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ORIGINAL ARTICLE

Frequency of Shoulder Pain and Disorders Among CABG Patients in District Rawalpindi

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A B S T R A C T

Objective: To determine the frequency of shoulder pain among patients undergone coronary artery bypass grafting.

Methodology: The descriptive cross sectional study was conducted at Rehabilitation department of Armed forces institute of cardiology/national institute of heart disease (AFIC/NIHD) Rawalpindi, Pakistan in 6 months from Mar 2019 to Aug 2019. The total calculated sample size was 378. Data was collected through survey by using self-structured questionnaire on Shoulder Pain and Disability Index and Numeric Pain Rating Scale. Male and female post CABG patients with age of 45 to 75 years and 1st week to 6 months postoperatively were included while shoulder pain due to neurological conditions and valvular surgery were excluded.

Results: Out of 378 post CABG patient's males were 324(85.7%) and females with post CABG were 54 (14.2%). Frequency of pain on SPADI pain subscale was 293(77%), SPADI disability subscale was 245(64%) and mean of SPADI was 63.70+14.

Conclusion: It is concluded that there is high frequency of shoulder pain and disability among post-CABG patients.

Introduction

The coronary arteries deliver blood to the heart and supply oxygen to myocardium allowing contraction of heart for pumping blood all over the body. Coronary arteries can occlude due to the formation of atherosclerotic plaque in the arteries which lead to coronary artery disease (CAD).[1] Risk factors for plaque formation incorporate high blood pressure ,obesity, smoking, high blood cholesterol, sedentary life style, diabetes and poor diet.[2] A common complain after coronary artery occlusion is chest pain that can radiate in to other parts of the body especially in left shoulder, arm, neck and jaw.[3] The diagnosis of heart attack due to CAD includes blood tests and electrocardiogram. The treatment of CAD includes management of risk factors,

such as weight management, smoking cessation, blood pressure control and lipid management.[4]

Currently one of the two methods used to treat advance coronary heart disease is CABG and the other is percutaneous coronary intervention (PCI).[5, 6]

CABG is the most common open heart surgery, it is a procedure in which small portion of arteries or veins taken from the other parts of the body especially from the great saphenous and internal memory arteries or vein are used to bypass blood vessels of the heart to restore blood flow of the heart. The types of CABG include minimally invasive, conventional and off-pump CABG. The procedure for conventional CABG includes opening up the sternum, stopping the heart to pump with the help of drugs and using cardio-pulmonary bypass machine to continue the flow of oxygen rich blood during surgery. After restoring the blood flow to heart, the fluid is drained by inserting chest drain and then the chest is closed. The procedure is same for off- pump CABG but the heart is not stopped to pump. The other type of CABG is a new technique which is called minimally invasive CABG which includes small incisions to accesses heart.[7]

After CABG procedure the musculoskeletal and neurological complications are observed clinically. The immobility of shoulder joint after cardiac surgery advised by surgeon for 1-4 weeks is significantly associated with postoperative shoulder dysfunction mainly caused by improper positioning of the patient, muscle division, injury to the long thoracic nerve and internal jugular vein cannulation[3] with the prevalence of frozen shoulder being 2%–3% worldwide leading to shoulder and thoracic pain.[8, 9] In a recent study done by Hussain et al also documented shoulder pain to be secondary complication of adhesive capsulitis of the post CABG patients with percentage being 89.7%.[10-12] The majority of patients who have undergone CABG presented shoulder pain usually left shoulder pain which is noticeable soon postoperatively.[11] A study showed that shorter height, being a female and preoperative shoulder disability score were the risk factors identified for Neuro-musculoskeletal pain and shoulder disability post-OHS.[10]

This study was conducted to identify the occurrence of post CABG shoulder pain associated as a secondary complication so that its management would be a part of cardiac rehabilitation later on.

