(Evaluation of the Progressions And Achievements Of Iraqi ATLS Center: A descriptive study)

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بِسمِ اللهِ الرَّحمنِ الرَّحيم

(الَّذِي خَلَقَنِي فَهُوَ يَهْدِينِ (78) وَالَّذِي هُوَ يُطْعِمُنِي وَيَسْقِينِ (79) وَإِذَا مَرِضْتُ فَهُوَ يَشْفِينِ (80))

صدقَ اللهُ العظيم

سورة الشعراء

Dedication:

To our wounded and patient country “Iraq".

To our families for their abundant support.

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Aim of the study:

1) To assess the progression of ATLS in Iraqi center.

2) To assess the achievements of ATLS in Iraqi center.

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Abstract:

Introduction:Advanced trauma life support (ATLS) is a training program for medical providers in the management of acute trauma cases, developed by the American College of Surgeons. Similar programs exist for immediate care providers such as paramedics. The program has been adopted worldwide in over 60 countries, sometimes under the name of Early Management of Severe Trauma, especially outside North America.

Aim:

1. To assess the progression of ATLS in Iraqi center.
2. To assess the achievements of ATLS in Iraqi center

Methods: In this descriptive study, the data were collected from the statistical reports in the emergency department at Al-imamain Al-kadhumain Medical City, Baghdad city, Capital of Iraq, the data included the trauma patients reports obtained at 2017 before the introduction of ATLS program and the reports at 2018 after the ATLS introduction.

Results: In 2017 the mortality rate of group A was 23 (0.32%) out from 7101 patients before ATLS introduction, while the mortality rate of group B in 2018 after ATLS® introduction was 18 (0.24%) out from 7504 patients, which means that ATLS® improved the traumatic patients outcome.

Conclusions: ATLS® program significantly lower the mortality rate in the first hour in trauma victims in AL-Emamain Al-khadhumia teaching hospital.

- The progression is that the Iraqi chapter improved the number of doctors ruled in ATLS® program and give a good idea about the management of this patients.

Introduction:

Advanced trauma life support (ATLS) is a training program for medical providers in the management of acute trauma cases, developed by the American College of Surgeons. Similar programs exist for immediate care providers such as paramedics. The program has been adopted worldwide in over 60 countries, [1] sometimes under the name of Early Management of Severe Trauma, especially outside North America. Its goal is to teach a simplified and standardized approach to trauma patients. Originally designed for emergency situations where only one doctor and one nurse are present, ATLS is now widely accepted as the standard of care for initial assessment and treatment in trauma centers. The premise of the ATLS program is to treat the greatest threat to life first. It also advocates that the lack of a definitive diagnosis and a detailed history should not slow the application of indicated treatment for life-threatening injury, with the most time-critical interventions performed early. (2), (3)

History

The ATLS course was established after a tragic plane crash in 1976, which devastated an entire family. The pilot, an orthopedic surgeon named James Styner, was seriously injured while his wife was died and three of his children sustained critical injuries. He was horrified at the treatment his family received at a local hospital in rural Nebraska and decided that the established system for managing the severely injured was wrong. A group of local surgeons and physicians, the Lincoln Medical Education Foundation, together with the University of Nebraska founded local courses aiming at teaching advanced trauma life support skills.(4)These courses served as a framework for the national ATLS courses adopted by the American College of Surgeons' Committee on Trauma.

