tertile and presence of knee OA, (Table 3).

The crude OR was above unity in the relationship between advanced knee OA (grades III and IV) and the third uric acid tertile (OR 2.51, 95% CI 1.17-5.38, p-value < 0.05). Also, adjustment for age, sex, BMI, serum cholesterol and serum triglycerides did not have changed the OR for the third tertile (Adjusted OR 2.18, 95% CI 1.03-4.61, p-value < 0.05). This suggests a positive association between third uric acid tertile and advanced knee OA, (Table 4).

Table 3. The relationship between serum uric acid tertiles and presence of knee OA expressed as odd ratio (OR) with 95% confidence interval (CI) and p-value

Uric acid tertiles (mg/dl)	Crude OR (95% CI)	Adjusted OR (95% CI)*
≤ 4	1 (Reference)	1 (Reference)
4.1-7	0.86 (0.62-1.20)	0.85 (0.61-1.19)
> 7	4.73 (2.05-10.92)**	4.10 (1.73-9.70)**

** Adjusted for age, sex, serum cholesterol, serum, triglycerides and BMI*
*** Significant results: p < 0.05*
CI: Confidence interval

Table 4. The relationship between serum uric acid tertiles and progression of knee OA expressed as odd ratio (OR) with 95% confidence interval (CI) and p-value

Uric acid tertiles (mg/dl)	No. of patients with Grades I and II knee OA	No. of patients with Grades III and IV knee OA	Crude OR (95% CI)	Adjusted OR (95% CI)*
≤ 4	12	6	1 (Reference)	1 (Reference)
4.1-7	53	24	0.89 (0.55-1.46)	0.82 (0.50-1.36)
> 7	3	4	2.51 (1.17-5.38)**	2.18 (1.03-4.61)**

** Adjusted for age, sex, serum cholesterol, serum, triglycerides and BMI*
*** Significant results: p < 0.05*
CI: Confidence interval

DISCUSSION

This study suggests a significant positive association between serum uric acid levels and both presence and progression of OA of the knee joint. This finding is consistent with a previous study done in Saudi Arabia in 1998-1999 in which a positive association between serum uric acid level and presence of OA of the knee joint was observed.[11] This may be explained by the pro-inflammatory effect of the elevated serum uric acid.[14] Other possible explanatory mechanisms for the association between high serum uric acid levels and knee OA include genetic

predisposition, and endogenous hormonal environment.[15,16]

Finding such positive association between serum uric acid levels and both presence and progression of OA of the knee joint may make it possible to prevent or slow down the progression of knee joint OA in patients having high serum uric acid level without knee joint OA or having high serum uric acid level in the early stages of knee joint OA by lowering their serum uric acid level with uric acid lowering drugs, the same idea was concluded from the results of a recent research done at Duke University Medical Center.[17]

In this study, 80% of the patients were women which is consistent with that found by the Ulm Osteoarthritis study.[8] Although in our community, this partly may be due to higher number of women than men seeking medical treatment of OA at outpatient clinic, but the increase in OA in women after menopause may point to hormonal mechanism.[16]

Although age, serum cholesterol, serum triglyceride and BMI was found to be associated with OA[1,18-20]; however, these factors as well as gender did not confound the association between serum uric acid, and presence and progression of knee OA. This suggested an association between level of serum uric acid and presence and progression of knee OA.

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پوختە

پەیوەندیا ئاستێ ترشێ میزێ دناف خوینێدا دگەل ئاوسانا چوکا

پێشەکی و ئارمانج: چەند ڤەکولینێن پێشتر پەیوەندی دیار کریە دنافبەرا ئاستێ ترشێ میزێ دناف خوینێدا ئۆ ئاوسانا گەها یاهەستی یاسەرانسەر، بەلێ بەلگە بو پەیوەندیێ دنافبەرا ئاستێ ترشێ میزێ دناف وینێدا دگەل ئاوسانا چوکا یاهەستی یێ بەر تەنگە. ئارمانج ژ ڤەکولینێ بۆ دیار کرنا هەبوونا پەیوندیێ دنافبەرا ئاستێ ترشێ میزێ دناف خوینێدا ئو ئاوسانا چوکا یاهەستی دگەل گرنگیاوێ.

ریکێن ڤەکولینێ: ئەف ڤەکولینە هاتە ئەنجام دان ل سەر دوو سەد (200) پشکداران ئەوێن ژییێن وان دناڤبەرا (31-69) سالان دا بوون، سەد (100) ژوان ئاوسانا چوکا یاهەستی ل لایەکی یان هەردوو لایان هەبوون ئەوێن دیتر سەد (100) کەسێن ساخلەم بوون. مێژویا پزشیکی ب درێژی هاتە وەرگرتن ژ پشکداران ئۆ پشکنینێن سەرجهی ل سەر ئەوان هاتنە کرن، هەروەسا پشکنینێن تیشکێ، ئاستێن ترشێ میزێ، یوریا، کریاتینین، شەکر، کولیسترولێ گشتی ئو چەوریێن سیانی دناف خوینێدا هاتنە وەرگرتن.

ئەنجام: پەیوندیەکا پوسیتییڤ و گرنگ هاتە دیتن دنافبەرا ئاستێ ترشێ میزێ دناف خوینێدا ئۆ هەبوونا ئاوسانا چوکا یاهەستی (ڕێژا جیاوازیێ odds ratio) بۆ بەرز ترین (سێیەمین) سێیەك بەرامبەر نزمترین (ئێکەمین) سێیەك 4.1، ناڤبرا باوەریێ (confidence interval) (1.73-9.70)، بەهایی p-value ژ 0.05 کێمتر بوو)، هەروەسا پەیوەندیەکا پوسیتیڤ وگرنگ هاتە دیتن دناڤبەرا ئاستێ ترشێ میزێ دناف خوینێدا ئو پێشڤەچوونا ئاوسانا چوکا یاهەستی (ڕێژا جیاوازیێ بۆ بەرزترین (سێیەمین) سێیەك بەرامبەر نزمترین (ئێکەمین) سێیەك 2.18، ناڤبرا باوەریێ (confidence interval) (1.03-4.61)، بەهایی p-value ژ 0.05 کێمتر بوو).

دەرئەنجام: ئەنجامێن ڤەکولینێ ئاماژە دکەن کو پەیوەندیەکا پوسیتیڤ وگرنك هەیە د نافبەرا ئاستێ ترشێ میزێ د ناف خوینێدا ئو ئاوسانا چوکا یاهەست.

الخلاصة

العلاقة بين مستوى الحامض البولي في الدم وإلتهاب المفصل العظمي لمفصل الركبة

خلفية واهداف البحث: أظهرت دراسات سابقة وجود علاقة بين مستوى الحامض البولي في الدم و إلتهاب المفاصل العظمي المعمم. لكن الدليل حول وجود علاقة بين مستوى الحامض البولي في الدم و إلتهاب مفصل الركبة العظمي لوحده محدود. الهدف من البحث هو للتأكد من وجود أية علاقة بين مستوى الحامض البولي في الدم وإلتهاب المفصل العظمي للركبة ومدى أهميتها من الناحية الإحصائية.

طرق البحث: دراسة من نوع حالة – سيطرة (Study Case–Control) أجريت في مركز دهوك لأمراض المفاصل و التأهيل الطبي على مائتي (200) مشارك تراوحت أعمارهم بين 31–69 سنة. مائة(100) منهم كانوا مصابين بألتهاب المفصل العظمي للركبة في طرف واحد أو في الطرفين و المائة (100) الباقية كانوا أصحاء (غير مصابين بألتهاب المفصل العظمي للركبة). تم أخذ التاريخ الطبي المفصل من المشاركين و أجري عليهم الفحص السريري مع أخذ الفحص الشعاعي و الفحوصات المختبرية لقياس مستوى الدم لكل من الحامض البولي، اليوريا، الكرياتينين، السكر، الكولسترول الكلي و الدهون الثلاثية.

النتائج: وجدت علاقة إيجابية ذات أهمية إحصائية بين الحامض البولي في الدم و وجود إلتهاب مفصل الركبة العظمي{نسبة الأرجحية (odd Ratio) للثلث الأعلى ضد الثلث الأدنى للحامض البولي في الدم = 4.10، 95٪ فاصل الثقة (Confidence Interval) 1.73-9.70، قيمة p–value أقل من 0.05). كما وجدت علاقة إيجابية ذات أهمية إحصائية بين الحامض البولي في الدم و تقدم إلتهاب مفصل الركبة العظمي (نسبة الأرجحية للثلث الأعلى ضد الثلث الأدنى للحامض البولي في الدم = 2.18، 95٪ فاصل الثقة 1.03-4.61، قيمة p–value أقل من 0.05).

الاستنتاج: النتائج تقترح وجود علاقة إيجابية ذات أهمية إحصائية بين مستوى الحامض البولي في الدم و إلتهاب مفصل الركبة العظمي.

ANTENATAL CARE IN ERBIL CITY-IRAQ: ASSESSMENT OF INFORMATION, EDUCATION AND COMMUNICATION STRATEGY

AWRING M. RAOOF, MBChB, MSc*
TARIQ S. AL-HADITHI, MBChB, MSc,TDM&H, PhD**

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ABSTRACT

Background and objectives Information education and communication strategy is included in the antenatal care to inform and educate pregnant women on topics related to pregnancy and care of newborn. The aim of this study was to assess women's awareness of danger signs of obstetric complications and their experiences at health care facilities.

Methods A sample of 1839 pregnant women attending primary health care centers from 1st of Jan through 30th of Apr 2009 was selected. At each primary health care center between 39 and 221 women were interviewed. Requested data included women's information on advice given on place of birth, family planning, benefit of birth in a health facility and other topics. Information on women's awareness of danger signs and their experiences at primary health care centers was also collected.

Results Family planning and nutrition were the most commonly discussed topics, 44.6% and 46.7%, respectively. Heavy bleeding, hypertension, anemia and bad obstetrical history were recognized by 67% 60%, 58% and 45% of clients as danger signs, respectively. Only 11% recognized prolonged labour as danger signs, with variations in the experiences of women at the primary health care centers; 61% reported spending three minutes and less with the health care provider, 53% were told about progress of pregnancy, 55% had the chance to ask questions and 65% were asked to return for another visit.

Conclusion Health education provided at antenatal clinic level in Erbil city seems to be relatively poor.

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Key words: Danger signs, Prolonged labour, Nutrition, Hypertension

Antenatal care is care routinely provided for all pregnant women at primary care level, or every aspect of care from screening to intensive life support provided to any women while pregnant and up to delivery.[1] Antenatal care provides an opportunity to inform and educate pregnant women on a variety of issues related to pregnancy, birth and parenthood.[2] Besides the benefits of identifying high-risk pregnancies and providing timely assessment and treatment, one of the expected utilities of antenatal care is the utilization of antenatal care services for gaining health knowledge and accessing other health services.[3]

Information, education and communication (IEC) can be defined as an approach which attempts to change or reinforce a set of behaviors in a "target audience" regarding a specific problem in a predefined period of time.[4] Both formal education and antenatal care had a significant impact on the results of child bearing.[5] Education provides women with accurate information about themselves, and about ways to prevent and treat illness. In addition, it brings desirable changes in reproductive patterns, in the status of women, and in living standards.[6]

* *Assistant lecturer in Community Medicine, Department of Medicine, College of Medicine, Hawler Medical University.*
** *Professor in Community and Tropical Medicine, Department of Medicine, College of Medicine, Hawler Medical University.*
Correspondence author: Awring M. Raoof. E-mail:awring_maroof@yahoo.com

Coverage of antenatal care is relatively high in Erbil city with 84% of women receiving antenatal care at least once during the pregnancy. More than half the women had four or more visits and about 80% of them sought antenatal care for the first time during first and second trimester. Furthermore, three in four women sought antenatal care for the last time in the last trimester.[7] This high antenatal coverage and relatively high frequency of visits provides an excellent opportunity for education information and communication. The IEC strategy was included within antenatal care in early 1990s. The strategy is to inform and educate pregnant women on variety of topics including nutrition, awareness of danger signs of obstetrical complications, care of the newborn, and family planning.

Awareness of the danger signs of obstetric complications among pregnant women and in their communities is the first step to accepting appropriate and timely referral to essential obstetric and newborn care.[8] Late or failure of women with obstetrical complications to reach referral hospitals may be attributed to many reasons. One reason may be lack of awareness of significance of symptoms or obstetrical complications.

The aim of this study was to assess women's information on certain topics including awareness of danger signs of obstetric complications and their experiences at health care facilities. The data will be useful for reinforcing or modifying behavior change for pregnant women as part of overall strategy for achieving the country's Millennium Development Goal for Maternal Health.[7]

METHODS

This was a cross-sectional study carried out at primary health care centers (PHCCs) in Erbil city (Erbil district), from 1st of January through 30th of April 2009 after fulfilling the required permissions. Erbil city is one of seven districts of Erbil governorate. The estimated population of the governorate is 1,542,421. Erbil city has an estimated population of 808,600 with approximately 50% females.[9] The district has one maternity hospital, providing comprehensive emergency obstetric care and 36 PHCCs, only 14 of them provide maternal and child health services (MCH) and one center is provided with labour room.

Proper antenatal care is provided through public health care facilities only. Registration at a public antenatal clinic depends on place of residence. Public PHCCs provide services six days a week between 8:00 am and 1:00 pm. Pregnant women are usually given monthly appointments until 28 weeks of gestation, two weekly appointments until 36 weeks and then weekly appointment until birth. The programme of activities of each antenatal clinic session includes a health talk, assessment of pregnant women through history taking, examination and laboratory tests, provision of tetanus toxoid immunization and iron/folate supplementation. Health talks are intended to cover nutrition, danger signs of pregnancy and delivery, family planning, breast feeding and care of the newborn.[3]

PHCCs were categorized into two groups; Western and Eastern PHCCs based on geographical residential pattern of Erbil city according to Al-Mudaris and Al-Hajar.[10]

The crude birth rate in Erbil is approximately 30 per 1000 population[9] indicating that 2% of the total population of Erbil is expected to have been pregnant at any period (year).[11] Assuming that 26% of the women were aware of obstetric danger signs, according to Pembe et al study in rural Tanzania,[12] with a worst accepted deviation of 12%, 95% confidence interval, a design effect of two and a non-participation rate of 10%, the sample size required for antenatal client exit interview was calculated as 1670 by Epi-Info program. Anyhow a sample of 1839 was obtained. Since the study

intended to compare pregnant women at various primary health care centers, the sample size was determined separately for each primary health care center taking into consideration the monthly registration of new pregnant women at the center. At each PHCC between 39-221 women were interviewed. If there were more women than required at the clinic, a convenience sample was taken. If there were fewer women than required, all were selected and a second visit was done to the clinic to complete the required number. Individual women were approached, given information regarding the purpose of the study, invited to participate, assured of confidentiality before the interview, and an informed verbal consent was obtained.

Data were collected in especially designed questionnaire; requested data included socio-demographic characteristics of participants, number of pregnancies, number of visits made during the last pregnancy, gestational age at first visit and gestational age at time of interview. Other requested data included women's information on advice given on place of birth, family planning, benefit of birth in a health facility and other topics. Information on women's awareness of danger signs and their experiences at PHCCs were also collected. Women were asked to mention the danger signs. Based on Safe Motherhood Initiative the danger signs include vaginal bleeding during pregnancy and delivery, bleeding after delivery, anemia, headache, lack of or cessation of fetal movement, fits of pregnancy, high blood pressure and prolonged labor.[1]

Chi-square was used to test for association between proportions. Statistical significance was accepted at p-values ≤ 0.05.

RESULTS

The age of clients ranged between 15 and 49 with a mean ± SD of 25.4 ± 6.1 years. Nearly 11% of the clients were teenagers, 63% in the third decade, and 44% primigravida. The mean of antenatal care visits was 3.22 ± 1.48. Women visiting the health center for the first time constituted about 38% in the first trimester, and 61% in the second trimester. At the time of interview 64% of women were in the second trimester. Age distribution and obstetrical characteristics of the women are presented in Table 1.

Table 1. Age distribution and obstetrical characteristics of antenatal clients

Characteristic	No. (%)
Age distribution(years)	
<20	**201 (10.9)**
20-29	**1166 (63.4)**
30-39	**395 (21.5)**
40-49	**77 (4.2)**
Gravidity	
1	**812 (44.2)**
2	**155 (8.4)**
3	**344 (18.7)**
4	**241 (13.1)**
5	**134 (7.3)**
≥ 6	**153 (8.3)**
Gestational age at first visit	
First trimester (0-13 weeks)	**689 (37.5)**
Second trimester (14-27 weeks)	**1119 (60.8)**
Third trimester (28+ weeks)	**31 (1.6)**
Gestational age at time of interview	
First trimester (0-13 weeks)	**256 (13.9)**
Second trimester (14-27 weeks)	**1179 (64.1)**
Third trimester (28+ weeks)	**404 (21.9)**
Total	**1839 (100)**

Table 2 shows the proportion of antenatal clients who reported that they had received information on certain topics at any of their antenatal visits. Diet and nutrition was the most commonly discussed topic (47%). The second topic was child spacing and family planning; 45% of clients reported receiving information on this topic. Provision of IEC on how to get to the health facility in case

of an emergency was recalled by 12% of clients only.

