

Original Article

Frequency of neck pain and its associated factors among Post CABG patients

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DOI:10.29052/IJEHSR.v7.i3.2019.140-146

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Received 07/12/2018

Accepted 26/03/2019

Published 01/09/2019



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Abstract

Background: Chronic postoperative pain (CPOP) is a well-recognized problem in Post-Coronary artery bypass grafting (CABG) patients. Post CABG upper extremity pain is found to be common among these patients effecting quality of life and hinders with the routine activities. The aim of this study was to identify the frequency of neck pain and its associated factors among post-operative CABG patients.

Methodology: A cross-sectional study was conducted in Dow University of Health Science, Karachi between April 2018 to November 2018. The sample size 78 was calculated by open epi calculator. Both male and female Postoperative CABG patients with a one-year follow-up were selected with or without neck pain aged between 30-75 years from Outpatient Department. Patients below <30 years of age and those with any other surgeries before or any malignant disease were excluded from the study sample. A questionnaire was given to grade their overall experience of pain on Visual Analogue Scale (VAS) and to fill out Neck Disability Index (NDI) for their neck pain. The data was analysed using SPSS version 21 and Chi square T-test was applied to evaluate the significance.

Results: Out of 78 patients there were 32 (41%) females and 46 (58%) males with a mean age range between 30-75 years. 51.3% had neck pain presented within 12 hours of onset of symptoms while 48% had no complaint of neck pain. After CABG, 40 (51.2%) patients developed pain in their neck within 1 year of follow up. the mean VAS score was 5.32 out of 10 points on the basis of which 38 patients didn't experienced any pain while 20 suffered from moderate pain, 12 from severe pain and 8 patients from mild pain.

Conclusion: Patients following CABG surgery develop neck pain within one-year follow-up associated with restricted neck and shoulder range of motion. They also experienced muscle tenderness in their trapezius and sternocleidomastoid muscles followed by frequent headaches.

Keywords

Cervical Pain, Neckache, Coronary Artery Bypass Grafting.



Introduction

The major cause of mortality across the world is Cardiovascular diseases (CVD). According to the global burden disease study (2013) it was evaluated that 30 % of deaths across the world was caused by CVD, majority are due to the Coronary heart disease (CHD)¹. For the treatment of CHD most frequently performed surgical procedure is CABG, which was introduced in 1960². In this procedure the artery or vein which tends to block the oxygen rich blood supply to the heart is unblocked to release the pressure. Frequency of CABG is found to be raised since last decades, but quality of life and wellbeing is improved by successful procedure of CABG on patients with CHD². This technique is commonly performed by cardiac surgeons on patients whose arteries are filled with plaque formation known as (Atherosclerosis), commonly called as Coronary artery disease (CAD)³.

Patients undergoing CABG have remarkable enhancement which can upgrade the standard of life and expand the life expectancy and survival rates. This technique also decreases the heart related death rates in patients with numerous cardiovascular diseases when comparing with another therapeutic regimes^{2&3}. CAD mortality rates will double from 1990 to 2020, with approximately 82% of the increase in the developing countries as reported by American Heart Journal in 2004. Existing results reported that rapid socioeconomic growth in developing countries and its increasing exposure to risk factors for CAD, such as diabetes, genetic factors, hypertension, and smoking will lead to disease⁴. 25% of patient's complaint of musculoskeletal pain enrolled in early outpatient cardiac rehabilitation while pain aggravated with common daily activities among 32% of patients⁵. The mortality rate of CAD in Pakistan is about 35-45% mainly because of unhealthy diet, lack of exercise, smoking and hypertension. According to a research,

population of Pakistan is on a highest risk of developing CHD⁶.

It was estimated by a retrospective study that, patients with chronic Post sternotomy pain (CPSP) complained of neck pain 33%, shoulder pain 47%, chest wall pain 22%, intra-scapular pain 42%, and elbow pain 10% out of which neck pain causes persistent pain in upper limb with restricted movements in daily living activities⁷. Musculoskeletal disorders comprise most commonly upper extremity and chest pain in post sternotomy patients⁸.

Neck pain is at 2nd position after sternum pain, causing pain due to insertion of central venous catheter (CVC) in the jugular vein which might leads to pneumothorax⁹. CVC is inserted to gain blood tests, measure central venous pressure and deliver medications. It stays in position for several hours after surgery. Hygiene level should be high because there is an increased risk of infection and due to its placement position neck and shoulder movements are restricted¹⁰.

Both physical and psychological health is affected due to CPSP which can prolong the healing time and causes a bad impact on the quality of life¹⁰. 25% of patients are affected by post-operative chronic pain, out of which 80% had pain for 2 or more days per week. These patients are also at a higher risk of anxiety and depression levels¹⁰. The purpose of the research project is to identify the frequency of neck pain and its associated factors among Postoperative CABG patients. Occurrence of chronic pain after cardiac surgery varies from 18-61% which affects the standard of life and causes restrictions on daily activities⁸. About 30% of cases reports that chronic postoperative pain (CPOP) is present at the site of surgery along with the upper part of the body (head and neck) and at the back⁹. Effects of CPSP should not be avoided, because it has a significant impact in on our daily living activities¹⁰.