Methodology

Cross sectional descriptive study was done in the department of rehabilitation in Armed Forces Institute of Cardiology and National Institute of Heart Diseases (AFIC/NIHD) Rawalpindi, Pakistan in 6 months from Mar 2019 to Aug 2019 through purposive sampling technique. The total calculated sample size was 378 by using Raosoft with 95% level of confidence and it was collected through survey by using self-structured questionnaire which was first peer reviewed from relevant professionals. Questionnaire consists of demographics, Shoulder Pain and Disability Index (SPADI) and Numeric Pain Rating Scale (NPRS). Male and female post CABG patients with age of 45 to 75 years and 1st week to 6 months postoperatively were included while shoulder pain due to neurological condition, shoulder dislocation and valvular surgery were excluded. Data was analyzed by using Statistical Package for Social Sciences (SPSS) 21 software.

Results

Out of 378 post CABG patients frequency of males was 324(85.7%) and frequency of females was 54 (14.2%).Participants of different age groups were observed as 116(30.7%)patients were between 45-55years of age, 239 (63.2%) were between 55-65 years of age and only 23(6.1%) were between65-75 years of age. Mean age of the patients was 53.71+9.96. BMI of participants was calculated and results shows that 189(50%) of patients were in the normal category, 132.3 (35 %) patients were obese category, 37.8 (10%) were in underweight and 18.9(5%) were in overweight. Common comorbidities were observed as anemia was prevailing in 4 (1.1%), diabetes was 132(34.6%), hypertension and COPD was 106(28%) and 11(2.9%) respectively.

Results showed that 293(77.51%) had shoulder pain while 75(22.48%) had no shoulder pain after CABG. Frequency of pain on SPADI pain subscale was 293(77%), SPADI disability subscale was 245(64%) and mean of SPADI was 63.70+14. Frequency of pain on other region was 4(1.1%) in cervical region and 3(0.7%) had thoracic pain.

Table I: Demographics distribution

Variables		Frequency	Percentage
Gender	Males	324	85.7%
	Females	54	14.2%
BMI	Normal	189	50%
	Obese	132	35%
	Underweight	37	10%
	overweight	18	5%
Comorbidities	Anemia	4	1.1%
	Diabetes	132	35%
	Hypertension	106	28%
	COPD	11	2.9%

Table II: SPADI Score

Mean of SPADI		63.70±14
	f	%
Pain on SPADI pain subscale	293	77%
Disability on SPADI disability subscale	245	64%

Discussion

The rate of mortality post-CABG is higher in elderly than young patients.[10] Coronary artery diseases are more prevalent among elderly patients due which the demand for CABG among elderly patients is increasing.[13] The result of this study shows that the percentage of post-CABG patients in age group of 55-65 is more than the patients in age group of 45-55.A recent study conduct by Kari Hanne Gjeilo et al showed that the health related quality of life of elderly as well as young patients had improved after cardiac surgery. [14]

Co-morbidities such as diabetes mellitus, hypertension, COPD and peripheral vascular disease are common among post-CABG patients. One of the study conducted in Italy by Domenico Scrutinioa et al showed that in post–CABG patients 29.9% of patients had DM, 18.9% of had COPD, 16% of patients were suffering from peripheral vascular disease and 27.5% from renal dysfunction.[15]

Results of this study showed that frequency of patients with restriction of left shoulder range of motion was higher than the frequency of patients with the restriction of right shoulder range of motion. Regarding frequency of shoulder pain results of this study showed that 293(77.51%) had shoulder pain while 75(22.48%) had no shoulder pain after CABG. The results of our study are supported by a study conducted in 2016 by IE Hojskov et al that patients undergoing CABG often experience a range of problems and symptoms such as hypomobility in upper limb, pain in shoulder and insufficient sleep.[16] In 2016 Olaf Wendler stated that those patients who received early rehabilitation with post CABG experience less pain and early mobility gain.[1] In 2016 a cross-sectional was conducted by waqar Ahmad awan in which they found that after cardiac surgery there was high prevalence of adhesive capsulitis.[3] Comprehensive rehabilitation Programme should be recommended in the early rehabilitation phase to prevent Pain and mobility disorder.

Conclusion

It is concluded that there was high frequency of shoulder pain and disability among post-CABG patients.