Table 2. Women (n= 1839) provided with IEC on selected topics at any or all antenatal visits

Topic	No. (%)
Diet and nutrition	860 (46.7)
Family planning/child spacing	821 (44.6)
Place of birth	802 (43.6)
Benefit of birth in a health facility	794 (43.2)
What to do if there is a problem such as bleeding or convulsions/fits	674 (36.7)
Care of the baby and breast feeding	436 (23.7)
How to get to health facility if there is an emergency	220 (11.9)
Talk about sexually transmitted disease and HIV/AIDs	150 (8.2)

Heavy bleeding, hypertension, anemia and bad obstetrical history were the commonest signs recognized by the clients as danger signs; 67%, 60%, 58% and 45% respectively. Only 11% recognized prolonged labour as danger signs. There were statistically significant variations between educated and non-educated clients attending health centers in recalling heavy bleeding ($p < 0.001$), cessation of fetal movement, sepsis/bad obstetrical history and obstructed labour ($p < 0.001$) as danger signs. Educated clients were more likely to recall heavy bleeding, post partum abdominal pain and anemia as danger signs, than non- educated clients (Table 3).

Less than half of clients (48%) reported that they met the health care provider in private, 61% reported that they spent three minutes and less with health care provider. More than half (53%) of clients were told about the progress of pregnancy, 55% reported they had the chance to ask questions. About two third (64.7%) were asked to return for another visit. There were statistically significant variations between educated and non-educated clients attending the health centers in respect to meeting the health care provider in adequate privacy($p < 0.001$), time spent with the care provider ($p < 0.001$), having the chance to ask questions ($p < 0.001$) and asked to come back for another visit ($p < 0.001$). The odds of educated clients attending the primary health care centers were more than odds of non-educated clients attending the primary health care centers in respect to previously mentioned experiences (Table 4).

Table 3. Comparison of awareness of danger signs between educated and non-educated clients attending PHCCs in Erbil city

Danger signs	Total PHCCs (n= 1839) No. (%)	Educated (n=1144) No. (%)	Non-educated (n=695) No. (%)	Relative risk ratio (95% CI)*	P value
Heavy bleeding	1239 (67.37)	820 (66.18)	419 (60.28)	1.6 (1.3-2.04)	< 0.001
Hypertension	1110 (60.35)	689 (60.22)	421 (60.57)	0.9 (0.8-1.2)	0.88
Anemia	1063 (57.80)	834 (72.90)	229 (32.94)	5.4 (4.4-6.7)	< 0.001
Bad obstetrical history	829 (45.07)	432 (37.76)	397 (57.12)	0.4 (0.3-0.5)	< 0.001
Cessation of fetal movement	524 (28.49)	455 (39.77)	69 (9.92)	0.5 (0.4-0.7)	< 0.001
Sepsis/postpartum abdominal pain	357 (19.41)	280 (24.47)	77 (11.07)	2.6 (1.9-3.4)	< 0.001
Obstructed /prolonged labour	203 (11.03)	112 (9.79)	91(13.09)	0.7 (0.5-0.9)	0.028

**CI=confidence interval*

Table 4. Comparison of experiences between educated and non-educated clients attending PHCCs in Erbil city

Experiences	Total PHCCs (n= 1839) No. (%)	Educated clients (n=1144) No. (%)	Non-educated clients (n=695) No. (%)	Relative risk ratio (95% CI)	P value
Meeting health care provider in adequate privacy	884 (48.06)	644 (56.29)	240 (34.53)	2.4 (2-2.9)	< 0.001
She spent 3 min and less with health care provider	1121(60.95)	853 (74.56)	268 (38.56)	4.6 (3.7-5.7)	< 0.001
She was told of progress of pregnancy	981(53.34)	641 (56.03)	340 (48.92)	1.3 (1.1-1.6)	0.003
She was asking questions	1108 (60.25)	798 (69.75)	382 (54.96)	1.8 (1.5-2.3)	< 0.001
She was asked to return	1190 (64.71)	820 (71.67)	370 (53.23)	2.2 (1.8-2.7)	< 0.001

DISCUSSION

Antenatal care is an opportunity for health education and clarifying topics related to pregnancy and inform women about the danger signs and symptoms for which assistance should be sought from a health care provider without delay. This study is part of a comprehensive safe motherhood needs assessment[13] which has been conducted in Erbil city during the last two years.

Ideally the first visit should occur in the first trimester, around or preferably before week 12 of pregnancy.[14] The present study showed a pattern of late arrival; only 38% of interviewed women reported that they had obtained antenatal care during the first trimester of their pregnancy, while 61% in the second trimester. Al-Sherbini[15] in Egypt reported lower figure for first antenatal visit; 21% in the first trimester, and 35% in the second trimester. In Basrah 21% clients visited the health center in first trimester,[16] which reflects the lack of knowledge and information about the importance of this type of health care.

In this study, less than 50% of clients reported that they were provided with IEC on selected topics such as diet and nutrition, family planning/child spacing, benefit of birth in health facility, place of birth, indicating that provision of IEC is relatively poor. Nearly 47% of women were advised about diet and nutrition, which is higher than that reported in Gambia (35%),[17] 45% reported receiving information about family planning, a figure which is similar to that reported in India (42%).[18] However, breast feeding was reported to be covered in health education by only 24% of clients which is lower than that reported in India study (34%).[18]

The proportions of clients who recalled awareness of bleeding, hypertension and anemia as danger signs was relatively high ranging from 57% to 67%. However, awareness about other danger signs including bad obstetrical history, cessation of fetal movement, sepsis/postpartum abdominal pain, obstructed labour was reported by less than half of clients ranging between 11% and 45%. This could be attributed to variations in provision of health information; health care providers were concentrating on certain danger signs of certain topics. Only 11% of women were

aware of prolonged labour as an obstetric danger sign despite that it is associated with both maternal and fetal morbidity and mortality. In Pakistan 23% of women were aware of prolonged labour as a danger sign.[19] In Gambia, a study on urban and rural women attending antenatal care, prolonged labour was not recognized as a danger sign.[17]

A study in a rural district in Tanzania revealed that 52% of women were able to mention anemia as a danger sign,[12] while in a study among rural-to-urban migrant women in China, 50% of women have knowledge about anemia.[20] Both figures are lower than that revealed by this study (58%). China study revealed a higher figure for awareness of hypertension (70%) as danger sign than our figure (60%).[20]

In the current study, 48% of clients reported they met the health care provider in adequate privacy; a higher figure was reported in Gambia (72%).[17] More than 60% said they spent three minutes or less with the antenatal care provider, although the new antenatal care model recommends 30-40 minutes for the first visit and 20 minutes for subsequent visits to carry out all activities including individual education,[14] In Gambia study 70% reported spending three minutes or less,[17] while in Tanzania 30% reported spending less than 3 minutes on individual counseling.[21] Around 53% of clients were told of progress of pregnancy, 60% had the chance to ask question, and 63% were asked to come back for another visit. Figures reported in Gambia were 25%, 16% and 70%, respectively.[17]

Comparing recalling of warning signs and experiences of educated and non-educated clients revealed that generally educated clients attending primary health care centers were more likely to recall danger signs than non-educated clients attending primary health care centers. Staff shortage is a major constraint in the delivery of health services and may contribute to variation in provision of IEC; provision of health education may be given less priority.[22] Variations in perception of danger signs by clients in these catchments areas may be another contributing factor.

It seems that health education provided at antenatal clinic level in Erbil city was relatively poor. As there is a need for IEC to reach a wider audience, it may also be provided through mass media. A uniform message can be disseminated; it will reach non-pregnant women who will be better informed. These messages will also reach men to encourage positive participation as partners to make pregnancy safer.

In a developing country such as Iraq with persistent maternal and child health problems, there is an urgent need to increase both demand for and quality of reproductive health services. Provision of antenatal education alone is the answer but can provide partial solution. Pregnant women who don't have adequate and appropriate information about pregnancy and childbirth would be ill-equipped. On the other hand, pregnant women would be unable to make optimal use of the information they have been provided if services are not readily available and of high quality.

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پوختە

کلینیکەکانی پەیوەست بەچاودێری دایك ومندالّ لە شاری هەولێر – هەڵسەنگاندنی زانیاری کۆکردنەوە، هۆشیاری تەندروستی و پەیوەندی کردن

پێشەکی و ئارمانج: ستراتیژی زانیاری کۆکردنەوە لەسەر ڕۆشنبیری ئافرەت وپەیوەندی کردنی لە بنکەکانی چاودێری دایك ومندالّ بە مەبەستی فێرکردن وڕۆشنبیرکردنەوەی ئافرەتی دووگیان لەسەر کۆمەڵێك بابەت کە پەیوەستن بە سکپڕی وچاودێری منداڵی تازە لە دایکبوو. ئامانج لەو توێژینەوە هەڵسەنگاندنی پلەی هۆشیاری ئافرەت دەربارەی نیشانە ترسناکەکانی کێشەی منداڵبوون ولێزانین وشارەزاییان لەسەر بوونی ئاسانکاری لە بنکە تەندروستیەکان.

ڕێکێن ڤەکولینێ: نموونەیەك لە ئافرەتان لە بنکە تەندروستیەکان چاو پێکەوتنیان لەگەڵ ئەنجامدرا بۆ ئەو توێژینەوە کە ژمارەیان (1839) ئافرەتی دووگیان بوو لە 1/ کانونی یەکەم تاوەکو 30/ نیسان لە ساڵی 2009. لە هەر یەکێك لە بنکە تەندروستیەکان 39–221 ئافرەت چاوپێکەوتنی لەگەڵ کرا. زانیاریەکانی کۆکرانەوە بریتی بوون لەو زانیاریانەی ئافرەت هەیبوو لەسەر ئامۆژگاریە پێدراوەکان سەبارەت بە شوێنی لە دایکبوون وپلانی ژمارەی خێزانداری و سوودەکانی منداڵبوون لەو شوێنانەی کە ئاسانکاری تیایە وزۆر شتی تر. زانیاری وهۆشیاری ئافرەت دەربارەی ماکە خراپەکان وزیانە چاوەڕوانکراوەکان وشارەزاییان لەسەر بنکە تەندروستیەکان و ئاسانکاریەکانیان بۆ ئافرەت و کرداری منداڵبوون.

ئەنجام: پلانی ژمارەی خێزانداری/ نێوانی منداڵبوونەکان، خواردن/ خۆراکی وورده بریتی بوون لەو بابەتە سەرەکیانەی کە زۆر باسی لەسەر کرا، کە ڕێژەکانیان 45٪ و47٪ یەك لە دوای یەك. خوێن بەربوونەکی زۆر، بەرزبوونەوەی پەستانی خوێن، خوێن کەمی، هەروەها خراپی مێژووی سکپڕی زۆر بە زەقی دیار بوون وەك نیشانەی ترسناك کە ڕێژەکانیان 67٪، 60٪، 58٪، 45٪ بوو یەك لە دوای یەك. تەنها 11٪ دڕێژبوونەوەی کرداری منداڵبوونیان بە ماکی خراپ دانا، بیروڕایان جیاواز بوو دەربارەی ئاسانکاری لە بنکە تەندروستیەکان، 61٪ وایان ڕاپۆرت کرد کەوا تەنها 3 خولەك لەگەڵ دەستەی ئامۆژکاری تەندروستی گفتوگۆیان کردووە، 53٪ باسی چۆنیەتی بەرەوپێشەوەچوونی کرداری سکپڕیان بۆ کرابوو، تەنها 55٪ دەرفەتی ئەوەیان هەبووە کە پرسیار بکەن، تەنها 65٪ ئاگادار کرانەوە کەوا بۆ سەردانی دووەم بگەڕێنەوە.

دەرەنجام: هۆشیاری تەندروستی لە کلینیکەکانی پەیوەست بەچاودێری دایك ومندالّ لە بنکە تەندروستیەکانی شاری هەولێر کزو لاوازە.

الخلاصة

مراكز الرعاية للأمومة والطفولة في مدينة أربيل – جمع المعلومات، التثقيف الصحي وثقافة الاتصال

خلفية واهداف البحث: استراتيجية جمع المعلومات وثقافة الاتصال والمقابلة في مراكز الرعاية للأمومة والطفولة لغرض تعليم وتثقيف الحامل حول مجموعة من الموضوعات المتعلقة والمرتبطة بالحمل ورعاية المولود. كان الهدف من الرسالة تقييم وعي المرأة حول العلامات الخطرة لعملية الولادة وخبراتهم وتجاربهم حول نوعية التسهيلات التي تقدّم في المراكز الصحية.

طرق البحث: تم مقابلة 1839 حامل اللواتي زرن المراكز الصحية الأولية من 1 كانون الثاني إلى 30 نيسان سنة 2009. كان عدد المقابلات في كل مركز تتراوح بين 39–221.

كانت المعلومات المطلوبة شملت معرفة الحامل بنصائح والارشادات المقدمة لها حول مكان الولادة، تنظيم الأسرة، والتسهيلات الموجودة في المراكز والمؤسسات الصحية وموضوعات أخرى. وتم جمع المعلومات حول وعي المرأة بشكل عام حول معرفة العلامات الخطرة وخبراتهم وتجاربهم في المراكز الصحية الأولية.

النتائج: تنظيم الأسرة/ تباعد الولادات، الغذاء/ التغذية كانت من أهم الموضوعات التي تم مناقشتها، كانت النسبة 45%، 47% على التوالي. تم كشف العلامات الخطرة كالنزف الشديد، ارتفاع ضغط الدم، فقر الدم، سوء خلفية فترة الحمل، وكانت النسب كالآتي: 67%، 60%، 58%، 45% على التوالي. نسبة11% من النساء تعتبر اطالة فترة الحمل من العلامات الخطرة، وهناك مفارقات كبيرة بين وجهة نظرهن حول خبرتهن بالتسهيلات في المراكز الصحية الأولية، 61% منهن قد قضين 3 دقائق من الوقت مع المشرفات في الرعاية وقت الزيارة، 53% قد تلقين معلومات حول سير عملية الحمل، 55% منهن كانت لها فرصة المناقشة مع المشرفات، 65% قد أخذن موعد لزيارة لاحقة.

الاستنتاج: التثقيف الصحي في مراكز الرعاية في مدينة أربيل كانت غير جيدة وتحت المستوى المطلوب.

EVALUATION OF SNODGRASS TECHNIQUE IN THE MANAGEMENT OF HYPOSPADIAS IN HEEVI HOSPITAL

MOHAMMED H. ALDABBAGH, MBChB, FIBMS*

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ABSTRACT

Background and objectives Hypospadias (hi-poe-spay-dee-us) is a common congenital anomaly affecting the penis in which the opening of the urethra is on the underside of the penis, instead of the tip. It may also cause a curvature of the penis (chordee). Hypospadias cause a lot of functional and psychological problems to the patient. The opening located anywhere along the length of the urethra. Treating hypospadias is a challenging mission for the surgeons. Hundreds of techniques were used but none of them was the standard method. The aim of the study was to evaluate Snodgrass technique (tubularized incised plate TIP) in the management of distal and midshaft hypospadias of our patients comparing the results to the international figures.

Methods From June 2006 to September 2009 thirty two patients with coronal, subcoronal distal and midshaft hypospadias were operated on in Heevi hospital. Cases with proximal hypospadias and those with severe chordee were excluded from the study. Information gathered about the age of the patient, type of the defect, previous interventions or circumcision and operative procedure used. We used the technique of Snodgrass repair with preputal flap. The neo urethra stented with catheter for a period of 1-2 weeks post operatively. Results were assessed with regards to the cosmetic appearance, urine stream and complications (dehiscence, fistula, stricture, meatal stenosis).

Results The total number of patients operated on using TIP technique was 32. The age varied between 10 months and 5 years, four of them were circumcised and three had previously failed surgery. Five had chordee. The follow up period ranged from 4 months to three years. The types of hypospadias were coronal (6 cases), subcoronal (12 cases), distal shaft (10 cases), and midshaft (4 cases). The cosmetic outcome was satisfactory for all parents involved in this study. Twenty-nine cases had straight stream. Ten patients had meatal stenosis. Two patients had micro fistula.

Conclusion Snodgrass technique for distal and midshaft hypospadias repair has good outcome and fewer complications.

