

Assessment of early and late complication post coronary artery graft by – pass surgery CABG

تقييم المضاعفات المبكرة والمتأخرة بعد عملية ترقيع الشرايين التاجية

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الهدف: تهدف الدراسة الى تقييم المضاعفات المبكرة والمتأخرة التي تحدث عند مرضى ترقيع الشرايين القلبية التاجية وكذلك ايجاد العلاقة مع بعض الموصفات الديموغرافية لهم.

المنهجية: دراسة وصفية - تحليلية أجريت لتقييم المضاعفات المبكرة والمتأخرة التي تحدث عند مرضى ترقيع الشرايين القلبية التاجية في وحدة العناية المركزة لمستشفى ابن البطار التعليمي ومستشفى الجراحات التخصصية التعليمي في مدينة بغداد للفترة من الاول من ايلول / 2009 ولغاية العشرون من ايارس / 2010. اختيرت عينة غرضية والمتكونة من (50) مريضاً بعد خروجهم من العملية خلال ال (48) ساعة الاولى في وحدة العناية المركزة كمرحلة تقييم اولى والمرحلة الثانية في العيادة الخارجية بعد خروجهم من المستشفى وعند مراجعتهم الدورية لغرض الفحص والمتابعة بعد استئصال المواقفات الرسمية الاصولية من المؤسسات الصحية وتحديد الموعد مع المرضى مسبقاً. تم جمع المعلومات باستخدام الاستمارات الاستثنائية وملؤها عن طريق المقابلة. تم تحليل البيانات باستخدام الوسائل الاحصائية الوصفية (التكرارات و النسب المئوية) والتحليل الاحصائي الاستثنائي (الوسط الحسابي ومعامل الارتباط).

□□□□□□: اشارت النتائج الى ان معظم افراد العينة هم من الذكور ، المدخنين، والمصابين بارتفاع ضغط الدم بالإضافة الى وجود علاقة قوية بين المستوى التعليمي و حدوث المضاعفات المبكرة لعملية ترقيع الاوردة التاجية للقلب كارتجاع عضلة القلب ، قلة السوائل ، صعوبة التنفس و خمج الجروح عن الصدر.

التوصيات: أوصت الدراسة بتقديم برنامج تثقيفي فيديو او كتيبات تتضمن الإرشادات والتعليمات الواجب اتباعها من قبل المرضى قبل العملية وبعدها لتلافي حدوث المضاعفات.

Abstract:

Objective: The study aims to assess the early and late complications that occur in patients with cardiovascular-coronary grafts as well as find a relationship with some demographic specifications for them.

Methodology: A descriptive study - analysis conducted to assess the complications early and late that occur in patients with graft artery to coronary heart in the intensive care unit of Hospital Ibn Al-Bitar Teaching Hospital, surgery specialist education in the city of Baghdad for the period from the first of September / 2009 until the twentieth of May / 2010. Chosen sample object-and consisting of (50) sick "after the exit of the process through the (48) hours the first in the intensive care unit phase evaluation of the first and the second phase in the outpatient clinic after discharge from the hospital and when their review periodical for the purpose of screening and follow-up after obtaining official approvals fundamentalist institutions health and to decide when, with patients in advance. Data was collected using the questionnaires and filled through the interview. The data were analyzed using descriptive statistical methods (frequencies and percentages) and inferential statistical analysis (mean and correlation coefficient).

Results: The results indicate that most of the sample are male, smokers, people with high blood pressure in addition to the strong relationship between educational level and incidence of complications early for the process of grafting veins coronary heart Kertjav heart muscle, lack of fluids, difficulty breathing, infection of wounds on the chest.

Conclusion: The study concluded that the most of the sample are male, smokers, people with high blood pressure in addition to the strong relationship between educational level and incidence of complications early for the process of grafting veins coronary heart.

Recommendation: The study recommended an educational program to provide a video or manuals containing instructions to be followed by patients pre and postoperative in order to avoid complications.

Key Words: Complication, Coronary- artery graft, and Surgery.