Methodology

A cross-sectional study was conducted in Dow University of Health Sciences Karachi, during April 2018 to November 2018, a survey was conducted through a questionnaire as per the sample size of 78 calculated by open epi calculator. Both male and female patients age between 35 to 75 years were included from Out Patient Department of hospital with a history of postoperative CABG one year follow up with or without upper extremity or neck pain. Patients were excluded who have any other infectious diseases or history of chronic disease such as (Cancer, Tuberculosis, and any surgical history other than CABG).

Postoperative CABG patients with 1 year follow up were asked to fill the pain questionnaire. All patient gave there informed consent. As a next step, the patients were asked to grade their pain on VAS¹¹. The patients in the study were asked to fill a questionnaire of NDI¹², which focuses on pain. After filling questionnaire form, results were calculated by

giving scores. Data was analysed on SPSS version 21 and Chi square T test was applied, to see the frequency of neck pain and its associated factors in Postoperative CABG patients

Results

Out of 78 patients, 38 (48.6%) are termed as missing because they did not have any musculoskeletal pain at upper extremity and neck after CABG. 40 (51.3%) patients had neck pain who filled the NDI questionnaire to explain the frequency of pain. age range between 30 – 75 years. The post-operative pain was more common in males. All patients underwent CABG within 1 year follow up. After operation 40 (51.2%) patients develop pain in neck. On assessing severity of neck pain on VAS, the mean score was 5.32 with a range of 1 – 10. 38 patients had no pain, 8 patients had mild, 20 had moderate and 12 had severe pain. Table I shows that there 46 male and 32 female out of n=78. Mean age was 52.4, weight 88.9 kg, height 5.4 ft. and BMI 33.17 kg/m².

Table I: Shows the demographics details of the study population

Variables	Categories	(n=78)
Gender	Male	46(58.9)
	Female	32(41)
Age (years)		52.4±7.8
Weight (kg)		88.9±10.2
Height (ft)		5.4±5.2
BMI (kg/m ²)		33.17±4.3

*Values are given as Mean±SD or n(%)

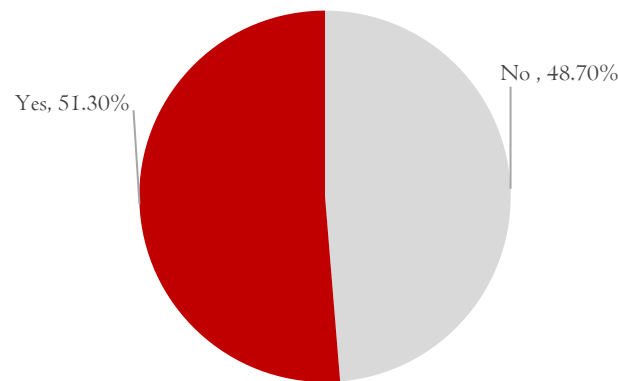


Figure 1: Prevalence of Neck Pain in the post-operative CABG patients

Figure 1 shows that 51.3% of post-operative CABG patients develop neck pain 51.3% patients and 48.7% reported no neck pain within one year follow up.

Table 2 described that on NDI 16 were having moderate pain, 09 worst pain and 06 severe pain whereas on VAS 20 had moderate pain, 12 severe and 08 had mild pain.

Table 2: Distribution of patients in relation to VAS and NDI Score

	Sub-Categories	n(%)
Neck Pain Intensity NDI (Score 0-50)	No Pain	4(5.1)
	Moderate Pain	16(20.5)
	Fairly Severe Pain	6(7.7)
	Very Severe Pain	5(6.4)
	Worst Imaginable Pain	9(11.5)
VAS (Score 0-10)	No Pain	0
	Mild Pain	8(20)
	Moderate Pain	20(50)
	Severe Pain	12(30)

*NDI-Neck Disability Index; VAS- Visual Analogue Scale

*Values are given as n(%).

Table 3 describes the 10 sections of NDI (Neck Disability Index) each. Participants found difficulty in doing recreational activities (30%), driving (25%), work (26%), and lifting weights (22%) while they can manage personal care, reading and concentration with less pain.

Table 3: Descriptive data and distribution of responses for each item in the NDI (n = 78)

Item	Mean	% Individuals with lowest score	% Individuals with highest score
Pain	11.5	3	20
Personal Care	9.5	4	15
Lifting	16	10	22
Reading	5	3	7

Headaches	13.5	6	21
Concentration	10	4	16
Work	18	10	26
Driving	16.5	8	25
Sleeping	9	4	14
Recreation	16.5	3	30

Table 4 shows significant P-value were observed for patients with neck pain as compared to sleeping, driving, washing and carrying heavy objects.