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Key words: Snodgrass, Hypospadias, Tabularized incised plate

Hypospadias is one of the most frequent malformation of the genital system with a 1:300 incidence ratio in newborn boys.[1] It seems to be even a higher incidence, which speaks in favor of an increasing incidence trend.[2]

Eighty percent of patients with hypospadias have a meatus in a coronal or subcoronal position.[3] The Snodgrass method is slowly becoming more dominant and accepted method.[4] Snodgrass described the tubularized incised plate hypospadias repair in 1994, which involve incising the urethral plate vertically then tabularizing it to form the new urethra. And he wrapped his anastomosis by preputial flap.[5]

METHODS

It is a pro and retrospective study involved thirty two children with hypospadias managed over a period of three years, from June 2006 to September 2009 using

* *Pediatric surgeon, Department of Surgery, School of Medicine, Faculty of Medical Sciences, Duhok University, Duhok-Kurdistan Region, Iraq. Email:m_h_ald@yahoo.com*

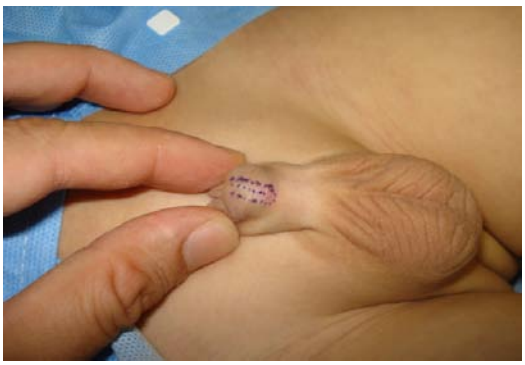
Snodgrass repair. Those with proximal hypospadias and those with severe chordee were excluded from the study.

The patients were admitted to the hospital, investigations like general urine exam, blood urea, serum creatinine and hemoglobin were done pre operatively.

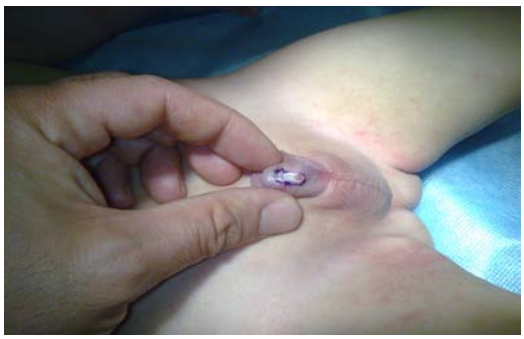
Surgeries were done under general anesthesia and endotracheal intubation. Magnifying surgical eye loops were used. Rubber tourniquet was used to reduce blood loss opened every 30 minutes. Cautery use was very limited.

The technique we used is described by Snodgrass utilizing the urethral plate to construct the neo urethra with a vertical midline incision in the plate distal to the hypospadiac opening to permit plate widening.[5]

The U shaped incision were marked 2 millimeters around the urethral orifice extending anteriorly to the glans (Figure 1 A and B). Complete penile degloving was done to permit correction of mild chordee. Lateral glanular flaps were created. The



A



B

Figure 1 A and B. The U shaped incision around the urethral orifice with anterior extension to the glans

neourethra was wrapped around 8 or 10 Fr catheter according to the age of the patient. Folly's catheter or naso-gastric tubes were used (Figure 2). Six-zero PDS sutures were used creating two layers, the first tubularized layer was continuous and the second covering layer was interrupted using the adjacent tissues. Dorsal subcuticular flap then created from the dorsal preputal skin which transposed ventrally to cover the new urethra. The transposition was either laterally or centrally via button hole opening in the base of the flap. Any remnant chordee was corrected by dorsal plication nodes (plication of the posterior tunica of the penis by 2-3 stitches). The excess skin was trimmed and wound closed by interrupted sutures.

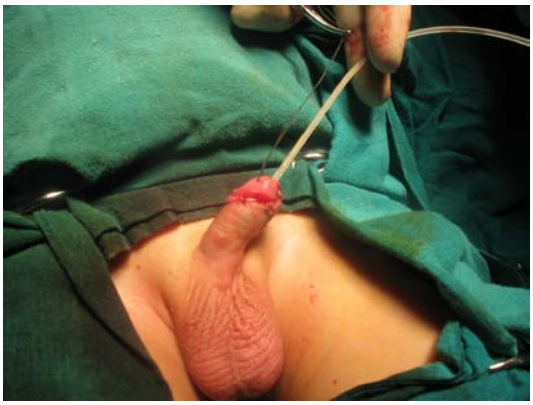


Figure 2. Wrapping of the neourethra with r 8 or 10 Fr Ordinary Folly's catheter or naso-gastric tubes catheter according to the age of the patient

Dressing of the penis was by dry gauze or antibiotic impregnated mesh and was opened 48 hours after surgery and the wound laid open. Gentamicin ointment and daily povidone iodine swab were used.

The catheter removed 7 to 14 days post-operatively, and earlier in children with distal types and those who complained of discomfort, catheter obstruction or slipping. Patients were discharged home 24- 48 hours after surgery.

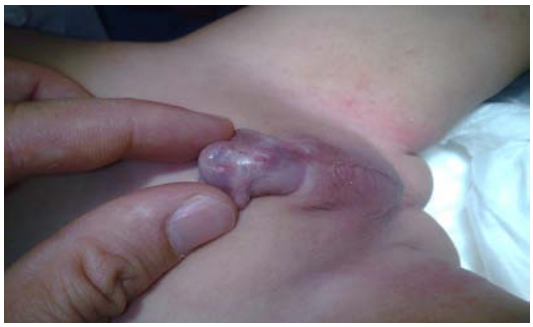
The follow up period ranged from 4 months to three years. The patients were

followed as outpatients. The following points were assessed: the cosmetic appearance, urine stream and complications (dehiscence, fistula, stricture and meatal stenosis).

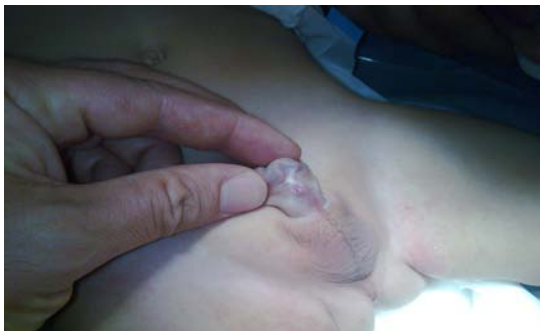
All patients underwent post operative urethral calibration 3-4 weeks after surgery using metallic dilator to assess the caliber of the new urethra and to prevent stricture, or meatal stenosis. Three to six times calibration were needed.

RESULTS

The total number of patients operated on using TIP technique was 32. The age varied between 10 months and 5 years. The types of hypospadias were coronal (6cases), subcoronal (12cases), distal shaft (10 cases) (Figure 3 A and B), midshaft (4 cases). Four of them were circumcised (12.2%) and three (9%) had previously failed surgery. Six (18%) had mild chordee, Three patients with small penis were given 3 doses of 25 mg testosterone enanthate monthly to enlarge the penis before surgery.



A



B

Figure 3. Types of hypospadius

The cosmetic outcome was satisfactory for all the parents involved in this study (Figure 4). The urine stream was straight in 29 (90%) cases.

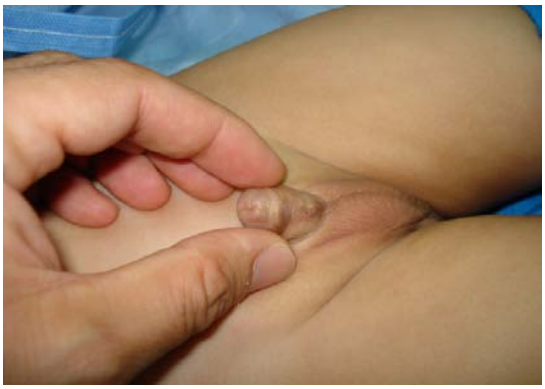


Figure 4. Postpoerative outcome of Snodgrass technique for hypospadias

Three cases had diverted stream with meatal stenosis corrected after managing the meatal stenosis. Ten patients (31.2%) had meatal stenosis.

Those patients were treated by regular dilatation with metallic urethral dilators for three to six times. Three of them needed meatotomy in whom the response to dilatation was not satisfactory.

Two patients had the catheter slipped 5 and 6 days after surgery, no attempt was taken to replace the catheter. Two patients had micro fistula, in one of them the fistula closed spontaneously 6 months later (the patient with redo operation). The other one underwent surgical repair of the fistula.

DISCUSSION

More than 200 types of surgical methods had been developed trying to correct this defect.[6,7] There is no universal surgical technique that would suit the correction of all the different types and variations of hypospadic expression. The aims of hypospadias surgical treatment are: trying to bring the urethral opening to the tip of the glans, achieving a regular and straight penis and straightforward wide stream with minimal post-operative complications in one-stage operation hence creating

favorable conditions for a successful psychosexual life. [8-12]

Snodgrass described the tubularized incised plate hypospadias repair in 1994 as a means to widen and improve mobilization of the urethral plate when performing a Thiersch-Duplay urethroplasty.[5] Since that time many reports had been published describing the success of this modified procedure to repair distal hypospadias.[6,7,13,14]

As a result of the popularity of this procedure other techniques currently used by pediatric urologists, for example Mathieu or transverse island onlay, for distal hypospadias will probably decline.[15] Snodgrass has better outcome, less complications, better cosmetic results.[16-20] Furthermore, Snodgrass creates a vertical slit-like normal appearing meatus, unlike a horizontally oriented and rounded meatus ('Fish mouth') produced by the meatal based (Mathieu) flap repair.[21]

In the study by Oswald J et al, these two techniques were compared regarding fistula formation, appearance, and duration of surgery in patients with anterior hypospadias. Operative time was much shorter in Snodgrass technique (75 minutes vs. 110 minutes). Three patients experienced complications in Mathieu technique group (2 cases of fistulas and 1 meatal stenosis); whereas, only one patient experienced glandular dehiscence in Snodgrass technique group. In all patients who had been operated on using Snodgrass technique, meatal appearance was slit like; whereas, in patients who had been operated on using Mathieu technique, meatus was rounded and horizontal. They concluded that Snodgrass technique is accompanied by better results and more natural meatal appearance.[19]

On the basis of the above mentioned results of multicenter experiences and our initial results, we have increased the use of this technique and chose Snodgrass technique for our patients replacing other techniques like Mathieu or transverse island onlay, for distal and mid shaft hypospadias. Although we still use meatal advancement and glanuloplasty (MAGPI) for glanular hypospadias.

Most literature reviewed describe Snodgrass technique for distal types with no or mild chordee.[4,5] That is why patients with coronal and subcoronal distal and mid shaft types were included, while proximal types were excluded and we treated them by other methods. Patients with severe chordee were also excluded from the study.

We had four patients previously circumcised, three had subcoronal and one had distal shaft hypospadias. They had good results with no complications apart from meatal stenosis.

Literature mentioned that Snodgrass technique is also suitable for boys who have already been circumcised.[4]

The Snodgrass urethroplasty method is suitable both as a primary operation as well as a repeated operation after an unsuccessful urethra reconstruction by using some other methods.[4]

We had three redo surgeries, (9.3%) after previous failed other methods all the three had no complications (apart from micro fistula in one patient that closed spontaneously) with accepted cosmetic results .Two were of subcoronal type and one with distal shaft hypospadias. In two of these patients the previous repair was totally disrupted and the other one had big fistula with distal obstruction. In both circumcised and redo patients we used subdartos flaps from the available subcutaneous tissue dorsally to cover our anastomosis.

Decter et al performed a study on 197 patients and reported that fistula was seen in 6.4% of patients for whom adjacent tissue had been used to cover urethroplasty, and it was seen in 0.8% of those for whom pediculated tissue had been used.

They concluded that in case of using Snodgrass technique, fistula formation is very rare if we use vascularized flap to cover the neourethra, and Snodgrass

method is the best technique for hypospadias.[22]

Comparing that to our technique we used both adjacent tissue as a second layer and pediculated vascularised flap to cover urethroplasty for all of our urethroplasties. It seems that vascularised flap covering the anastomosis greatly reduce the incidence of fistula formation.[22,23] The use of the above mentioned 2nd layer from adjacent tissue had no bad sequels like urethral stricture since we had no post operative urethral stricture. Regarding skin covering we used the same ventral skin trying to make sutures little bit lateral to the underlying suture line to minimize fistula formation.

We had two patients with tiny fistula formation; one of them had redo surgery of previously failed repair. One closed spontaneously and the other was closed surgically. Micro urethro cutanous fistula, tend to heal spontaneously.[24]

Accordingly if we consider the definition of complications as those need another surgery.[23] The incidence of overall complications will be 12.5% if meatal stenosis were considered. The incidence of fistulae in our patient would be 3.2%. And the incidence of meatal stenosis will be 9.3%.

Our results are comparable to what published by original Snodgrass and Sugarman papers and KM O'Connor et al. Snodgrass published his first results in 1994, the study involved 16 patients with no complications.[5] His second paper published in 1996 involved 148 patients and the complication rates was 7%.[13] Sugarman at 1999 did a study on 32 patients with a complication rate of 3.2%.[25]

The results of KM O'Connor, EA Kiely were satisfactory regarding the Cosmetic appearance in 97%. The urinary stream was straight in 94%. Meatal stenosis was found in 21% and Fistula formations occurred in 3%.[26]

Another study by Alan B. Retik á Joseph G. Borer a total of 31 patients (27 primary; 4 reoperative) underwent TIP urethroplasty. The patients' age at primary and reoperative hypospadias repair ranged from 5 months to 26 years. Excellent functional and cosmetic results were achieved in all but one patient, who developed urethrocutaneous fistula.[27]

Holland et al did a study on 59 patients with a mean age of 13 months, using Snodgrass technique, and followed them for 9 months. Fistula and meatal stenosis were reported in 10%, and 5% of cases respectively. Appearance and functional results were reported to be acceptable.[18]

Comparing to the above mentioned studies, we had more post-op incidence of meatal stenosis and less of fistulae formation .Meatal stenosis is easily treated and cause no cosmetic or functional sequels, while persistent fistula need another surgery. However surgery for fistula was successful.

Snodgrass technique for distal and midshaft hypospadias repair has better outcome and fewer complications comparing it with other types of surgeries. It is also suitable for redo and circumcised patients. Our results were comparable to the international figures.

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پوختە

خاندنك لديف ريكا (سنودكراس) بو جارە سە ريا ميزتنا بشف بو زاروكا لباريزكەها دھوكێ

پێشەكى و ئارمانج: شيوازى ميزتنا بنخو يازاروكا شوان جورين نەخوشين نەدرست بونا لەشى زاروكى وجارەسەريا وى يا بزەحمەتە. ئەگەرێن وى كونكا سەرى ئاميرى زاروكى نە ل جهى خو يى دروستە، دبتە ل نيڤا ئاميرى زاروكى شينا لسەرى ئاميرە ى بيت. وھندەك ئاريشين دژى بەيدادبن وەكى گنك بونا كونكا ئاميرەى يان خاربونا ئاميرەى وئاريشين دى ين دەرونى وين سكسى. وجارەسەريا فيى نەخوشيى بتر ز (200) ريكا ل سە رانسھ رى جيھانى بكار تين وج شوا ن نەخوشين درست نەبون بتمامى وريكا (سنودكراس) باشترين ريكە بو فان نەخوشيا. ئارمانجا مەژفى خاندنى تقيما ريكا (سنودكراس) بو جارەسەريا نەخوشين ميزتنا بنخو بو نەخوشين مەزجورين بيدا دبن لنيفا و جهى دير ژ سەركى.

ريكێن ڤەكولينێ: خاندن ھاتەكرن ل باژيرى دھوكى ل سەر (32) نەخوشا ئەوين ژى وان نافبينا (10) ھيفا تا (5) سالا وخاندنا فى ريكى (3) سالا نافبينا (2006 و 2009) كيشا. خاندنا مەئە و جور كومكرن ئەوين جارەسەريا وان بريكا (سنودكراس) ھاتەكرن و ئەو زاروكن ئەوين كونكا ميزى يال نيفى يان دير ز سەركى ئاميرەى. و ئەو جورين خاربونا نيرى يان جورين نيزيكى وى ھاتنە لادان ژفى خاندنى ژبە ركو ئەف ريكە نە يا درستە وب ھندەك ريكين دى ھاتنە جارەسەركرن. ريكا فى جارەسە ريى بكارئينانا صفيحا احليلى و بادانا وى لدور بوريى.

ئەنجام: ژمارا نەخوشا 32 بوون. كونكا ئاميرى زاروكى ل جهێ (coronal) بوو ل 6 نەخوشا و ل (subcoronal) ل 12 نەخوشا و ل(distal) ل 10نەخوشا و ل (midshaft) ل 4 نەخوشا. 4 زارو بێن سونەتكرى بوون و بوو 3 زارويا نشتەگەريێن نە بێن سەركەفتى ھاتبوونە كرن. 6 زارويا خاركرنا ئاميرى مێزێ ھەبوو. 12.5٪ ژ نەخوشێن شتەگەرى بو ھاتيە كرن توشى گرفتاريا بوون.