INTRODUCTION:

grafts coronary artery by-pass surgery is a surgical procedure performed to relieve angina. Coronary Artery Bypass Graft operation for ischemic disease provides quality of heart saphenous coronary and reduce the risk of death from coronary artery disease. Arteries or veins from elsewhere in the patient body are grafted to the coronary arteries to by-pass atherosclerotic narrowing and improve the blood supply to myocardium. This surgery is usually performed with heart stop; necessitating the usage of cardio pulmonary bypass technique “the patient is monitored to assess the progress and complication during his stay in intensive care unit ⁽⁵⁾”.

In spite of modern approaches and advanced technique and medication that are used in prevention of possible consequences, there are certain complications that can develop during or after the CABG. All complications can be classified as short – termed and permanent. The classification can be done also according to organs and organ systems that have been affected ⁽²⁾.

All surgeries carries risk of complication, possible complication may early and late complication; which include arrhythmia, excessive bleeding ⁽⁴⁾, and the late complication include, stroke, and infection besides, potential complication that may developed include:

- Cardiac complication: heart failure, myocardial infarction (MI), stunned myocardium, dysrhythmias, tamponed cardiac arrest.
- Pulmonary complication; pulmonary edema; pulmonary emboli; pleural effusion; pneumothorax; respiratory failure; acute respiratory distress.
- Hemorrhage.
- Neurologic complication.
- Renal failure acute or chronic.
- Electrolyte imbalance.
- Hepatic failure.
- Infection, sepsis. ⁽⁶⁾

Objective: The study aims to assess the early and late complications that occur in patients with cardiovascular-coronary grafts as well as find a relationship with some demographic specifications for them.

METHODOLOGY

Design of the study:

A descriptive study was conducted, from 1st September 2009 to 20th May to assess the early and late complication may occurred to patients post coronary artery graft - by - pass surgery CABG in intensive care unit of Ibn – Al betar hospital, and Al Hariri for special surgeries Teaching hospital.

Sampling:

A purposive sample of 50 patients were selected at first stage of the study in intensive care unit during their stay for the first week after CABG surgery and second stage of collection data at outpatient department during the of patients visits appointment after discharge from hospital for arrangement between hospital and patient by telephone with the researcher.

Instruments:

The questionnaire and study instrument; in order to assess the early and late CABG surgery complication specifically designed questions were applied – a questionnaire based on comprehensive review of literature med line, consisted of the following:

- 1- Part one: demographic data sheet this part is consisted of all information related to sample such as; patient gender, age, level of education, marital status, and occupation.
- 2- Part two: a health assessment sheet consisted of seven items related to patient health, any surgery before, and healthy habits.
- 3- Part three: post – operative – assessment, this tool consisted of five main items and six sub-main items sheet related to early complication may occurred to CABG patient to be evaluated by two scale Yes or No.
- 4- Part four: this sheet consisted of four main items and eleven sub-main items related to the late complication may occur to post CABG patient to be evaluated by two scales Yes or No.

All items of part two, three and four were measured by binomial scale which consisted of Yes or No, also a statistical analysis were used which includes the percentage, frequencies, mean of score (MS), and chi- square test.

Validity of instrument was determined through conducting a pilot study to a sample consisting of 10 patients in intensive care unit during the first 24 hours after CABG surgery and every two weeks for 2 month in outpatient department after special telephone arrangement with patient and hospital visit to detect the early complication.

The reliability of questionnaire was determined
($r = 0.85$) which was adequately reliable.

Data Collection:

Collection data at outpatient department ,with special arrangement by the researcher by telephone to determine patient doctor visit appointment each two weeks for 2 months.

RESULTS:**Table (1): Distribution and percentage of the study sample according to demographical characteristics**

No.	Items	Frequency	Percentage
1	Gender		
	Male	47	94
	Female	3	6
	Total	50	100
2	Age		
	45-50	9	18
	51-55	19	38
	56-60	10	20
	61-over	12	24
	Total	50	100
3	Marital Status		
	Married	45	90
	Single	5	10
	Total	50	100
4	Level of education		
	Illiterate	8	16
	Primary	17	34
	Secondary	14	28
	University	11	22
	Total	50	100
5	Occupation		
	Employed	22	44
	Earners	28	56
	Total	50	100

This table showed that the majority of the sample was 94%; at age group 51-55 year 38% were married with 43% primary school and 56% of the sample occupation were earners.