The original aims of the ATLS courses were to train those doctors who do not manage trauma on a regular basis, such as rural general practitioners, in the initial management of the severely injured patient. The pilot courses were run in Aubern , Nebraska in 1977. These had expanded nationally under the auspices of the American College of Surgeons by 1980. Early reports on the implementation and evaluation of these pilot courses and the improvements in rural trauma care appeared in the literature soon afterwards.[5],[6] Improvements were also noted in the quality of trauma care apparent upon the arrival of patients at a major hospital[7]and on mortality rates, using multiple logistic regression analysis.[8],[9]Additional studies suggest an improvement related to the introduction of ATLS8 but others have failed to show significant improvement in patient outcome and assessment.[10]

In the late 1980s, a retrospective analysis of deaths attributable to injury reported that significant numbers could have been prevented.[11] A subsequent Working Party Report from the Royal College of Surgeons, England noted the improvement in standards of care of the injured patient in the United States after the development of ATLS.[12] ATLS was brought to the United Kingdom with the first course taught at the Royal College of Surgeons in 1988. By 1995, it had been taught in over 25 countries and has been shown to be an effective teaching course in both developing and developed countries.[13] Today ATLS is the internationally recognized standard for the initial assessment and management of serious injury.

The national importance of the program:

Adoption of that program ATLS & the other programs that are associated with it & start the training of doctors and health personnel inside Iraq It has supreme and major importance from various aspects Whether it is an academic education or a health service. Added that it is treating injuries according to international methodology

Studies and experiments have proved effective in reducing the severity of injuries and reducing the number of deaths all over the world not only in war casualties but in all kinds of injuries.

ATLS and Al-nahrain medicine:

In view of the importance and leadership of that national program, the idea of establishing a nucleus for that program and opening the first position in Iraq at the Faculty of Medicine of Nahrain was crystallized by some professors and commanders. In the branch of surgery and with support and logistical support by expatriate doctors from the college for their sense of responsibility towards their country and their desire to raise the college. So the American College of Surgeon was approached more than a year and a half ago to approve the establishment of this program at the Faculty of Medicine as the first center in Iraq and the response was that there was no objection to that coordination and should be through the Middle East office which includes more than 13 countries and Dr. Saud al-Turki from Saudi Arabia has already been contacted with the help of the College of expatriates and expressed his readiness and enthusiasm and his approval of the project.

Course Objectives:

Participants will be familiar with the knowledge and skills needed to quickly identify, manage and treat adult and young patients who are subject to multiple injuries.

Upon passing the course participants will be able to:

• Explain the concepts and principles of the initial and secondary evaluation.

• Prioritize the management of cases and patients.

• Initiate primary and secondary management.

• Apply and explain the skills needed to assess and manage seriously injured people.

Program Goals:

This course provides safe and reliable methods for rapid management of injured patients and basic knowledge in:

• rapidly and accuracy in assessment

• Determine priority in the recovery procedure and reach a stable state

• Identify needs and capabilities

• Arrange the transfer to the department of care needed by the patient depending on his condition after stabilizing

• Ensure optimal care

Description of the Advanced Life Support in Injuries Course:

Is a two-and-a-half-day interactive course based on hypotheses where trainers give interactive lectures and participants conduct skill-based training workshops in applying the principles of the Advanced Course to Support Life in Injuries.[14]

Primary survey:

The first and key part of the assessment of patients presenting with trauma is called the primary survey. During this time, life-threatening injuries are identified and simultaneously resuscitation is begun. A simple mnemonic, ABCDE, is used as a mnemonic for the order in which problems should be addressed.[15]

1- Airway maintenance with cervical spine protection

2- Breathing and ventilation

3- Circulation with bleeding control

4- Disability/Neurologic assessment

5- Exposure and environmental control.[15]

Secondary survey:

When the primary survey is completed, resuscitation efforts are well established, and the vital signs are normalizing, the secondary survey can begin. The secondary survey is a head-to-toe evaluation of the trauma patient, including a complete history and physical examination, including the reassessment of all vital signs. Each region of the body must be fully examined. X-rays indicated by examination are obtained. If at any time during the secondary survey the patient deteriorates, another primary survey is carried out as a potential life threat may be present. (16)

There's new insight into managing traumatic patients, (Special conditions) that ATLS deals with: Trauma in Pregnancy and Interpersonal Violence, pediatrics trauma, geriatrics trauma and thermal injuries. (17)

Tertiary survey:

A careful and complete examination followed by serial assessments help recognize missed injuries and related problems, allowing a definitive care management. The rate of delayed diagnosis may be as high as 10 %.(18)

Methods:

2-1. Study setting:

In this descriptive study, the data were collected from the statistical reports in the emergency department at Al-imamain Al-kadhumain Medical City, Baghdad city, Capital of Iraq, the data included the trauma patients reports obtained at 2017 before the introduction of ATLS program and the reports at 2018 after the ATLS introduction. The study performed on In Al-imamain Al-kadhumain Medical City in Baghdad, during the years of 2018-2019.