References

1. Romaine SP, Tomaszewski M, Condorelli G, Samani NJ. MicroRNAs in cardiovascular disease: an introduction for clinicians. Heart. 2015;101(12):921-8.
2. Jassim AM, Mohammad SS, Ridha AMA. A Study of Dietary Pattern toward Ischemic Heart Disease among Patients under 50 Years Old. Indian Journal of Public Health Research & Development. 2018;9(8).
3. Awan WA, Aftab A, Kafeel S, Kanwal R, Ahmed A, Qureshi M. prevalence and associated risk factors of adhesive capsulitis in post cardiac surgery patients. Pakistan Heart Journal. 2019;52(3).
4. Škrlová K, Malachová K, Muñoz-Bonilla A, Měřinská D, Rybková Z, Fernández-García M, et al. Biocompatible Polymer Materials with Antimicrobial Properties for Preparation of Stents. Nanomaterials. 2019;9(11):1548.
5. Lee CJ, Lee J-Y, Oum C-Y, Youn J-C, Kang S-M, Choi D, et al. The Effect of FLT1 Variant on Long-Term Cardiovascular Outcomes: Validation of a Locus Identified in a Previous Genome-Wide Association Study. PloS one. 2016;11(10):e0164705.
6. Stein C. Efeitos da fototerapia nas doenças cardiovasculares 2017.
7. Hynes N, Devane D, Sultan S, Kavanagh EP, Morris L, Veerasingam D, et al. Hybrid repair versus conventional open repair for thoracic aortic arch aneurysms. The Cochrane database of systematic reviews. 2018;2018(1).
8. Chokkalingam M, Saradha S, Navitha A, Nayar PG. Incidence and clinical profile of patients with frozen shoulder after cardiac surgery. Journal of Clinical and Preventive Cardiology. 2017;6(4):142.
9. El-Ansary D, Adams R, Ghandi A. Musculoskeletal and neurological complications following coronary artery bypass

graft surgery: A comparison between saphenous vein and internal mammary artery grafting. Australian Journal of Physiotherapy. 2000;46(1):19-25.
10. Bellet RN, Lamb RL, Gould TD, Bartlett HJ. Prevalence of neuro-musculoskeletal pain and dysfunction in open-heart surgical patients preoperatively and at 6 and 12 weeks postoperatively: a prospective longitudinal observation study. Pragmatic and observational research. 2017;8:211.
11. Vasaghi-Gharamaleki B, Mirza-Mohammad Khanpour J, Khosravian-Arab T. The prevalence and characteristics of shoulder pain in female patients with coronary artery bypass graft (CABG). Journal of Rehabilitation Sciences & Research. 2017;4(1):10-4.
12. Manhal S, Sirajudeen MS, Pillai PS, Nair HR, Marla J. Occurrence of shoulder disorders among postcoronary artery bypass surgery patients in India. Archives of Medicine and Health Sciences. 2015;3(1):34.
13. Shan L, Saxena A, McMahon R, Newcomb A. Coronary artery bypass graft surgery in the elderly: a review of postoperative quality of life. Circulation. 2013;128(21):2333-43.
14. Gjeilo KH, Wahba A, Klepstad P, Lydersen S, Stenseth R. Recovery patterns and health-related quality of life in older patients undergoing cardiac surgery: a prospective study. European Journal of Cardiovascular Nursing. 2012;11(3):322-30.
15. Scrutinio D, Giannuzzi P. Comorbidity in patients undergoing coronary artery bypass graft surgery: impact on outcome and implications for cardiac rehabilitation. European Journal of Cardiovascular Prevention & Rehabilitation. 2008;15(4):379-85.
16. Højskov IE, Moons P, Hansen NV, Greve H, Olsen DB, Cour SL, et al. Early physical training and psycho-educational intervention for patients undergoing coronary artery bypass grafting. The SheppHeart randomized 2× 2 factorial clinical pilot trial. European Journal of Cardiovascular Nursing. 2016;15(6):425-37.
17. Waite I, Deshpande R, Baghai M, Massey T, Wendler O, Greenwood S. Home-based preoperative rehabilitation (prehab) to improve physical function and reduce hospital length of stay for frail patients undergoing coronary artery bypass graft and valve surgery. Journal of cardiothoracic surgery. 2017;12(1):91.