Table 2: Mean of score of the sample initial health assessment

No.	Items	Yes		No		MS
		F	%	F	%	
1	Previous operation	28	56	22	44	1.12
2	Hypertension	32	64	18	36	1.3
3	Diabetes	20	40	30	60	0.8
4	Heart disease	24	48	26	52	0.9
5	Renal disease	12	24	38	76	0.48
6	Smoking	32	64	18	36	1.3

This table demonstrated that the majority of the sample (64%) with hypertension and they were smokers, only 24% of the sample were with renal disease.

Table 3. Mean of score and frequency of early complication occurred to patients after CABG within 48h in I.C.U.

No.	Items	Yes		No		MS
		F	%	F	%	
1	Atrial arrhythmia	40	80	10	20	1.6
2	Ventricular arrhythmia	8	16	42	84	1.1
3	Hypoxia P O ₂ > 95% P CO ₂ > 40mmhg	28	56	22	44	1.16
4	hypothermia	27	54	23	46	1.14
5	Hypervolemia -Dry mouth skin -Concentrated urine -Bleeding	38	76	12	24	2

This table presented that the majority of the suffering sample post CABG within 48h from Atrial arrhythmia 80%, and hypervolemia 76%(MS=2), and 56% with hypoxia

Table 4. Mean of score to late complication occurred to patient after CABG

No.	Item	Yes		No		MS
1	Incisional sternal wound infection during first week with symptoms: Fever, Leukocytosis, and Wound purulent drainage.	17	34	33	66	1.5
2	Excessive bleeding			50	100	
3	Post pericardictomy syndrome occurred within 2 week – 3 weeks month with signs of -pericardial pain -pericardial effusion associated with inflammation -dyspnea			50	100	
4	Cardiac tamponed occurred within 3 weeks with symptoms -fever -lethargy -oliguria -dysphagia -epigastria pain	29	58	21	42	1.6

This table showed that only 58% with Mean of Score 1.6 of the sample affected with dyspnea as a late complication after 3 weeks of discharge

Table 5. Association between gender and occurrence of complication within 48h after CABG in I.C.U

No.	Items		Gender				P-value
			Female		Male		
			No.	%	No.	%	
1	Atrialarrhythmia	Yes	3	7.5	37	93.5	0.372
		No	0	0	10	100	
2	Ventricular arrhythmia	Yes	3	12.5	21	87.5	0.145
		No	0	0	16	100	
3	hypoxia	Yes	3	16.7	15	83.3	0.017
		No	0	0	32	100	
4	Hypothermia less than 37 c	Yes	3	11.1	24	88.9	0.18
		No	0	0	15	100	
5	Hypovolemia	Yes	3	37.5	5	62.5	000
		No	0	0	42	100	
6	cardiac arrest	Yes	2	100	0	0	000
		No	1	2.1	47	97.9	

This table demonstrated that P- value = 0.017 less than 0.05 which revealed there is strong association between occurrence of complication after CABG and gender.

Table 6: Association between level of education and occurrence of early complication after CABG within 48h in I.C.U

N o.	Items		Level of education								P-value
			Illiterate		Primary		Secondary		University		
			N	%	N	%	N	%	N	%	
1	Atrial arrhythmia	Yes	8	20	17	42.5	14	35	1	2.5	0.000
		No	0	0	0	0	0	0	10	100	
2	Ventricular arrhythmia	Yes	8	26.7	17	56.7	5	16.7	0	0	0.000
		No	0	0	0	0	0	45	11	55	
3	hypoxia	Yes	8	44.4	10	55.6	0	0	0	0	0.000
		No	0	0	7	21.9	14	43.8	11	34.3	
4	Hypothermia less than 37 c	Yes	8	25	17	53.1	7	21.9	0	0	0.000
		No	0	0	0	0	7	38.9	11	16.1	
5	Hypovolemia	Yes	8	100	0	0	0	0	0	0	0.000
		No	0	0	17	40.5	14	33.3	11	26.2	
6	cardiac arrest	Yes	2	100	0	0	0	0	0	0	0.012
		No	6	12.5	17	35.4	14	29.2	11	22.9	

This table presented that P- value = 0.012 less than 0.05 which revealed strong association between level of education and occurrence of early complication that mean the education people have awareness to prevent occurrence of early complication.