2-2. Inclusion and exclusion criteria:

Inclusion criteria were, only trauma patients including accidents, orthopedics, burns and wounds. Exclusion criteria were patients with conditions other than trauma patients.

2-3. Methods of study:

Two groups of trauma patients were collected at 2017 and 2018. Group A represents the number of traumatic patient deaths at 2017 before ATLS program introduction; group B represents the number of traumatic patient deaths at 2018 after ATLS program introduction The number of admissions and the number of deaths during the two years were obtained from the reports of the emergency department.

2-4. Statistical analysis :

After collecting the necessary information, data entered in SPSS version 21.0. To describe the summation of the number of admissions and the number of deaths of the two groups. Comparison between the summations of the two groups was done.

Results:

Table 1: shows the number of Admitted Patients and No. of dead patient's trauma in emergency section during 2017 before ATLS introduction. The total number of admitted and dead patients were 7101 and 23 respectively.

Table 1: Number of Admitted Patients and No. of dead patient's trauma in emergency section during 2017 before ATLS introduction.

2017	Accidents		Orthopedics		Burns		Wounds		Total of Admitted patients	Total of dead patients
	No. of Admitted Patients	No. of dead patients	No. of Admitted Patients	No. of dead patients	No. of Admitted Patients	No. of dead patients	No. of Admitted Patients	No. of dead patients		
January	158	2	70	0	87	1	327	0	767	3
February	160	1	153	1	75	0	243	1	631	3
March	98	1	161	0	55	0	503	1	817	2
April	65	0	107	1	54	0	139	0	365	1
May	98	1	141	1	33	1	146	1	418	4
June	148	1	242	0	71	0	316	0	797	1
July	155	0	200	1	69	0	195	1	619	2
August	417	1	260	2	97	0	135	0	909	3
September	144	0	160	0	45	0	343	0	692	0
October	106	0	153	0	16	0	63	0	338	0
November	220	2	76	1	44	0	182	1	522	4
December	90	0	151	0	10	0	101	0	351	0
Total	1862	9	1874	7	656	2	2695	5	***7101***	***23(0.32%***

Table 2: shows the number of Admitted Patients and No. of dead patient's trauma in emergency section during 2017 before ATLS introduction. The total number of admitted and dead patients were 7504 and 18 respectively.

Table 2: Number of Admitted Patients and No. of dead patient's trauma in emergency section during 2018 after ATLS introduction.

2018	Accidents		Orthopedics		Burns		Wounds*		Total of Admitted patients	Total of dead patients
	No. of Admitted Patients	No. of dead patients	No. of Admitted Patients	No. of dead patients	No. of Admitted Patients	No. of dead patients	No. of Admitted Patients	No. of dead patients		
January	89	1	123	0	70	0	399	0	681	1
February	179	1	141	1	60	0	140	0	520	2
March	200	2	205	0	28	1	71	1	504	2
April	335	1	270	0	42	0	329	0	976	1
May	62	0	109	2	35	0	603	1	809	3
June	99	1	154	1	55	0	345	0	653	2
July	158	0	233	0	62	0	313	0	484	0
August	70	0	78	0	45	0	135	0	328	0
September	70	1	160	1	45	0	155	2	430	4
October	91	1	141	1	17	0	79	0	328	2
November	94	0	271	0	171	1	433	0	969	1
December	96	0	188	0	33	0	223	0	540	0
Total	1565	8	2073	6	663	2	3225	4	***7504***	***18(0.24 %)***

*wound: penetrating wound, Blunt wound, brain injury, wound without brain injury,

Table 3: shows total of Deaths before and after ATLS introduction. The number of deaths in 2017was 25 while in 2018 was 16. These results indicate that ATLS has a good achievements after its application.