Table 4: Consequences of Neck Pain on Quality of Life of the patients

Variables	Patients with neck pain n(%)	P-value
Sleeping	34 (43.5)	< 0.001
Carrying Heavy Objects	26 (33.3)	< 0.001
Driving	18 (23.07)	< 0.001
Washing	22 (28.20)	< 0.001

Discussion

Based on our knowledge and understanding through literature review this is the first study of its kind in which the frequency of neck pain and its associated factors among Postoperative CABG patients were studied. Overall neck pain reported in our study is 51.3% in which mild to moderate neck and shoulder stiffness, frozen shoulder, trapezius and sternocleidomastoid muscles trigger points are represented. Risk factors identified for neck pain were presence of Intravenous catheter in the neck, patient's anxiety and fear level and restricted Range of Motion of neck and shoulder.

While we found 51.3% (Table 1) prevalence of neck pain, other studies have showed that musculoskeletal pain was most prevalent in neck, shoulder and upper region of the body from 1st Postoperative day till 6th week¹³. According to a prospective study it was estimated that the overall percentage of non-cardiac pain after sternotomy for cardiac surgery is quite prevalent (28%). Most of the patients reveals moderate pain intensity but

some (1%) report severe pain, never being lower than 54 mm on VAS¹³.

Our study results also shows that on NDI, 16 (20.5%) patients were experiencing moderate pain at the time of study, 11.5% patients were having worst imaginable pain, 7.7% patients complain fairly severe pain, 6.4% have very severe pain (Table 2). In our study patients who filled the NDI revealed that 16(20%), were facing moderate pain, 18 (23.1%) were experiencing moderate headaches and cannot lift heavy weights because of pain, 20 (25.6%) cannot read and 15(19.2%) experience difficulty in taking care of themselves like bathing, dressing etc. (Table 3).

Post-sternotomy pain always remain the complication of cardiac surgery but this pain syndrome is always poorly evaluated and no preventive measures is taken to prevent it. A two year multicentre prospective study was conducted in 2014 to investigate the prevalence and risk factors for persistent postoperative non-anginal pain after cardiac surgery⁸. A total number of 1247 patients

completed the preoperative assessment and follow-up were taken at 3 and 24 months. 84% of patients were having pain at three month and 78% were having pain even after two years of surgery. Another study addressed the prevalence, characteristics, effect, and predictors of CPOP 1-3 years after cardiac surgery. This concluded that non-anginal CPOP affected 23% of patients⁹. High-level of anxiety, sleep disturbance and depression also seem to affect their quality of life.

A research was conducted in Department of Cardiac Rehabilitation Rawalpindi and Okara Pakistan and it was estimated that chronic neck and chest pain was more common in Postoperative CABG patients¹⁴. A total of 100 patients were included in this study to assess the location and intensity of chronic non-anginal post-operative pain after heart surgery and investigate the predicting factors. After surgery, 95.5% patients had pain in chest-wall, 89.7% in shoulders and 65.5 % in neck¹⁴. Postoperative Shoulder Pain was more recorded in age group >50years in which females are 91.3% and males are 72.2%. Postoperative neck pain was presented in above 60 years age of patients in which females were 73.9% and males were 75.7%. Those who were undergoing the CABG procedure developed neck pain rapidly in higher frequency than those who were having Percutaneous Coronary Intervention. They recorded that neck pain is most prevalent in Chronic Obstructive Airway Disease rather than other factors. This pain can be described as throbbing, dull, deep pain. Pain after CABG procedure is severe causing stress response and tissue trauma. This study concludes that relationship existed between CPOP and Chronic Obstructive Airway Disease¹⁴.

A study was conducted in 2017 and it was stated that severe intense CPSP is present in about 38% of patients which was moderate to severe¹¹. The most contributing factor to this pain is highest level of anxiety. In this study

none of the patient reported the neck pain or stiffness or any presence of trigger points in muscles around neck region. CPSP is the main problem in Health-related Quality of life according to this study and starting early pain management will decrease the prevalence of this CPSP¹¹.

Conclusion

This cross-sectional survey shows that the overall incidence of neck pain after CABG is 51.3%. Most of the patients experience a moderate pain intensity which obstruct daily living activities and decrease quality of life. CPSP is an important complication that may have a significant impact on the patient's everyday life. Future studies will show whether minimizing complications, improving postoperative care and starting early adequate pain management will reduce the incidence of musculoskeletal disorders among patients. Longitudinal prospective studies are needed to further evaluate risk factors, including inadequate postoperative pain relief in both acute and chronic period.

Conflicts of Interest

None.

Acknowledgement

We would like to especially acknowledge the cardio thoracic surgeons, Clinical staff, and nurses of Cardio vascular Department of Dow University of Health Sciences, Karachi for all their co-operation and support.

Funding

None.

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