دەرئەنجام: ديارىوو ژ فى خاندنى كو ريكا (سنودكراس) باشترين ريكە وكيمتر مزاعفات بێن ھەين ژ ريكين دى بو جارەسەريا ميزتنا بنخو.

الخلاصة

دراسة تقييم لطريقة (سنودكراس) في علاج حالات المبال التحتاني في مستشفى هيفي للاطفال

خلفية واهداف البحث: تعتبر حالات المبال التحتاني من التشوهات الخلقية صعبة العلاج. تكون فيها فتحة الاحليل عند الذكر. فتكون في الجزء الاقرب من القضيب بدلا من قمته و على مستويات متفاوتة. وقد يترافق معها مشاكل اخرى مثل تضيق فتحة الاحليل و اعوجاج العضو الذكري. ومشاكل اخرى منها نفسية و جنسية. هناك أكثرمن 200 طريقة على مستوى العالم لعلاج هذه الحالة, لم تكن أي منها مرضية بالكامل. تعتبر طريقة سنودكراس من احدث وافضل الطرق حاليا. تهدف الدراسة الى تقييم نتائج طريقة سنودكراس في علاج حالات المبال التحتاني في مرضانا. من الأنواع التي تصيب المنطقة الوسطى والبعيدة من القضيب.

طرق البحث: أجريت الدراسة في مدينة دهوك على 32 مريض. تراوحت اعمارهم بين 10 اشهر و 5 سنوات استغرقت الدراسة 3 سنوات ما بين حزيران 2006 وأيلول 2009 .شملت الدراسة الحالات التي تم علاجها بطريقة سنودكراس، وهم الاطفال الذين لديهم فتحة الاحليل في المنطقة الوسطى والبعيدة من القضيب. اما الحالات المصاحبة لاعوجاج الذكر الشديد او الانواع القريبة فقد استثنو من الدراسة لعدم ملائمة هذة الطريقة لهم و قد عولجو بطرق اخرى. استندت الطريقة على استخدام صفيحة الاحليل ولفها حول انبوب و تغطيتها بطبقة من الانسجة المجاورة و بلوح من الطبقة الداخلية لجلد القلفة. فترة المتابعة تراوحت بين 4 اشهر و 3 سنوات. اخذ بنظر الاعتبار الشكل النهائي للذكر بعد العملية وانسيابية خروج الادرار و نسبة المضاعفات.

النتائج: العدد الكلي 32 مريضا .وجدت فتحة الاحليل في مناطق مختلفة من مريض الى آخر.ستة منهم كانت فتحة الاحليل في المنطقة التاجية، 12 حالة مادون التاجية، 10 حالات في المنطقة البعيدة من القضيب. بينما وجدت فتحة الاحليل في المنطقة الوسطى من القضيب في 4 حالات. اربعة اطفال كانو مختونين قبل العملية. وثلاثة اطفال اجريت لهم عمليات غير ناجحة سابقا. ستة من المرضى كان لديهم حالة اعوجاج القضيب. كانت النتائج من ناحية الشكل النهائي مرضية لجميع اهالي الاطفال. نسبة المضاعفات 12.5%. انسيابية خروج الادراركان طبيعيا في 29 حالة بينما ثلاثة من المرضى كان لديهم انحراف وتشتت في انسيابية الادرار.عشرة اطفال حصلت لديهم مشكلة تضيق الاحليل.

الاستنتاج: تبين من الدراسة ان طريقة سنودكراس هي الافضل والاقل مضاعفات من الطرق الاخرى في علاج المبال التحتاني. وان النتائج المستخلصة من هذه الدراسة جاءت مقاربة للنتائج العالمية.

PATTERN AND OUTCOME OF NEUROBLASTOMA IN DUHOK CITY, KURDISTAN REGION, IRAQ

KHALID N. ABDURRAHMAN, MBChB, DCH, FIBMS*

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ABSTRACT

Background and objectives The prognosis of neuroblastoma varies widely depending on the age at diagnosis, extent of the disease and tumor biology. This study was undertaken to evaluate the pattern and the 4-year survival rates of children with neuroblastoma in Duhok city, Kurdistan region, North of Iraq.

Methods A total of 33 children with neuroblastoma who had been diagnosed at Heevi Pediatric Hospital, Duhok city, from January 2000 to January 2007 were evaluated for their age, sex, primary tumor site at diagnosis, histology, staging, treatment and outcome.

Results The median age at diagnosis was 23 months (range 3-74 months), 19 patients were males and 14 were females with male-to-female ratio of 1.3:1. Adrenal gland was the commonest site of the primary tumor and abdominal distension was the most frequent presentation. Favorable histology was seen in 19 (57.5%), and unfavorable histology in 14 (42.5%) patients. Complete surgical resection was performed after diagnosis in 6 patients, incomplete resection/debulking in 18 patients, 5 patients died before surgery, and in infants less than 12 months of age with stage 4S disease (4 patients) only biopsy was taken. Twenty-three patients (69.6%) were diagnosed with stage 3 or 4 disease. All patients received chemotherapy. The 4-year disease free survival and the overall survival rate were 18.1% and 30.2 %, respectively.

Conclusion The 4-year disease free survival and the overall survival rate of neuroblastoma patients in Duhok city were similar to that reported earlier from Baghdad but lower than those reported in other countries. Advanced stage of disease, incomplete tumor excision and increased age at diagnosis were all associated with poor survival. Exploration of more novel therapeutic approaches is required to improve the outcomes of patients in our region.

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Key words: Neuroblastoma, Prognostic factors, Survival rate, Duhok, Iraq

Neuroblastoma (NB) is the most common extracranial solid tumor in childhood, affecting 1 in 7000 children younger than 5 years. It most commonly arises from the adrenal medulla, but can occur anywhere along the sympathetic chain from neck to pelvis. It is the most commonly diagnosed cancer of infancy, with an incidence of 64/million, almost double the incidence of leukemia, the next most commonly diagnosed cancer of infancy.[1] The median age of diagnosis is 22 months with slight male predominance, and NB is rarely diagnosed after the age of 10 years.[2,3]

Neuroblastoma has a diverse clinical behavior. Spontaneous regression of the tumor occurs in a subgroup of patients, especially those who are diagnosed before 1 year of age.[4] Nonetheless, many patients who have advanced disease will end up in mortality despite aggressive multimodal management. Several factors have been identified to correlate with a favorable clinical outcome. These include age younger than 1 year at presentation, and complete tumor excision.[5] On the other hand, poor prognostic factors include advanced stage, older age, MYCN amplification, tumor cell ploidy and chromosomal abnormalities.[6]

During the last two decades

* *Assistant professor of Pediatrics, Department of Pediatrics, School of Medicine, Faculty of Medical Sciences University of Duhok, Heevi Pediatric Teaching Hospital. Email: drkhnawaf@yahoo.com*

advances have been made in predicting outcome in the patient and improving therapeutic options.[7] However, high-risk NB patients still have a 5-year-survival rate less than 35%. This is due to drug resistance of primary tumors or metastases after relapse.[8-10]

Recent advances in molecular genetics, megatherapy with stem cell rescue and targeted therapies have improved survival in developed nations.[11-13]

The purposes of this study were to study the pattern of NB and to evaluate the 4-year disease-free survival, the overall survival rates and the related factors in children treated at our hospital.

METHODS

Thirty-three children diagnosed as having neuroblastoma who received their treatment at Heevi pediatric teaching Hospital in the period between January 2000 and January 2007 were studied, patients diagnosed after this date were not included because the period of follow up (4 years) has not completed. Their age at diagnosis, gender, primary tumor site, clinical manifestations, histology, stage at diagnosis, treatment and outcome were analyzed.

Diagnosis of NB was established by examination of tumor tissue obtained by open biopsy and immunohistochemistry which help distinguish NB from other small blue round cell tumors of childhood using antibodies for neural markers, such as neurofilament protein, neuron-specific enolase and ganglioside GD2.

Bone marrow aspiration and urinary catecholamine estimation were done in all cases. Histologically, the tumors were classified as favorable and unfavorable according to the grading system of Shimada.[14,15]

Other investigations included complete blood count, serum electrolytes, serum ferritin, liver function tests, chest X-ray, CT and/or MRI of the abdomen. Methylisobenzyl guanidinium (MIBG) scintigraphy and MYCN amplification were not performed because of non-availability. Staging was done according to the International Neuroblastoma Staging System (INSS).[16]

All patients received chemotherapy. Children with stage 1 and stage 2 disease, were taken for primary surgery followed by chemotherapy. Children with advanced stages received chemotherapy followed by surgical resection/debulking of the primary tumor. The chemotherapy included 5 courses of OPEC therapy (vincristine 1.5 mg/m^2 IV bolus on day 1, cisplatin 80 mg/m^2 IV continuous infusion over 24 hours on day 1, etoposide 200 mg/m^2 IV over 4 hours on day 2 and cyclophosphamide 600 mg/m^2 over 20 minutes on day 1) at 21-day interval. Response to treatment at primary/metastatic sites was reassessed after 5 courses by physical examination, CT scan of the abdomen, bone marrow examination (for those with bone marrow involvement), CXR and urinary catecholamine estimation, according to the modified international neuroblastoma response criteria (INRC).[17] If there was no evidence of metastatic disease, resection/debulking of the primary tumor was attempted, depending on the extent and adherence of the tumor to adjoining structures. Radiotherapy is not available in our region; therefore, in patients with stage 3 or stage 4 diseases, an additional 2 courses of OPEC therapy were administered.

The patients who achieved complete remission were followed up every 3 months for 4 years by chest X-ray, abdominal ultrasonography and urinary catecholamine estimation, with assessment of overall survival (from the date of diagnosis to the date of death or the date of last follow-up) and disease-free survival (duration of time from complete remission to clinical and radiological progression of disease). No patient was lost to follow up.

RESULTS

Age at the time of diagnosis was divided into four levels: < 12 months, 12-24 months, >24-36 months and >36 months. The general characteristics of the 33 patients were presented in table 1. The median age at diagnosis was 23 months (range 3-74 months), 19 patients were males and 14 were females with male-to-female ratio of 1.3:1. The primary tumor site was as follows: adrenal gland (Figure 1) in 21 patients (63.6%), retroperitoneum in 5 (15.1%), pelvis in 5 (15.1%), thorax (Figure 2) in 1 (3%), and neck (Figure 3) in 1 (3%) patient. The most frequent presentation was abdomen lump/distension, followed by fever, bone pain, hepatomegaly, lymphadenopathy and proptosis (Figure 4). The modes of presentation are shown in table 2.

Table 1. General characteristics of patients (N=33)

Variable	No (%)
Gender	
Males	**19 (57.6)**
Females	**14 (42.4)**
Age groups	
< 12 months	**5 (15.1)**
12-24 months	**9 (27)**
> 24-36 months	**11 (33.3)**
> 36 months	**8 (24.2)**
Primary tumor site	
Abdomen	
Adrenal gland	**21 (63.6)**
Retroperitoneum	**5 (15.1)**
Pelvis	**5 (15.1)**
Chest	**1 (3)**
Neck	**1 (3)**
Staging	
1	**1 (3)**
2	**5 (15.1)**
3	**15 (45.4)**
4	**8 (24.2)**
4S	**4 (12.1)**
Histopathology	
Favorable	**19 (57.5)**
Unfavorable	**14 (42.5)**
Surgical resection*	
Complete	**6 (18.1)**
Incomplete/Debulking	**18 (54.5)**
Only biopsy (stage 4S)	**4 (12.1)**

** 5 patients died before surgery*

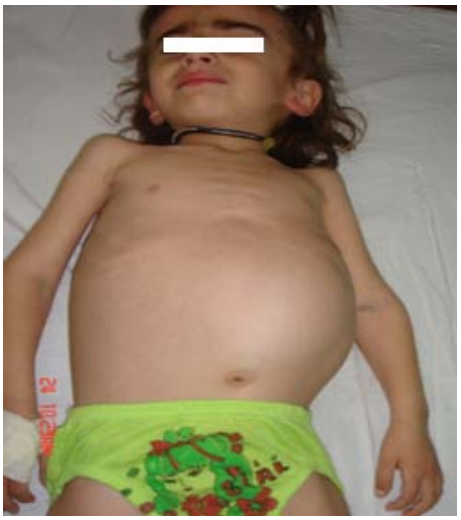


Figure 1. Abdominal distension due to neuroblastoma of the left adrenal gland

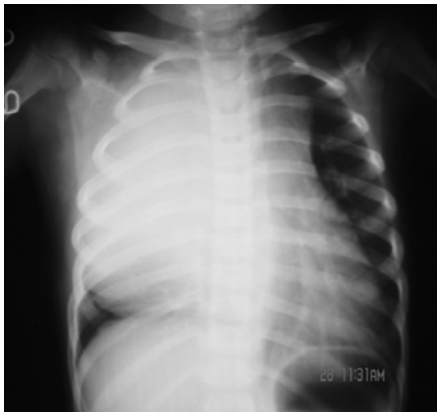


Figure 2. CXR showing neuroblastoma of the chest: A large mediastinal mass extending to the right hemithorax

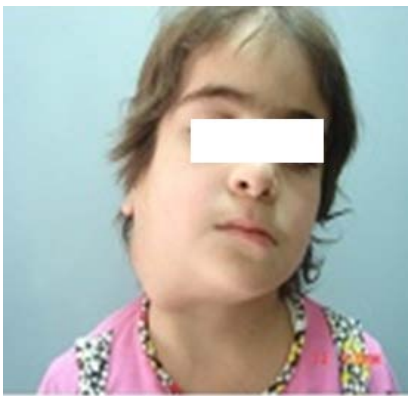


Figure 3. Mass in the neck due to neuroblastoma

Figure 4. Metastatic neuroblastoma: proptosis and periorbital ecchymoses (raccoon eyes) caused by tumor infiltration of the periorbital bones, with permission

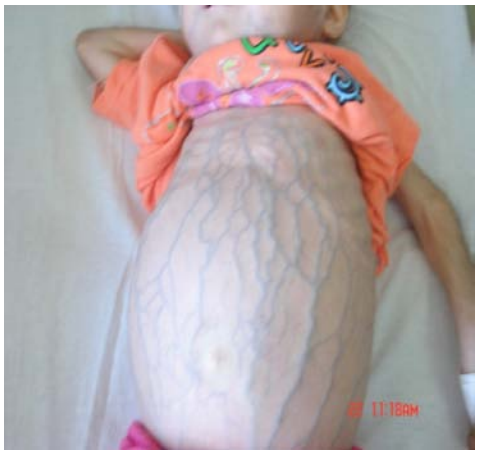
Table 2. Clinical manifestations at presentation (N=33)

Presenting signs and symptoms	No (%)*
Abdomen lump/distension	27 (81.8)
Fever	13 (39.3)
Bone pain	13 (39.3)
Hepatomegaly	12 (36.3)
Lymphadenopathy	12 (36.3)
Proptosis	8 (24.2)
Weight loss	7 (21.2)
Shortness of breath	1 (3)
Cervical lump	1 (3)
Chronic diarrhea	1 (3)

** Some patients had more than one presentation*

Urinary catecholamine levels were found to be elevated in 28 (84.8%) patients. Favorable histology was seen in 19 (57.5%), and unfavorable histology in 14 (42.5%) patients. Bone marrow examination was done to all enrolled patients and it was infiltrated with tumor cells in 12 (36.3%) patients.

The cohort of patients was mostly diagnosed at more advanced stages. Twenty-three patients (69.6%) were diagnosed with stage 3 or 4 disease (Figure 5). Complete surgical resection was performed after diagnosis in 6 patients, and after 5 cycles of chemotherapy, incomplete resection/ debulking was performed in 18 patients and in 4 patients under 12 months of age with stage 4S disease (Figure 6) only biopsy was taken, followed by chemotherapy.



A

B

Figure 5 A and B. Disseminated neuroblastoma (stage 4), with permission.

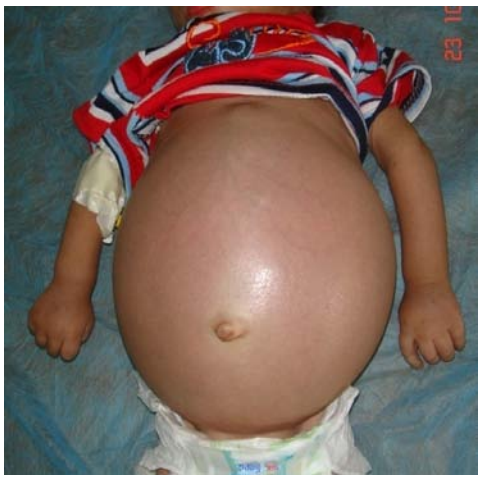


Figure 6. Massive hepatomegaly in an infant with stage 4S neuroblastoma

The age groups (> 24-36 months and > 36 months) included significantly more numbers of cases in the advanced clinical stages (stage 3 and 4), and in the unfavorable histology group than the age groups (< 12 months and 12-24 months), as shown in tables 3 and 4.