DISCUSSION:

The result of the study presents, that the majority of the sample were male 94% at age from 51-55 years old 38%, 90% of them married with 34% of the sample with primary level of education and 40% of their occupation were earner as showed in the table (1).

This result is not compatible with ⁽¹⁾ who stated that; mortality may be higher in women, primarily due to their advanced age at the time of CABG surgery and smaller coronary arteries, also women develop coronary artery disease about 10 years later than man because of hormonal “protection” while they still regularly menstruate although in women risk factor for coronary artery disease, especially for the development of coronary artery disease at a young age in very real.

The preoperative history and health assessment should be well assessed and well documented, because it provides a basis for occurrence of post-operative complication.

This result presented in table 2 which showed that the most of the sample 64% were with hypertension and smokers at mean of score (1.3), only 24% of the sample with renal disease.

This result agreed with ⁽⁶⁾ who stated that, the modifiable risk factors for coronary artery disease were:

- High blood cholesterol level.
- Cigarette smoking, tobacco use.
- Hypertension.
- Diabetes mellitus.
- Lack of estrogen in women.

- Physical inactivity and obesity.

Early complication that occurred within 48 hours in I.C.U. after CABG surgery that table (3) showed, were 80% of the sample with mean of score (1.6) with Atrial arrhythmia, 76% of them with hypovolemic at mean of score (2) which indicated a serious complication .

This result presented by (John 2005), who stated that, Atrial fibrillation, characterized by a rapid and sustained heart rate of more than 130 beats/min, appears in less than half of patients who have undergone a coronary artery by-pass graft surgery.

When the heart beats at a rate between 100- 250 beats/min, these arrhythmias can be dangerous complication to CABG procedure, and the patient's heart rate monitored continuously for several hours after surgery.

Also ⁽³⁾ demonstrated that CABG stands for coronary Artery Bypass Graft surgeries, these procedures alleviate the condition in individuals with advanced coronary artery disease that causes plaque deposits to form and dangerously inhibits the flow of blood to the heart muscle, however, a host of complications can occur as a result of CABG operation, and patient should be very aware of the potential dangers that can occur. The following is a list of complications that have been reported by CABG physicians and patients worldwide: Stoke, damage caused by emboli, excessive blood loss, stenosis, arrhythmias, MI, Angina, death.

Late complication occurred post CABG surgery as shown in table -4- which occurred at period from 1w-6w, the table presents that only 58% with mean of score were (1.6) suffering from dyspnea, and 34% affected by fever which is a sign of infection of the

sternal wound, and infection can affect incision of the leg or hands, which is a very serious problem require medical therapy.

This result revealed by ⁽³⁾, who stated that late post- operative,

complication may occurred after the fourth post-operative day, wound infection after CABG surgery occurred despite perioperative antibiotics and aseptic technique, sternal wound infection and mediastinitis occur in 4% to 5% of patients after sternotomy , sternal wound infection typically present 4-14 days after surgery with fever.

The pre-operative teaching and knowledge given to educated patients showed a strong relation between level of education and occurrence of early complication, as showed in (table 6) (P value = 0.012< 0.05) which demonstrated that well knowledge people had a good awareness to prevent the complication such as hypervolemia, Atrial arrhythmia, hypoxia, hypothermia,

By the following instruction or teaching giving of them pre – operative, this result agreed by ⁽⁸⁾ there is a specific instructions for recovering at home within 4-6 weeks after surgery. How to care for healing incisions? How to recognize signs of infection or other complication such as (swelling, tightness, and depression). When to call a doctor and the next visit.

CONCLUSIONS:

The study concluded that the most of the sample are male, smokers, people with high blood pressure in addition to the strong relationship between educational level and incidence of complications early for the process of grafting veins coronary heart Kertjav heart muscle, lack of fluids, difficulty breathing, infection of wounds on the chest

RECOMMENDATION:

Regarding the early stated conclusion the present study recommended the following:

1. A special teaching sessions with videos and provided to patient pre- operative.
2. A special booklet consisting all the instruction needed to patients to prevent occurrence of complication and this information better illustrated as pictures for understanding by all education levels of patients.
3. Further studies can be conducted for large sample size different setting.

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