Table3: Total of Deaths before and after ATLS introduction.		
Year months	Deaths* of 2107	Deaths* of 2018
January	5	1
February	3	2
march	2	4
April	1	1
May	4	3
June	1	2
July	2	0
August	3	0
September	0	4
October	0	2
November	4	1
December	0	0
Total	23	18
*Deaths include trauma, burns, wounds and orthopedics.		

Table (4): achievements of Iraqi ATLS® courses.

Number	Course Serial.	Type	Date	Participants	IP[1]	I. CANDIDATES[2]	Full I[3].
1	54029	P	9/2017	16	11		6
2	54049	I	9/2017	9	-	9	-
3	55642	P	2/2018	13	5		2
4	55639	P	3/2018	16	5		2
5	56031	P	5/2018	10	6		2
6	56468	I	7/2018	8		8	-
7	57530	P	11/2018	13	5		2
TOTAL	PROVIDER COURSE/5	INSTRUCTOR COURSE/ 2		Providers/68	32	17	14

1- Instructor potential
2- Instructor candidates
3- Full instructor

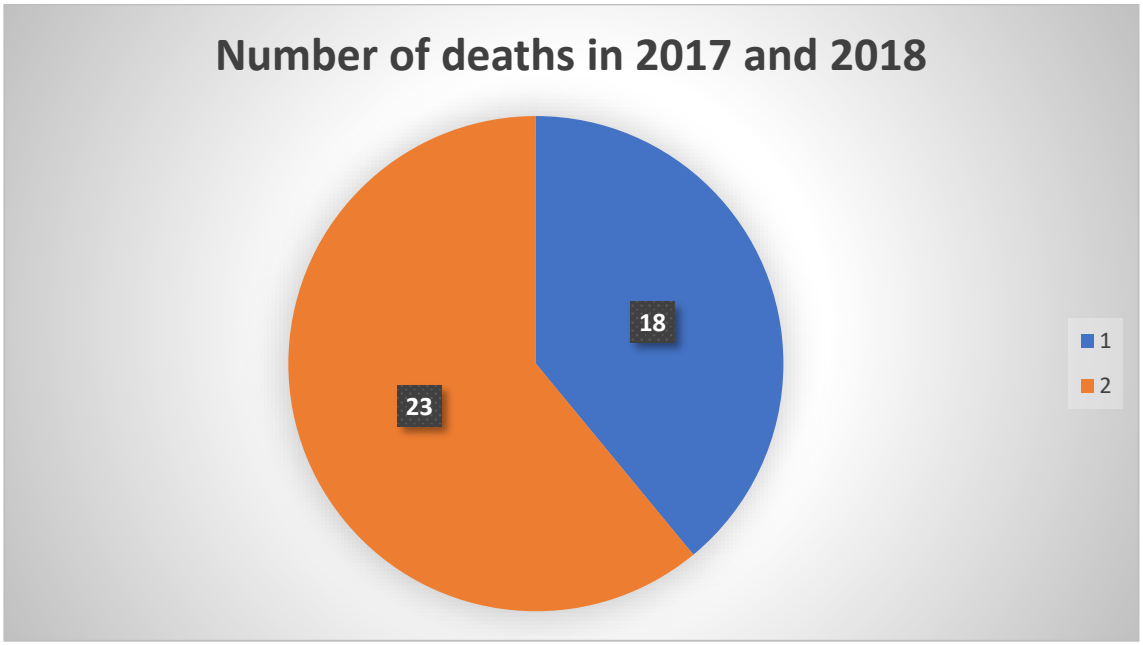

Figure1: Number of death before and after ATLS introduction.