Table 3. The distribution of the histology in relation to age groups

Age groups (months)	Favorable Histopathology	Unfavorable histopathology
< 12	5	0
12-24	7	2
>24-36	6	5
> 36	1	7

Table 4. The distribution of the staging in relation to age groups

Age group (months)	Stage				
	1	2	3	4	4S
< 12	1	0	0	0	4
12-24	0	3	6	0	0
>24-36	0	1	4	6	0
> 36	0	1	5	2	0

In 5 patients with stage 4 disease, the treatment was unsuccessful after 5 courses of chemotherapy (before surgical resection of the mass) and they died due to progressive disease (PD). Complete response (CR) was achieved in 10 patients (1 in stage 1, 5 in stage 2 and 4 in stage 4S) as evidenced by normal physical examination, CT scan of the abdomen, CXR and urinary catecholamines. In the remaining patients (15 in stage 3 and 3 in stage 4) the response was partial (reduction in the size of the mass and urinary catecholamines by 60-70%).

Relapse occurred in 22 patients, including all patients with incomplete surgical resection/debulking (Table 5). The median age of relapse after remission was 10 months (range: 6-32 months), 18 patients died during chemotherapy due to disseminated disease and adverse effects of cytotoxics, and 4 patients responded to second course of chemotherapy.

Table 5. Relapse in relation to surgical resection (N=28)*

Surgical resection	No.	Relapse No. (%)
Complete	6	4 (66.6)
Incomplete/Debulking	18	18 (100.0)
Only biosy (Stage 4S)	4	0

** Five patients were not included; they died before surgery*

After 4 years follow up, 6 (18.1%) cases were alive free of disease, 4 (12.1%) cases were alive with disease and 23 (69.7%) cases had died. The 4-year disease free survival and the overall survival rate were 18.1% and 30.2 %, respectively.

The survival rate in relation to stages and age groups were illustrated in table 6 and 7, respectively. There was no mortality in all patients with stage 1, 2 or 4S diseases; whereas no patient with stage 3 and 4 disease survived.

Table 6. The overall survival rates at different stages of disease

Stage	No. of patients	No. of deaths	Survival rate (%)
1	1	0	100
2	5	0	100
3	15	15	0
4	8	8	0
4S	4	0	100
Total	33	23	30.2

Table 7. The overall survival rates at different age groups

Age groups (months)	No. of patients	No. of deaths	Survival rate (%)
< 12	5	0	100
12-24	9	6	33.3
>24-36	11	10	9
> 36	8	7	12.5
Total	33	23	30.2

DISCUSSION

Reports on the outcome of children with NB from developing countries are limited, even though pediatric oncologists manage a significant number of children with NB.[18-20] This is the second long-term prospective study of the outcome of children with NB in Iraq,[21] and the first one in Kurdistan region.

In spite of insufficient investigative workup, the primary tumor site was defined in all our patients. In 31 (93.9%) patients the tumor was in the abdomen. Out of these, the adrenal gland was the primary site in 21 (63.6%). This is comparable with the results reported by Adkins et al,[22] and Bansal et al [23] where 64% and 69% of tumors arose in the adrenal gland, respectively, and higher than the result reported by Chan et al (48.6%).[24]

Sixty-nine point six of our patients had either stage 3 or 4 diseases, whereas 98% patients from India,[23] 88% patients from Malaysia,[25] as well as Turkey,[26] and 82% from Hong Kong[27] had advanced stage NB. The lower percentage of patients with advanced stage disease in our series than other studies may be due to non-availability of MIBG scanning, the use of this scanning will detect more patients with advanced stage disease.

Four patients (12.1%) had stage 4S disease. Although infants with INSS stage 4S disease, favorable Shimada histology, non-amplified MYCN (single copy), and hyperdiploidy are considered for low-risk group without any treatment (only close observation),[28] our patients with this stage were treated with 5 courses of OPEC therapy, because of non-availability of facilities for determination of the prognostic factors (MYCN amplification, chromosomal analysis and DNA index). This special NB often spontaneously regresses, although infants younger than 2 months can present with respiratory compromise caused by a rapidly enlarging liver and may require cancer directed treatment.[29]

We found that more patients in the younger age groups (< 12 months and 12-24 months) had favorable prognostic indicators (stages 1, 2, 4S and favorable histology) than those in the older age groups (> 24-36 months and > 36 months). This indicates the importance of age as a prognostic factor. Patient age at diagnosis in particular has long been recognized as a powerful indicator of clinical behavior of NB. Sutow[30] first reported, in 1958, the significantly better outcome of patients younger than 2 years at diagnosis, and Gross and co-workers [31] showed that the survival of infants was significantly better than that of children older than 12 months. Since then, many clinical trials conducted by the Children Oncology Group [6,32,33] have used 12 months at diagnosis as a cut-off to discriminate risk of the patients with NB. More recently, however, Schmidt et al [34] and George et al [35] reported an excellent outcome in a subset of patients with stage 4 NB who were between 12 and 18 months old at diagnosis. Furthermore, the latest analysis by London and co-workers,[36] using statistical models with more than 3500 cases combined from the previous Children's Cancer Group (CCG) and Pediatric Oncology Group (POG) studies, showed that prognostic impact by age was continuous in nature and that an optimal cut-off for prognostic distinction was between 460 and 600 days of age at diagnosis with a minimum p-value at 18.8 months.

Recurrence of tumor occurred at the primary or metastatic sites in (22/28; 78.5%) patients and it was seen in all patients with incomplete surgical resection/debulking. To define the role of surgery in NB, La Quaglia et al [37] published their 23-year experience on the effects of gross total tumor resection on survival in 141 high-risk patients. The probability of local progression of disease was 10% compared with 50% ($P < 0.01$) in 103 patients who had gross total resection versus those without total resection. The

overall survival was 50% compared with 11% ($P < 0.01$), and more recently Adkins et al [22] and Chan et al [24] demonstrated a better survival for those who underwent a more aggressive surgical approach, though this is a technically demanding and time consuming procedure. These results showed the importance of performing surgical resection of NB whenever possible and complete tumor excision has been demonstrated to confer survival benefit on patients with advanced disease even if there is metastasis.[22,37] Majority of the relapse were observed soon after completing the therapy, indicating that the disease was suppressed temporarily by chemotherapy. Eighteen patients (81.8%) with relapse of the disease died despite second course of chemotherapy. The evidence is overwhelming that conventional chemotherapy was unsuccessful in controlling the disease. Lau et al [38] examined their series of patients with recurrent NB and attempted to identify factors influencing survival time after relapse. Thirty-one patients were evaluated and 77% relapsed within the first 24 months, with 28 patients dying of progressive disease. Univariate analysis found MYCN amplification, chromosome 1p deletion, recurrence within 12 months of diagnosis, and recurrence within 6 months of stem cell transplant all to be significant factors in decreasing survival time after relapse. Salvage therapy was found to prolong survival in patients who were not MYCN amplified and in those who were greater than 6 months post stem cell transplant. Kramer et al[39] retrospectively analyzed patients taking oral topotecan for relapsed NB resistant to conventional treatment. In 5 of 20 patients, modest radiographic improvements of tumor burden were demonstrated. These findings suggest some benefit and warrant further investigation.

The 4 year disease-free survival and the overall survival rates in the current study were 18.1% and 30.2 %, respectively. Only patients with stage 1, 2 and 4S disease were alive after 4 years of follow-up, and all patients with advanced stages (stage 3 and 4) had died. These results were similar to that of a study published from medical city Hospital-Baghdad in 1995, where the two year disease-free survival was 20.3%.[21] Historically, the long-term survival of high-risk NB, with non-myeloablative chemotherapy has been less than 15%.[40] In a study from Turkey,[26] five-year overall and event-free survival rates were 63% and 30% in stage 3, and 6% and 5%, in stage 4 patients, respectively. A 2 year disease free survival of 39% was reported in 78 patients from Malaysia,[25] and the overall survival of patients with NB in Hong Kong was 67.6%.[24] Myeloablative therapy with stem cell rescue and targeted therapy has improved survival in recent times.[12,41-43] In the European Neuroblastoma Study Group, 5-year event-free survival was 38% in the melphalan-treated group and 27% in the non-melphalan group.[12] French Society of Pediatric Oncology reported higher survival rates (83%) with high-dose chemotherapy, stem cell rescue and radiotherapy, when compared with standard treatment alone (25%), in stage 2/3 disease.[11]

As reported in the literature,[1,28] younger age at diagnosis, especially for those less than one year of age, would confer better prognosis. If 2 year of age was used as the cut-off in the current study, the survival was much better for patients who were less than 2 years of age at the time of diagnosis. The mortality rate of patients who were diagnosed with the disease later than two-year-old was 89.4 % while it was 42.8 % for those who were diagnosed younger than two year-old.

In conclusion, we demonstrated that outcome of NB patients in Duhok was dismal with conventional chemotherapy. Advanced stage of disease, incomplete tumor excision and increased age at diagnosis were all associated with poor survival. Information regarding MYCN

status, chromosomal analysis and DNA index is lacking in this study, thus, it is unfeasible to comment if unfavorable features were responsible for the adverse outcome. Exploration of more novel therapeutic approaches is required to improve the outcomes of patients in our region.

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پوختە

شێواز وچارە نقێسێ نیوروبلاستوما ل باژێرێ دهوکێ – هەرێما کوردستانا عێراقێ

پێشەکی و ئارمانج: پێشبینیکرن ب چارە نقێسێ نیوروبلاستوما یا گرێدایە ب بژیێ نەخوشیڤە و رێژەیا بەلاڤبوونا وبایلۆژیا وەرماندنێ. ئارمانج ژ ڤەکولینێ بەرچافکرنا شێواز وتێکرایی بەردوامبوون ل سەر ژیانێ بشتی جوار سالان بۆ زاروکێن تۆشبووین ب نیوروبلاستوما یێ، ل بارژێرێ دهوکێ/ هەرێما کوردستانێ.

ریکێن ڤەکولینێ: لێکولین ل سەر (33) زاروکێن تۆشبووین ب نیوروبلاستوما ژوان زاروکێن هاتینە چارەسەرکرن ل نەخوشخانا (هیڤی) یازاروکان ل باژێرێ دهوکێ دناڤبەرا سالێن (2000–2007)ز، ژلایێ ژیی وڕەگەزی وجهێ دەستبێکێ یێ وەرماندنێ وجورێ نەسیجی وقۆناغا وەرماندنێ وچارەسەری وچارەنقێس.

ئەنجام: تێکرایێن ژیێ نەخوشان ل دەستبێکا چارەسەرکرتێ (23) هەیڤبوون ورێژەیا نێر بو مێ (1.3بو1) (الغدة الكظرية) ژ هەمی جهان وەرماندیبوو ، وبوڤبوونا ژکی نیشانێن نەخووشییا بەرچاڤبوو ب 57.5٪ ژ نەخوشان نەسیجێ وەرماندنێ یاباش بوو ول 42.5٪ نەسیجێ نەباشبوو. ل دەف (6) ژنەخوشان وەرماندن هاتە بنبکرن، ل دەف (18) ژ نەخوشان ب رەنگەکێ پارچەیی نەخەشی هاتە برین، ل دەف (4) ژ نەخوشیان ئەوین ژیێ وان کێمتر ژ سالەکێ ، ڤوجەکا کیمیاوی بۆ هاتە دان بێ وەرماندن ژێ بێتە راکرن. هەمی نەخوشی هاتنە چارەسەرکرن ل قوناغەکا بێشکەفتی ژ نەخوشیێ وهەمیا چارەسەریا کیمیاوی تێکرایێن مانێ بێ نەخوشیێ وتێکرایێن بەردەوامبوونێ ل سەرژیانێ گەهشتنە 18.1 و 30.2٪ ل ووین ئێك.

دەرئەنجام: تێکرایێن مانێ ونەمرنێ ل دهوکێ کێمترە ژ وەلاتێن دی، وئەف چەندە یاکرێدایە ب ژیێ ونەخوشیڤە ل دەمێ چارەسەرکرنێ وهەبوونا نەخوشیێ ل قوناغەکا بیشکەفتی ونە بنیرکرنا وەرەمێ ب ڕەنگەکێ تەمامی ، وئەم بێتڤییە هزر ل رێکێن نوی ژ بو بێشئێخستنا جارەنقیسێ نەخوشان.

الخلاصة

نمط و مصير سرطان العقدة العصبية (نيوروبلاستوما) في مدينة دهوك، اقليم كردستان العراق

خلفية واهداف البحث: ان التكهن بمصير النيوروبلاستوما يعتمد على عمر المريض، ومدى انتشار وبايولوجية الورم . يهدف هذا البحث الى معرفة نمط ومعدل البقاء على قيد الحياة بعد اربع سنوات, للاطفال المصابين بالنيوروبلاستوما في مدينة دهوك / شمال العراق.

طرق البحث: تمت دراسة 33 طفلا مصابا بالنيوروبلاستوما من الذين شخصوا في مستشفى هيفي التعليمي للاطفال / مدينة دهوك للفترة من عام 2000–2007 من حيث العمر، الجنس، الموضع الاولي للورم، نوع النسيج، مرحلة الورم، العلاج والمصير.

النتائج: معدل عمر المرضى عند التشخيص كان 23 شهرا ونسبة الذكور الى الاناث كان 1.3 : 1. الغدة الكظرية كان من اكثر المواضع الاولية للورم وانتفاخ البطن من اكثر علامات المرض. في57.5 % من المرضى كان نسيج الورم ايجابيا وفي 42,5% كان النسيج سلبيا. في 6 من المرضى استؤصل الورم كاملا، وفي 18 من المرضى استؤصل الورم جزئيا، وتوفي خمس من المرضى قبل اجراء العملية الجراحية. وفي اربع من المرضى الذين هم دون سنة من العمر تم اخذ خزعة بدون استئصال الورم. معظم المرضى شخصوا في مرحلة متقدمة من المرض، وجميع المرضى عولجوا كيمياويا. معدل البقاء بدون مرض ومعدل البقاء على قيد الحياة كانا 18.1 % و 30.2 % على الترتيب.

الاستنتاج: ان معدل البقاء على قيد الحياة لمرضى النيوروبلاستوما في دهوك يشبه الى حد ما معدله في بغداد بينما اقل من الدول الاخرى، وقد ارتبط ذلك بتقدم عمر المريض عند التشخيص ووجود المرض في مرحلة متقدمة، وعدم استئصال الورم بشكل كامل. نحتاج الى طرق حديثة للعلاج من اجل تحسين مصير المرضى.

OUTCOME OF TRANSCERVICAL THYROIDECTOMY FOR RETROSTERNAL GOITRE

HAYDER H. IBRAHIM, MBChB, FRCSEd*

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ABSTRACT

Background and objectives The management of retrosternal goiter is a problem which has challenged surgeons. The development of multinodular retrosternal goiter is still common and knowledge of their treatment is important. The aim of this study was to analyze a series of patients who underwent surgery for retrosternal goitre, and explore the results of surgical treatment via transcervical approach in term of morbidity and mortality.

Methods A total of 50 patients out of 250 with retrosternal goiter who underwent thyroidectomy by the researcher in Mosul and Duhok from February 1995–December 2009 were included in the study.

Results Out of the total two-hundred fifty patients, fifty (20%) presented with retrosternal extension of goitre.The mean age of the patients with retrosternal extension were 40 years. Out of the fifty patients, females constituted 80%. The most common preoperative symptom was shortness of breath (74%). Twelve percent of patients were asymptomatic. Preoperative chest radiograph showed tracheal compression in 80% (by lateral view) and tracheal deviation in 20% of patients. The retrosternal goitre was resected via cervical approach in all patients. Postoperative complication rate was 20% which includes haematoma in 3 patients, wound infection in 2 patients, early hypoparathyroidisim in 3 patients and temporary recurrent laryngeal nerve injury in 2 patients. There were no patients with permanent recurrent laryngeal nerve injury, permanent hypoparathyroidisim or tracheomalacia. All of the patients for whom the surgery was done survived.

Conclusion Resection of thyroid gland through a cervical approach for retrosternal goitres is associated with low rate of morbidity and no mortality.