Discussion:

The ATLS® course emphasizes the primary management of the injured patient, starting at the time of injury and continuing through the initial assessment, life-saving interventions, reevaluation, and stabilization and, when needed, transfer to a trauma center. This course is intended for all physicians who could be involved in acute trauma care. The question addressed in this study is whether ATLS® training affects the fate of the trauma patient?

Introduction of the ATLS® course in Iraq provided for an opportunity to compare outcome data of trauma patients between a pre-ATLS and a post-ATLS Period.

AL-Emamain Al-khadhumia medical city was chosen in which the physicians were not yet acquainted with the ATLS® program.

Two populations were analyzed, one before ATLS® and one after ATLS® training of the medical teams.

In 2017 the mortality rate of **group A** was **23 (0.32%)** out from **7101** patients before ATLS introduction, while the mortality rate of **group B** in 2018 after ATLS® introduction was **18 (0.24%)** out from **7504** patients.

The study shown decrease in the mortality rate after ATLS® introduction was similar to the study that has been published by Ger D.J.van OldenMD..etal in Department of General Surgery, Meander Medical Center, Amersfoort, in Netherlands, in 2004 which showed that the number of patients admitted before ATLS® applied were 31 and 15 of them died, mortality rate was 68% while after introduction of ATLS® ,the number of admitted patients were 32 and 10 of them died, mortality rate become 34%. [19]

also the study that published by MDJudith A.Vestrup in Vancouver, British Columbia, Canada showed similar results as that the number of patients admitted before ATLS® applied were 50 and the mortality rate was 26% while after introduction of ATLS® ,the number of admitted patients were 71 and the mortality rate was 20%.[20] , also the study that published by Ali J , Adam R…etal in june 1993in Europe which showed that the number of patients admitted before ATLS® applied were 400 and the mortality rate was 55.2% while after introduction of ATLS® ,the number of admitted patients were 413 and the mortality rate was 13.6%.[21]

The table no. (4) Represents the achievements of Iraqi course that held in Iraqi chapter in Al-nahrain College of medicine center.

The first column of this table showed the number of courses (1st, 2nd, 3rd, 4th, 5th...etc.).

The second column represent the course serial (54029….etc.) in American college of surgeons , so any one of the participant can enter one of this coded to know if he is in the course or not.

The third column represent the type, there are two types:

- P type: represent provider course which means that successful graduate of that course can be a safe provider who can give knowledge and experience to deal with the patients: like doing ABC or even dealing systematically.
- I type: represent instructor course which means the courses that has been done on the instructor potential (a person who has the ability to be a lecturer need to enter instructor course) to be changed into instructor candidate.

The fourth column represent the date of the course.

The fifth column represent participant (no. of students for each course).

The sixth column represent IP which represent the instructor potential, as example in the first course on September 2017 the number of participants were 16 but only 11 of them got the IP , while in the second course that has been done on September 2017 it has been graduated an instructor candidate cause

who enter it were already an instructor potential there were 9 IP and it graduate a 9 instructor candidate ,(instructor candidate represent the seven column).

The total providers through all the courses were 68 students, a 32 of them graduated as an instructor potential and 17 as an instructor candidate.

The eight column represent the full instructor , in the first course that has been done on September 2017 they were 6 full instructor , on the 3rd, 4th,5th,7th courses the full instructor in each course were 2, so the total full instructor from all the courses in faculty Iraqi chapter were 14 full instructors .

Conclusions:

- Our study results showed an improvement in the care of trauma patients following completion of an ATLS program & this study also identified a significantly lower number of patients with inadequate management.
- ATLS program significantly lower the mortality rate in the first hour in trauma victims in AL-Emamain Al-khadhumia teaching hospital.
- Iraqi chapter improved the number of doctors ruled in ATLS program and give a good idea about the management of this patients.

Recommendation:

- Such program should be integrated into the training of Iraqi doctors and suggest that ATLS should be viewed as an integral part of medical training.

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