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Key words: Goitre, Retrosternal, Transcervical thyroidectomy, Complications

The extension of thyroid gland into the mediastinum, known as retrosternal goitre, has received much attention.The origin of retrosternal goitre is believed to be resulted from extension of the cervical gland into the mediastinum, rather than from abnormal growth of a mediastinal-based gland. Evidence for this is that the neurovascular supply to nearly all retrosternal goitres is from a cervical rather than a thoracic source.[1] Inferior extension of the gland is facilitated by the anatomic constraints on the gland. Three additional factors affect the downward growth of the gland. They include downward traction of the swallowing, negative intrathoracic pressure during respiration,and gravity.[1] In fact, 5-50% of patients can be asymptomatic on presentation.[2-5] With increased use of iodized salt, the overall incidence of multinodular goitre has dramatically declined. Nevertheless, it still remains a significant cause of morbidity and possibly of mortality[6]. Many authors have discussed this entity and proposed therapies from early reports by Kocher, Halasted, and Lahey to recent works.[2,3,6,7] The consensus is that retrosternal goitre is best managed surgically. Medical treatment by thyroid hormones can reduce the size of the gland by 20-30% and thus

* *Lecturer in General Surgery, School of Medicine, Faculty of Medical Sciences, Duhok University, Kurdistan, Iraq. Email: hayder1950@yahoo.com*

can reduce the symptoms. However, this is only temporary,[8] and so the cure can be achieved only by surgery.[6]

There are many approaches to surgery like cervical incision, stertnotomy, thoracotomy, and combination approaches. Recent studies demonstrate that cervical approaches were adequate in 94--96%[2,7] of all cases while the remainder required sternotomy.[9-11] The reasons for carrying out surgery are the prevention of progressive airway obstruction, the prevention of acute airway compromise due to haemorrhage or cystic degeneration, the poor response to medical treatment, the inaccessibility to fine needle aspiration (FNA) and, therefore, the possibility of undiagnosed malignancy.[2]

In the current study, a series of patients with retrosternal goitres were analyzed for their clinical and pathological features, surgical treatment and outcomes.

The aims of this study, therefore, were to analyze a series of patients undergoing surgery for retrosternal goitre with emphasis on morbidity and mortality, and to establish a guideline for the treatment.

METHODS

The study included fifty patients with retrosternal goiter out of two hundred and fifty (20%) operated on for goiter by the researcher from February 1995–December 2009 in Duhok and Mosul General Hospitals. A special form was designed for each patient included age, gender, clinical presentation, investigations, histopathology, and post-operative complications. A patient was defined to have retrosternal goitre when a major portion of the thyroid gland was found within the mediastinal compartment either radiologically (chest radiograph) or at the time of operation. A complete head and neck examination was performed in each patient. All patients had thyroid mass. Thyroid function test and chest x-ray were performed for all cases preoperatively. Indirect mirror laryngeal examination was performed for all patients before operation, and showed four patients (8%) with preexisting paresis of the vocal cords those who presented with hoarseness of voice. Ultrasound has a relatively small role in evaluating the retrosternal goiter as it is not very effective in the retrosternal position so it was not used in this study. All patients with retrosternal goitres were approached through a cervical incision. The operative procedure for removal of retrosternal goiter included mobilization of the upper pole of the gland first with ligation of superior and middle vascular pedicles. Using a blunt finger dissection technique, the gland was gently elevated out of the mediastinum and the inferior thyroid artery and veins were ligated and identifying or at least feeling the recurrent laryngeal nerve. In all cases, the vascular supply to the retrosternal gland was from the cervical rather than the thoracic origin. After removal of the gland, the wound was closed after a suction drain was left in place. Tracheostomy was not required in any of these cases.

RESULTS

Of the two-hundred fifty patients for whom thyroidectomy performed, retrosternal goitre was diagnosed in fifty patients (20%). The mean age of this group was 40 years (range 25- 65), with female: male ratio of 4:1. The symptoms and signs at presentation are outlined in table 1.

All patients had thyroidectomy via a cervical incision approach. A sternotomy or thoracotomy approach was never utilized. The operative findings, as shown in table 2, were both lobes goitre in 40 patients (80%), left side retrosternal in 7 patients (14%), and right side retrosternal extension in 3 patients (6%). Tracheal deviation was seen in 10 patients (20%) and tracheal compression was encountered in 40 patients (80%). Oesophageal compression was noticed in two patients (4%) as well as lymph node enlargement in two patients (4%).

Table 1. Symptoms and signs at presentation in patients with retrosternal goitre who underwent thyroidectomy at Duhok and Mosul General Hospitals from February 1995 to December 2009 (n=50)

Symptoms	No. (%)
Asymptomatic	6 (12)
Lump in the neck	50 (100)
Pressure effect	
Dyspnea	38 (76)
Dysphagia	2 (4)
Hoarseness	4 (8)
Euthyroid	48 (96)
Hyperthyroid	2 (4)
Hypothyroid	0 (0)

Table 2. Operative findings in patients with retrosternal goitre who underwent thyroidectomy at Duhok and Mosul General Hospitals from February 1995 to December 2009 (n=50)

Findings	No. (%)
Bilateral retrosternal goitre	40 (80)
Right retrosternal goitre	3 (6)
Left retrosternal goitre	7 (14)
Tracheal compression	40 (80)
Tracheal deviation	10 (10)
Oesophageal compression	2 (4)
Lymph node enlargement in malignant goitre	2 (4)

Histopathological findings are presented in table 3. Malignancy was detected in 3 patients (6%). All others were benign.

Table 3. Histopathological findings in patients with retrosternal goitre who underwent thyroidectomy at Duhok and Mosul General Hospitals from February 1995 to December 2009 (n=50)

Histopathology	No. (%)
Non-toxic multinodular goiter	42 (84)
Toxic multinodular goitre	2 (2)
Hashimato's thyroiditis	3(6)
Malignancy - Papillary carcinoma	3(6)

Table 4 shows postoperative complications that the patients encountered. Overall, complication occurred in 10 patients (20%). None of the patients had permanent recurrent laryngeal nerve injury, permanent hypoparathyroidisim, or tracheomalacia. In addition, none of the patients died from the surgery.

Table 4. Complications of surgery in patients with retrosternal goitre who underwent thyroidectomy at Duhok and Mosul General Hospitals from February 1995 to December 2009 (n=50)

Complications	No. (%)
Haematoma	3 (6)
Infection	2 (4)
Temporary recurrent laryngeal nerve injury	2 (4)
Early hypoparathyroidisim	3 (6)
Permenant Hypoparathyroidisim	0 (0)
Tracheomalacia	0 (0)
Permanent recurrent laryngeal nerve injury	0 (0)

DISCUSSION

Several definitions of retrosternal goitre have been previously published, which are, at least, partly responsible for the wide difference in the reported incidence.[5, 12] An incidence of retrosternal extension of 15.3% out of all thyroidectomies was observed.[13] Another author chose to define the condition if 50% or more of the goitre is located in the chest, and this resulted in an incidence of only 2.6%.[5] We had chosen to diagnose retrosternal extension when there was any intrathoracic component of the goitre seen with the neck extended at operation. The position of the neck in extension, as is common practice in thyroid surgery, had been included for accuracy in the definition. It has been shown that only very minimal cephalad movement of the thyroid occurs, conferring little perceivable advantage for the surgeon.[14]

In this study, the retrosternal goitre presented most commonly in the fourth

decade of life with a female: male ratio of 4:1. In all patients, goitre was located in superior part of the anterior mediastinum and none of the patients had posterior mediastinal goitre.

The compressive symptoms documented in this series are likely to be secondary to the pressure from an expanding thyroid mass. Because of the bony confines of the thoracic inlet and the limited space of the upper mediastinum, the thyroid compresses the trachea much more readily and causes luminal compromise with a smaller mass, when compared with a cervical goitre.[15]

In the current study, clinically and radiological (chest radiograph, barium swallow) evident tracheal compression and deviation was present in 80% and 20%, respectively, whereas esophageal compression was noted in only 4%. This suggests that compression from a mediastinal mass tends to affect the trachea before affecting the esophagus. Three of the patients with preoperative hoarsness of voice improved after operaion.

Three patients in this series had recurrent retrosternal goitre. These patients had undergone a prior lobectomy or subtotal resection of the thyroid. These data suggest that not only retrosternal goitre does arise in the face of longstanding cervical goitre, but also any resection less than total allows for the possibility of retrosternal recurrence. This does not suggest that total resection should be performed in the setting of primary cervical disease. However, in the case of retrosternal goitre, we feel that a total resection will prevent the need for future mediastinal dissection.

As in prior series of retrosternal goitre, malignancy is an uncommon but a significant threat. The risk of malignancy in retrosternal goitre is between 6% and 21%.[2,3,7] Our series was similar, as 6% of patients demonstrated malignancy (papillary carcinoma) on pathologic evaluation. Patients with lymph nodes enlargement pre-operatively had malignant goiter confirmed by histopathology.

The retrosternal goitre in all patients was approached via a cervical incision.

Many series in the 1950s through 1970s recognized the potential need for opening the mediastinum. Various recommendations existed for a combination of cervical incision with anterior thoracotomy, partial sternotomy or full sternotomy.[16]

More recent series[2,3, 6,7] advocate the routine use of the cervical incision, with sternotomy reserved for the 2% to 6% of cases with atypical anatomy, dense adhesions from prior surgery, or inability to deliver the gland into the neck.[9 , 11] In our series, sternotomy was never required.

We routinely perform thyroidectomy for retrosternal goiter. In 80% of the patients, a subtotal or near total thyroidectomy was performed, while in the remaining, a hemithyroidectomy was utilized.

Our complication rate of 20% which is similar to what is noticed in other series.[7,14,17,18] There were three cases with haematoma; in two of them, it was superficial to the investing layer of deep cervical fascia, and in one patient it was deep to the fascia which was explored. Wound infection was noted in two patients. Three cases presented postoperatively with early hypoparathyroidisim, and two patients with temporary recurrent laryngeal nerve injury. No patient was presented with permanent hypoparathyroidisim or recurrent laryngeal nerve injury. Despite tracheal compression by goitres, there was no tracheomalacia noted in this series.

Indeed, for a condition that is potentially more difficult than standard cervical thyroidectomy, our morbidity rate is low and mortality is found to be zero which is similar to other report.[15] Also, trascervical approach for retrosternal goitre is almost always a safe operation with a relatively low incidence of serious complications.[19]

Conclusion we approached all retrosternal goitre by a cervical incision, and despite the large size and extensive involvement in the mediastinum, there were no major complications related to the thyroidectomy and there was no mortality. We routinely perform thyroidectomy for the reasons of malignant and recurrence potential. While the risk of tracheomalacia is known, it was not encountered in this series.

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پوختە

خواندنی ئارمنج نشتەرگەریا پەریزاد پشت دەپێ سنگی (نەخوش بوون و مرنێ تە) بڕێکا تەکرنا حەفکێ پا

پێشەکی و ئارمانج: چارە سەریا پەریزادا پشت دەپێ سنگی ئاستە نگەکە کو بەرهەنگاریا نشتەرکارا دبیت. دیار بوونا پـەریزادا پشـت دەپێ سنگی یا پرگرێ هێشتا یا مشەیە و زانینا چارە سەریا وان یا گرنگە. ئارمانجا ڤێ تەکولینێ ئەو بو کو شروڤەکرنا چەند نەخوشا پێت کو نشتەرگەریا پەریزادا پشت دەپێ سنگی بو هاتیە کـرن بێتـە ئەنجامـدان و زانینـا ئـەنجا مێت چارەسـەریا نشـتەرگەرێ ژلایێ (نەخوش بوون و مرنێ تە) بڕێکا تەکرنا حەفکێ پا.

ریکێن تەکولینێ: رێکوردێت (50) پێنجی نەخوشا هاتنە شروڤەکرن پێت کو نشتەرگەریا هەلاندنا پەریزادێ بوهاتیەکرن ژ شواتا 1995 – کانینا ئێکێ 2009 ێ.

ئەنجام: ژ کوبی (250) دووسەد و پێنجی نەخوشا، پێنجی ژ وان (20٪) دیار بوون کو پەریزادا پشت دەبێ سنگی لێ خو یا دك ساخلەتێت ڤان نەخوشا دیار بوون کو ژیێ وا دچل سالیێدا بوو، (80٪) ژ توخمێ مێ بوون و (20٪) ژ توخمی نێر بوون. 20٪ ژ نیشانێت هەرە مشە لنك ڤان نەخوشا بەری نشتەرکاری بوبێتە کرن بێنتەنکی بوو(74٪)، و 12(٪) ژ وان نەخوشیا چ نیشان لنك دیار نەبوون. تێرێزا سنگی یا بەری نشتەرکاریێ دیارکر کو گڤاشتنا کڕکڕکێ لنك 80٪ ولادانا کڕکڕکێ لنك 20٪ یا دیاربوو. پەریزادا پشت دەپێ سنگی هاتە هلاندن درێکا حەفکێ پا لنك هەمی نەخوشا. رێژا ئالوزێیت پشتی نشتەرگەریێ20٪ بوون کو ئەوژیك بریتی بوون ژ گۆمتکلێت خنیێ لجەم (3) نەخوشا و هەودان لجەم (2) نەخوشا، دیاربوونا زی(hypoparathyroidism) لنك (3) نەخوشا و (2) نەخوشا ئیفلینج بوونا بەروەختا دەمارێت دەنگی لجەم پەیدابوو. نەخوشا ئیفلینج بوونا دەمارێت دەنگی یاهەردەمی نەبوو و هەرووسا چ ژوان تووشی (hypoparathyroidism). هەردەمی نەبوون تەنك بوون و پێتی بوونا بووریا بای دیارنەبوو و چ نەخوشا ژیێ خو ژ دەست نەدا.

دەرئەنجام: برین و هەلاندنا پەریزادێ درێکا حەفکێرا ژبو پەریزادا بشت دەیێ سنگی یاهەڤبەندە لگـەل کێماسـیا نـەخوش بـوونێ و یـا بێ بارە ژمرنێ.

الخلاصة

دراسة نتائج عمليات استئصال تضخم الغدة الدرقية خلف عظم القص من خلال الرقبة

خلفية واهداف البحث: المرضى المصابين بتضخم الغدة الدرقية خلف عظم القص (الدراق) تعتبر من المشاكل الجراحية من ناحية الطريقة الجراحية للعلاج وهي حالة طبية غير قليلة. إن الهدف من هذه الدراسة هو تحليل مجموعة من المرضى الذين أجريت لهم عمليات استئصال الغدة الدرقية الممتدة خلف عظم القص ودراسة نتائج العمليات (المضاعفات والوفيات) من خلال فتح الرقبة أي دون اللجوء إلى فتح عظم القص.

طرق البحث: تم دراسة عمليات استئصال الغدة الدرقية للفترة من شباط 1995 ولغاية كانون الأول 2009 للحالات الذين لديهم تضخم الغدة(الدراق) خلف عظم القص.

النتائج: من مجموع مئتي وخمسون مريض, خمسون منهم (20%) لديهم تضخم الغدة الدرقية خلف عظم القص. خواص المرضى تشمل معدل العمر 4 سنة، 40 (80%) نساء 10 رجال (20%). أكثر الأعراض شيوعا هي ضيق التنفس 37 مريض (74%)، و 6 مرضى (12%) بدون أعراض انظغاطية. أشعة الصدر قبل العملية أخذت لكافة المرضى وتبين مايلي: الضغط على ألرغامي (القصبة الهوائية) في 40 مريض (80%)، انحراف ألرغامي في 10 مرضى (20%). جميع الحالات المرضية تم استئصال الغدة من الرقبة وبدون فتح عظم القص. كانت نسبة المضاعفات بعد العملية 20% (10 مريض) والتي تشمل تجمع دموي في3، التهاب الجرح في 2، فشل مبكر وقتي في الدريقة 3، وإصابة جزئية في العصب الراجع للحنجرة 2 من المرض .لا يوجد مريض في حالة إصابة دائمية في العصب الراجع للحنجرة أو هبوط دائمي في الغدة المجاورة للدرقية (الدريقة) كما لأتوجد حالات تلين ألرغامي أو حالات وفيات في هذه الدراسة.

الاستنتاج: استئصال الغدة الدرقية من خلال فتح الرقبة بدون فتح عظم القص لمرضى تضخم الغدة الدرقية (الدراق) ذات الامتداد خلف عظم القص تعتبر عملية أمينة مع مضاعفات قليلة وبدون وفيات.

IDENTIFICATION OF HELICOBACTER PYLORI IN GASTRIC BIOPSIES OF PATIENTS WITH CHRONIC GASTRITIS: HISTOPATHOLOGICAL AND IMMUNOHISTOCHEMICAL STUDY

INTISAR S. PITY, MBChB, MSc, FIBMS*
AZAD M. BAIZEED, MBChB**

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ABSTRACT

Background and objectives Different methods have been used for detection of Helicobacter pylori in patients with chronic gastritis but a little has been written about immunohistochemistry. The study done was to identify Helicobacter pylori in gastric biopsies of patients with chronic gastritis using the routine stains and immunohistochemistry.
Methods In a twelve month period, from April 2008 to May 2009, 105 cases of chronic gastritis were studied. The routine hematoxylin and eosin stain and modified Giemsa stains "Sheehan's modified may method" and immunohistochemistry "automated staining machine from Ventana Company" were performed.
Results Chronic gastritis cases (n=105) included 35 (33.3%) mild, 51 (48.6%) moderate, and 19 (18.1%) marked inflammation. Active form gastritis was detected in 76 (72.4%) cases, glandular atrophy in 40 (38.1%) cases, and intestinal metaplasia in 19 (18.1%) cases. The routine hematoxylin- eosin and modified Giemsa stains gave 20 (19%) false positive and 13 (12.4%) false negative results. The sensitivity and specificity of the routine stains were 77.6% and 57.4% respectively while their positive and negative predictive values were 69.2% and 67.5 % respectively with 68.6% accuracy.
Conclusion Although Helicobacter pylori can be readily demonstrated by the routine hematoxylin-eosin/modified Giemsa stains, the high rates of false negative and false positive results necessitate the routine application of immunohistochemistry for all chronic gastritis cases.

Duhok Med J 2011;5(1): 69-77.

Key words: Helicobacter pylori, Chronic gastritis, Immunohistochemistry

Chronic gastritis is a common gastrointestinal problem all over the world. It is frequently associated with Helicobacter pylori (H. pylori).[1-3] These gram negative bacilli can be detected by different methods including invasive techniques like histological examination, culture and rapid urease test. The non-invasive techniques comprise serology, urea breath test, in addition to urine, blood and stool examination.[3-5] Apart from culture, a single test is not sufficient to make an accurate diagnosis. For this reason, the European guidelines indicated that the gold standard needs to be generally represented by at least two different tests.[4]

In a histological section, H. pylori is recognized as short, curved or spiral bacilli resting on the epithelial surface or in the mucus layer of gastric mucosa. It is also found deep in the gastric pits.[6,7] After treatment, the density of H. pylori becomes lower or even absent and the shape of bacteria may be changed into round (coccoid form) or vibrio shape. Such modified forms are difficult to be identified by the hematoxylin-eosin (H&E)

* *Assistant professor, Department of Histopathology, School of Medicine, Faculty of Medical Sciences, University of Duhok*
** *Department of Histopathology, Health Directorate, Duhok, Iraq*
Correspondence author: Intisar S. Pity. Email: dani2000fadi@yahoo.com

and even by the modified Giemsa stains (MGS).[8] Little has been written about identification of H. pylori by immunohistochemistry. In the current study, immunohistochemistry was performed in addition to the routine H&E/MGS in chronic gastritis biopsy specimens to identify H. pylori, to compare between the two methods and to correlate the colonization of bacilli with different parameters of chronic gastritis.

METHODS

The study was done in Duhok central laboratory, histopathology department, Duhok/Kurdistan region, Iraq. During a twelve month period, from April 2008 to May 2009, 105 consecutive endoscopic gastric biopsy specimens diagnosed as chronic gastritis, were examined. The specimens were already fixed in 10% formalin overnight, processed and embedded in paraffin wax. Four micron-thick tissue sections were taken and stained again with the routine H&E stain and with MGS performing "Sheehan's modified method. Then immunohistochemistry (IHC) was done using a rabbit polyclonal antibody against H. pylori (Cell Margue, Ventana, catalogue: 760-2645, Rocklin, Calif) according to the manufacture's instruction using automated Bench-Mark instrument (Ventana). Then slides were examined under light microscope.

Cases were reviewed according to the updated Sydney system for classification of chronic gastritis using the five graded parameters: chronic inflammation, activity, and intestinal metaplasia, atrophy, and H. pylori density. The H. pylori density was graded into mild: scattered organism covering <1/3rd of the mucosal surface; moderate: moderate colonization covering 1/3rd to 2/3rd of the mucosal surface; and marked: dense colonization covering >2/3rd of the mucosal surface.[9]

The McNemar's statistic test was used for the significance of p value between IHC and the routine H&E/MGS stains.

RESULTS

The age of patients ranged from 14 to 80 years (mean: 42.2 year). There were 45 (42.9%) males and 60 (57.1%) females with a male to female ratio of 0.8:1. According to the updated Sydney system, the studied chronic gastritis cases were graded into mild 35 (33.3%), moderate 51 (48.6%), and marked chronic inflammation 19 (18.1%). Of these, 72.4% (n=76) were active forms. Glandular atrophy was found in 40 (38.1%) cases while intestinal metaplasia was present in 19 (18.1%) cases (Table 1).

Table 1. Pattern of gastritis of the studied cases

Lesion	No. (%)
Inflammation	
Mild	**35 (33.3)**
Moderate	**51 (48.6)**
Marked	**19 (18.1)**
Activity	**76 (72.4)**
Glandular atrophy	**40 (38.1)**
Intestinal metaplasia	**19 (18.1)**

Table 2 shows the degree of H. pylori colonization using IHC and H&E/MGS. With IHC, the bacilli were demonstrated in 58 (55.2%) cases, of which 27 (25.7%) showed mild, 17 (16.2%) moderate, and 14 (13.3%) marked colonization (Figure 1 and 2). On the other hand, the routine H&E/MGS gave 65 (61.9%) positive H. pylori cases (Figure 3 and 4). Comparing the routine stains with IHC, the rate of bacterial identification was the same among marked form colonization and a little bit differed in moderate cases but there was a big gap in demonstrating mild forms of H. pylori between the two techniques, where the routine stains resulted in diagnosis of only of 16 (15.2%) out of 27 true positive cases. In addition, there was a difficulty in identifying the modified coccoid form bacilli and nearly impossibility in demonstrating a single bacterium with the routine stains. Such modified and solitary bacteria were demonstrated obviously by IHC (Figure 5).

Table 2. Detection of H pylori using H&E/MGS and IHC by degree of colonization

Bacterial colonization	H&E/ MGS		
	H. pylori + No. (%)	H. pylori – No. (%)	Total (IHC) No. (%)
Mild	16 (15.2%)	11 (10.5%)	27 (25.7)
Moderate	15 (14.3%)	2 (1.9%)	17 (16.2)
Marked	14 (13.3%)	0 (0%)	14 (13.3)
Total	45 (42.9%)	13 (12.3%)	58 (55.2)

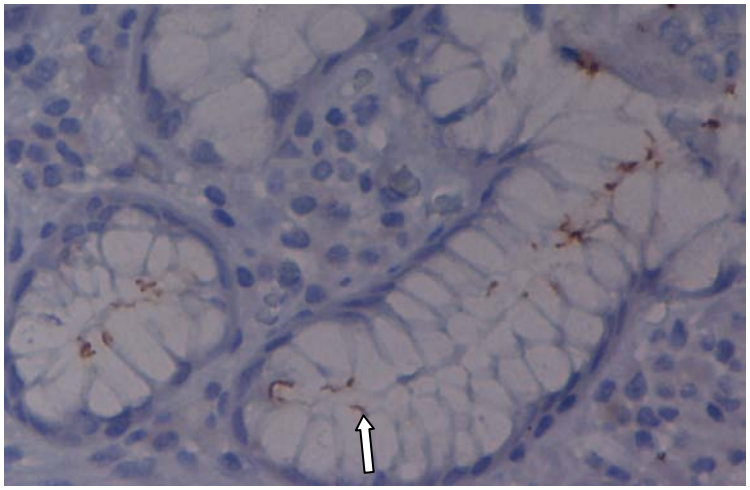

Figure 1. Moderate bacterial colonization. The typical spiral curved H. pylori (arrow) demonstrated with IHC brown colored in a faint blue glandular background (400X)

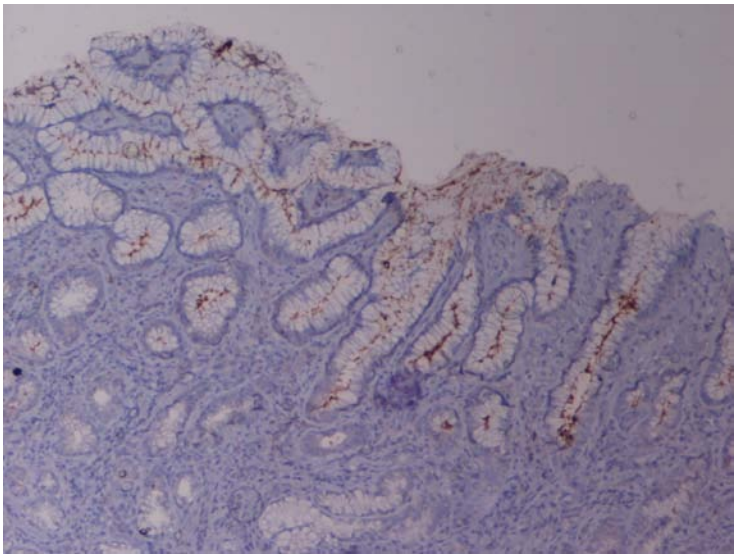

Figure 2. IHC stain showing marked colonization of H. pylori (400X)

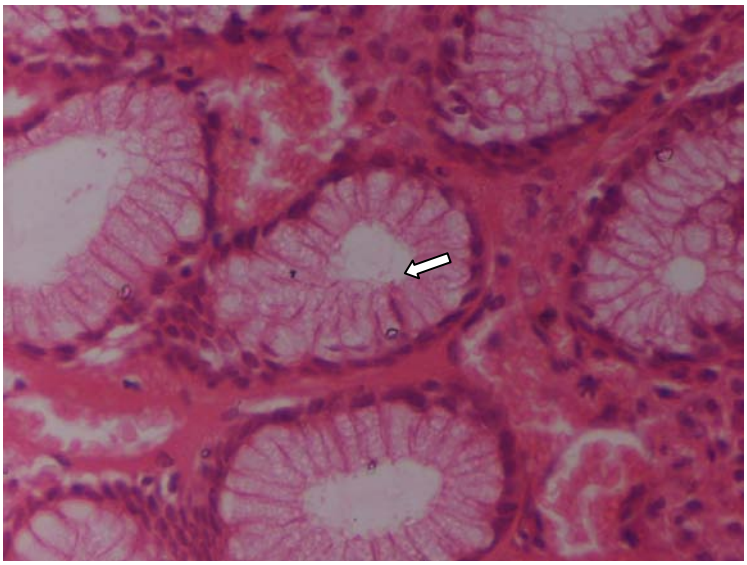

Figure 3. H&E stain demonstrating H. pylori (arrow) (400X)

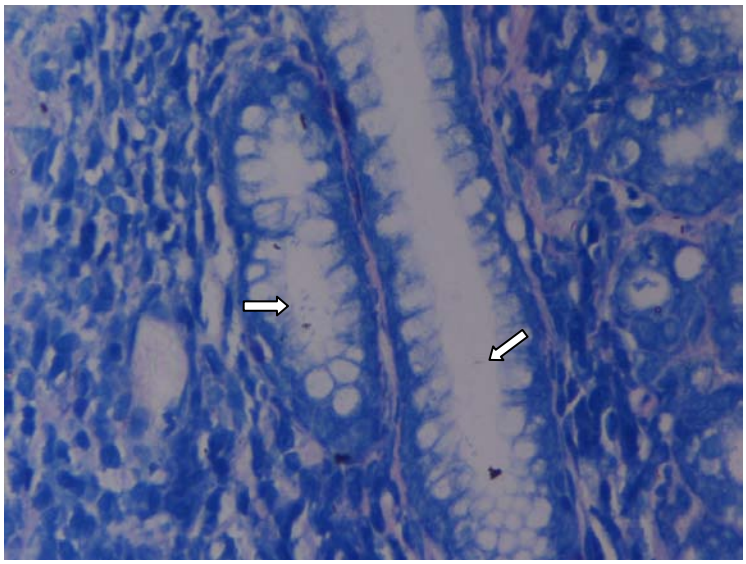

Figure 4. The spiral H. pylori bacteria are demonstrated with MGS (arrow). MG stain (400X)

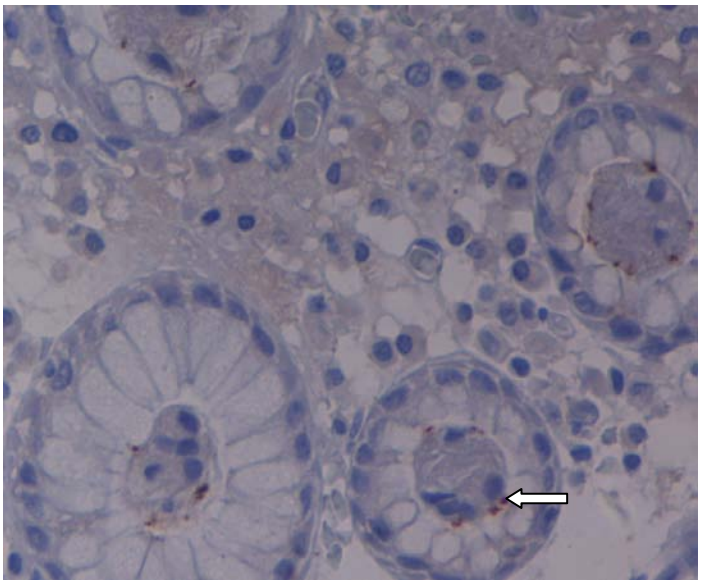

Figure 5. The obvious identification of modified coccoid forms of H.pylori by IHC (400X)

There were 20 (19%) false positive and 13 (12.4%) false negative results. The sensitivity and specificity of the routine H&E/MGS stains were 77.6% and 57.4%, respectively. The positive and negative predictive values of the routine stain were 69.2% and 67.5 %, respectively with 68.6% accuracy. However, statistically no significance difference was noted between the routine and IHC stains (p> 0.05) (Table 3).

Table 3. Number of positive and negative H.pylori cases by the routine H&E/MGS stain in comparison with IHC

		IHC stain		Total
		+	-	
H&E and MGS	+	45	20	65
	-	13	27	40
Total		58	47	105

Sensitivity: 77.6, specificity: 57.4%, positive predictive value: 69.2%, negative predictive value: 67.5 %, accuracy: 68.6%, and p > 0.05.

The presence of H. pylori, by IHC, was studied in correlation with inflammation, activity, atrophy, and intestinal metaplasia. Regarding inflammation, H. pylori was seen only in 14 (40%) cases of mild inflammation, 37 (72.6%) cases of moderate inflammation, and 7 (36.8%) cases of marked inflammation (Table 4).

Table 4. Colonization of H. pylori by degree of inflammation

Degree of inflammation (n)	H. pylori	
	+	-
	No. (%)	No. (%)
Mild (35)	14 (40%)	21 (60%)
Moderate (51)	37 (72.6%)	14 (27.4)
Marked (19)	7 (36.8%)	12 (63.2)
Total (105)	58 (55.2%)	47 (44.8%)

Table 5 demonstrates H. pylori colonization according to the other parameters of chronic gastritis. Of the active forms, 51 (67.1%) were positive for H. pylori while among glandular atrophy cases, 28 (70%) showed bacterial colonization, and of intestinal metaplasia cases, 11 (57.9%) revealed positive H. pylori; the bacilli were detected in areas other than the metaplastic regions.

Table 5. Colonization of H.pylori by parameters of gastritis

Pattern of gastritis (n)	H. pylori	
	+	-
	No. (%)	No. (%)
Activity (76)	51 (67.1%)	25 (32.9%)
Atrophy (40)	28(70%)	12 (30%)
Metaplasia (19)	11 (57.9%)	8(42.1%)

On the other hand, of the 58 H. pylori cases only 51 (87.9%) showed evidence of activity while the remaining 9 (12.1%) cases did not have signs of activity.

DISCUSSION

In the present study, performing IHC resulted in the diagnosis of H. pylori in 55.2% of chronic gastritis cases, a finding that is less than that reported in Saudi Arabia (60.1%) and Iran (70.1%).[2,10]

The routine H&E/MGS showed low sensitivity (77.6%) and specificity (57.4%). The high rate of false positive results (19%) may be the result of the poor contrast between the bacteria and the surface mucosal cells in addition to the fact that many bacteria other than H. pylori like H. heilmanii and gastric secretions and debris may be confused with H. pylori using the routine staining.[11] Such cases were proved to be negative by IHC in the present study. On the other hand, the 12.4% false negative results can be explained by the fact that H. pylori organisms in mild colonization or single bacilli can be easily missed by the routine H&E/MGS stains. This in addition to the fact that after treatment, many H. pylori organisms may be modified into coccoid forms which may be passed undetected by the routine stains.[8] These single or

modified organisms can be obviously detected by IHC as shown in current study.

Among patients with the chronic active gastritis, 67.1% were positive for H. pylori, a finding which is slightly less than the reported rate in United State (73.5%) and Iran (80.9%).[2,12] On the other hand, not all cases of H. pylori associated gastritis showed activity in the present study, 12.1% of cases showed no evidence of any activity. A finding that is just contrast to the well-known thought that activity is a feature of all cases of H. pylori infection, but at the same time it strengthens what has been reported in a recent study done in United States in which it has been reported that 5.3% of chronic non active gastritis cases were H. pylori positive.[12-14]

Areas of metaplasia were almost negative for H. pylori which were detected in the adjacent non-metaplastic areas, a finding that confirms the absence of these pathogens in alkaline media.[9]

Gastric atrophy was present in 48.3% of H. pylori cases. This observation was confirmed by a study done in Duhok/Iraq.[15] It is more than that reported in Turkey (43%) but less than that seen in a study done in Emirate where atrophy was reported in 54% of H. pylori cases.[16,17]

Immunohistochemistry should be applied routinely to all chronic gastritis biopsy specimens in order patients can take the appropriate therapy, avoid underestimated positive cases and diminish exposure to the side effects of un-indicated therapy of false positive cases.

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پوختە

دەست نیشانکرنا (Helicobacter pylori) ل پارچەیەکا گەدەیێ ل نەخوشێن تووشی هەوکردنا گەدەیا دوم دریژ بووین: ڤەکولینەکا شانازی و ئیمیونوهیستوکمستری

پێشەکی و ئارمانج: رێکێن جوراجور یێن هاتینە ب کارئینان ژ بوو دیارکرنا (Helicobacter pylori) ل نەخوشێن تووشی هەوکردنا گەدەیا دوم دریژ بووین بەلێ کێم هاتیە نڤیسین لسەر ئیمیونوهیستوکمستری. ئەڤ ڤەکولینە هاتە کرن ژ بو دەست نیشانکرنا (Helicobacter pylori) ل پارچەیەکا گەدەیێ ل نەخوشێن تووشی هەوکردنا گەدەیا دوم دریژ بووین ب بۆیاغێن روتینی و ئیمیونوهیستوکمستری.

ریکێن ڤەکولینێ: د ماوێ 12 هەیڤا دا، ژ نیسانا 2008 تا گولانا 2009، 105 حالەتێن هەوکردنا گەدەیا دوم دریژ بکارئینانا بۆیاغا هیماتوکسیلین و یا گیمزا یا گوهارتی و ئیمیونوهیستوکمستری ب رێکا بۆیاغکرنا ئوتوماتیکی ژ کومبانیا ڤینتانا.

ئەنجام: ژ (105) نەخوشێن تووشی هەوکردنا گەدەیا دوم دریژ بووین، 35 (33.3٪) حالەت یێن کێم بوون، 51 (46.6٪) یا وەسەت بوو و یا 19 (18.1٪) یا دژوار بوو. هەوکردنا گەدەیا یا چالاك بوو ل 76 (72.4٪) حالەتا، و پووکاندنا لووی ل 40 (38.1٪) حالەتا، و گۆڕینا رێڤیکا ل 19 (18.1٪) حالەتا. 20 (19٪) حالەت ب شاشی ڤە هاتنە دیارکرن کو پوزەتیڤ بوون و 13 (12.4٪) حالەت ب شاشی ڤە هاتنە دیارکرن کو نێگەتیڤ بوون ب رێکا بۆیاغا هیماتوکسیلین و یا گیمزا یا گوهارتی. بۆیاغێن روتینی 77.6٪ و 57.4٪ (sensitivity) و (specificity) ل دویـــڤ ئێـــك، و (value predictive positive) و (negative predictive value) بێن ڤان بۆیاغا (69.2٪) و (67.5٪) بوون ل دویڤ ئێك، و هویرکا ب رێژەیا (68.6٪).

دەرئەنجام: سەرەرای کو Helicobacter pylori دهێتە دەست نیشانکرن ب ساناهی ب رێکا بۆیاغا هیماتوکسیلین و یا گیمزا یا گوهارتی، بەلێ هەبوونا رێژەیەکا بلند ژ ئەنجامێن پوزەتیڤ و نێگەتیڤ وێ چەندێ خازیت کو بکارئینانا ئیمیونوهیستوکمستری ل هەمی حالەتێن هەوکردنا گەدەیا دوم دریژ.

الخلاصة

تحديد ملوية بيلوري في خزعات المعدة للمرضى الذين يعانون من التهاب المعدة المزمن: دراسة نسيجية، كيميائية مناعية

خلفية واهداف البحث: تم استخدام أساليب مختلفة للكشف عن ملوية بيلوري في المرضى الذين يعانون من التهاب المعدة المزمن ولكن كتب قليلا عن الكيمياء المناعية أجريت الدراسة لتحديد ملوية بيلوري في خزعات المعدة من المرضى الذين يعانون من التهاب المعدة المزمن باستخدام الاصباغ الروتينية و الكيمياء المناعية.

طرق البحث: خلال فترة اثني عشر شهرا، من أبريل 2008 إلى مايو 2009، تمت دراسة 105 حالة من التهاب المعدة المزمن باستخدام صبغة الهيماتوكسيلين الروتينية و صبغة غيمزا المحورة "Sheehan's modified may method" و الكيمياء المناعية بطريقة "تلطيخ الآلي من شركة Ventana".

النتائج: شملت الدراسة 105 حالة من التهاب المعدة المزمن: 35 (33.3٪) حالة التهاب خفيفة, 51 (48.6٪) حالة التهاب متوسطة، 19 (18.1٪) حالة التهاب شديدة. وقد مثلت التهابات المعدة المنشطة في 76 (72.4٪) حالة، وضمور غدي في 40 (38.1٪) حالة، وحؤول المعوية في 19 (18.1٪) حالة. وقد سببت صبغة الهيماتوكسيلين الروتينية و صبغة غيمزا المحورة 20 (19٪) نتيجة إيجابية كاذبة و13 (12.4٪) سلبية كاذبة سلبية. وكانت حساسية وخصوصية الصبغة الروتينية: 77.6٪ و 57.4٪ على التوالي بينما قيمها التنبؤية الإيجابية والسلبية كانت 69.2% و67.5٪ على التوالي مع دقة 68.6٪.

الاستنتاج: على الرغم من أنه يمكن أثبات رؤية ملوية بيلوري بسهولة من قبل الهيماتوكسيلين الروتينية و صبغة غيمزا المحورة، ولكن وجود معدلات نتائج سلبية وإيجابية كاذبة عالية يستلزم التطبيق الروتيني للكيمياء المناعية لجميع حالات التهاب المعدة المزمن.

A RARE PRESENTATION OF CHILDHOOD ACUTE LYMPHOBLASTIC LEUKEMIA WITH OBSTRUCTIVE JAUNDICE DUE TO PANCREATIC INVOLVEMENT - CASE REPORT

KHALID N. ABDURRAHMAN, MBChB, DCH, FIBMS*

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SUMMARY

Obstructive jaundice due to pancreatic mass is a rare manifestation of acute lymphoblastic leukemia in children with only a few reported cases. We report the clinical, hematological and radiological findings of a 20-month-old boy with pre-B acute lymphoblastic leukemia and pancreatic involvement. Liver function tests showed an obstructive picture and a computed tomography scan of his abdomen demonstrated bulky pancreas with a hypodense texture. Three weeks after induction chemotherapy his jaundice resolved, the pancreatic mass reduced in size and he is now in complete hematological remission. Acute lymphoblastic leukemia may mimic other causes of a pancreatic mass and should be considered as part of the differential diagnosis when atypical features are present.

Duhok Med J 2011;5(1): 78-83.

Key words: Acute leukemia, Obstructive jaundice, Pancreatic involvement, ALL

Acute Lymphoblastic Leukemia (ALL) is the most common malignancy reported among Iraqi children.[1] Common features at presentation include pallor, fever, fatigue, bleeding tendency, lymphadenopathy, splenomegaly and hepatomegaly. Other features are rather infrequent at presentation including central nervous System (CNS) and testicular involvement.[2] Cholestatic jaundice is quite an unusual presentation of ALL, it is even rarer to be caused by involvement of the pancreas resulting in obstructive jaundice. We report on a 20 month old male child with ALL presenting as a pancreatic mass and obstructive jaundice.

CASE PRESENTATION

A 20-months-old boy presented with a 7-day history of jaundice. He had no significant past medical history. Physical examination showed jaundice, anemia, hepatomegaly (liver span 9 cm), splenomegaly (4 cm BCM) and painless firm right testicular swelling. Liver function tests showed an obstructive picture [serum total bilirubin 14.3 mg/dl with direct of 11.4 mg/dl, alanine transaminase of 42 IU/L (reference range: 10-45 IU/L) and serum alkaline phosphatase of 565 IU/L (reference range: 71-142 IU/L)]. Complete blood picture revealed a hemoglobin concentration of 7 g/dl, total white cell count of 10.9 x 10^9/L with 44% blasts, and platelet count of 160 x 10^9/L. Bone marrow aspirate showed infiltration by a heterogeneous population of blasts constituting 71% of all nucleated elements and confirmed a diagnosis of acute leukemia. Immunophenotyping demonstrated a pre- B-cell Acute Lymphoblastic Leukemia phenotype.

Contrast-enhanced computed tomography of the abdomen showed a diffusely enlarged pancreas with distension of gall bladder, free of gall stones (Figure 1).

Examination of CSF indicated no evidence of CNS involvement. Testicular biopsy showed infiltration with lymphoblasts.

He was commenced on chemotherapy according to the MRC UKALL 2003

** Assistant professor of Pediatrics, Department of Pediatrics, School of Medicine, Faculty of Medical Sciences University of Duhok, Heevi Pediatric Teaching Hospital. Email: drkhnawaf@yahoo.com*

protocol.

A significant drop in bilirubin and alkaline phosphatase was noticed within 10 days and they both returned to normal in three weeks. After 28 days of initiation of induction chemotherapy, a repeat bone marrow assessment showed complete hematological remission (blasts constituting 4% of all nucleated cells). A repeat of the abdominal CT scan demonstrated significant reduction in the size of the pancreas (Figure 2).

Written informed consent was obtained from the patient's guardian.

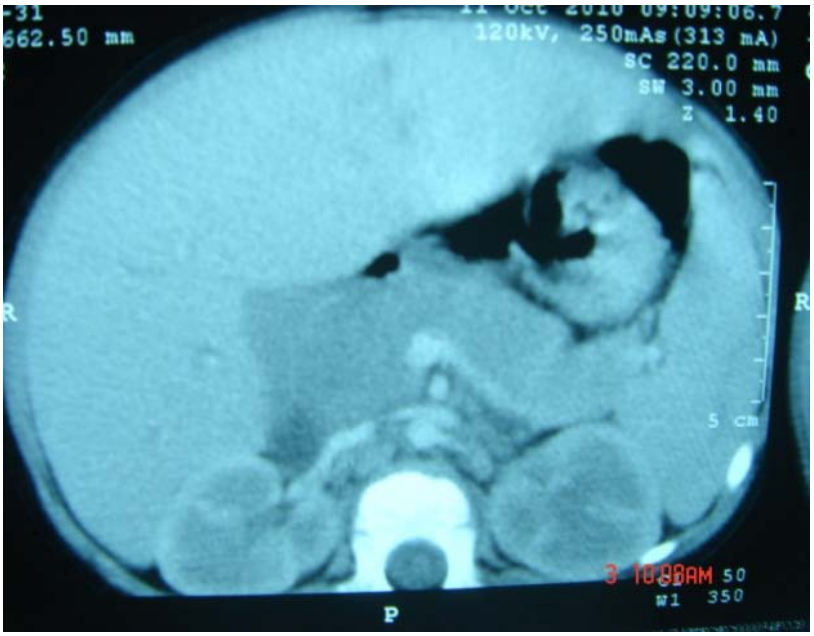

Figure 1. CT scan of the pancreatic mass at presentation

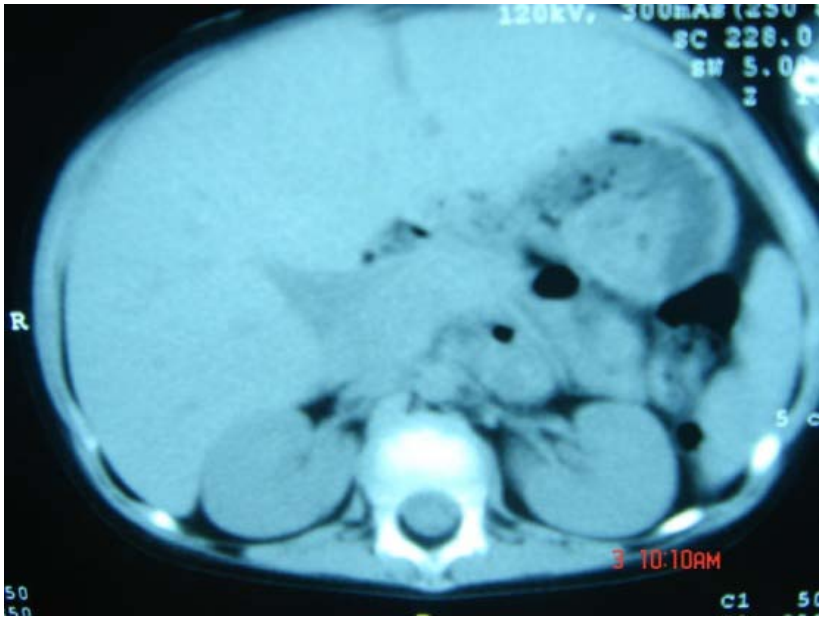

Figure 2. CT scan showing resolution of the pancreatic mass after chemotherapy

DISCUSSION

Although ALL is primarily a disease of bone marrow and peripheral blood, any organ or tissue may be infiltrated by the abnormal cells. Such infiltration may be clinically apparent by physical examination or it may be occult and detectable only by histologic sampling.[2]

Pancreatic involvement in ALL is very rare at presentation and only a few cases have been reported previously with ages ranging from 10 weeks to 39 years.[3-8] This may be asymptomatic or associated with obstructive jaundice.[3-5,8] In our case report the patient presented with cholestatic jaundice and further investigations uncovered the acute leukemic process. Pancreatic involvement has been reported in association with precursor B-cell phenotype, similar to the current case report,[4,7] and also in association with T-cell and mature B phenotypes.[6,8] Furthermore, our patient had in addition to his pancreatic involvement, involvement of another extramedullary site (testicular involvement) which is similar to some of the previous reports where additional extramedullary organ(s) involvement were noted.[7,8]

Pancreatic involvement has also been reported in other hematological malignancies, such as Non-Hodgkin's Lymphoma and granulocytic sarcoma.[8-10] In addition to pancreatic involvement, cholestatic jaundice in acute lymphoblastic leukemia, may also occur through diffuse infiltration of liver sinusoids or the common bile ducts by leukemic blasts.[11,12]

In conclusion, ALL is a rare cause of obstructive jaundice secondary to a pancreatic mass. It should be considered in the differential diagnosis of obstructive jaundice, since such extramedullary involvement by the leukemic process is highly responsive to systemic anti-leukemic therapy, which may be critical for subsequent management.

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پوختە

دەگمەنترین حالەتەکێ پەنجە شێرا خوینیێ یا زاروکا – راپورتا حالەتەکێ

زەرکا گرتیبونی ژبەر گرێگا پەنکریاسێ دەگمەنترین حالەتەکێ پەنجەشێرا خوینێ یا زاروکا، پتنێ چەند حالەتەك بێت هاتینە رابورت کرن ل هەمو جیهانێ. مە حالەتا زاروکەکی بیست مانك هەبو پەنجەشێرا خوینێ ل کەل گریکا پەنکریاسێ بێشکێشکر. تێستا مێلاکی دیار کر کو هەیە زەرکا گرتی و ومفراسا زکی دیارکر کو هەیە کریکا پەنکریاسێ. بشتی سی حەفتیا ژ چارەسەرکریا کیمیاوی زەرکا زاروکی کێم بو وگرێکا پەنکریاسێ ژی کێم بو. پەنجە شێرا خوینێ یا زاروکا جارنا وەکی گریکا پەنکریاسی یە، پێتڤیە ئەڤە پێش چاڤ بێت.

الخلاصة

حالة نادرة من سرطان الدم اللمفاوي لدى الاطفال باصابة البنكرياس مع يرقان انسدادي

اشهار حالة

اليرقان الانسدادي الناتج عن تورم البنكرياس من الحالات النادرة لسرطان الدم اللمفاوي لدى الاطفال. إذ تم تسجيل حالات قليلة منها، ونحن نشهر حالة طفل يبلغ من العمر عشرون شهراً مصابا بسرطان الدم اللمفاوي مع اصابة البنكرياس. حيث اظهرت فحوصات وظائف الكبد وجود يرقان انسدادي واظهر التصوير المقطعي للبطن (المفراس) وجود تورم في البنكرياس. بعد ثلاثة اسابيع من بدء العلاج الكيمياوي تبدد اليرقان وصغر حجم البنكرياس. سرطان الدم اللمفاوي قد يشبه اورام البنكرياس ويجب ان يؤخذ ذلك بنظر الاعتبار.