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ORIGINAL ARTICLE

Estimation of Prevalence Rates of the Acute Coronary Syndrome (ACS) among Patients Presented with Chest Pain in the Cardiac Center

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ABSTRACT

Background: Chest pain has been observed in the number of peoples. This is the major cause of hospital visit.
Objective: The purpose of the study was to observe the acute coronary syndrome prevalence. The association of the chest pain with the cardiovascular risk factors was also studied.
Study design: It is an observational study with statistical approach**,** conducted at Wazirabad Institute of Cardiology, Wazirabad and Khyber Teaching Hospital, Peshawar.
Material and Methods: The study was conducted from Dec 2021 to May 2022. The 101 patients visited the teaching hospital of our department were included in the study. Focusing on the history of hypertension diabetes and smoking all the participants involved in the study were interviewed. The acute coronary syndrome prevalence rates were calculated. In order to find the correlation of the variables with the ACS the linear regression analysis was performed.
Results: The calculated mean age was observed to be 54± 16.5 years. Out of all the patients included in the study the 75% were male participants, rest of them were female. The hypertension symptoms were observed in the 37% patients. The diabetes were observed in 26% while 23% patients were smokers. The 50% patients had non-specific chest pain while 31% patients had atypical chest pain. The 18% patients had the typical chest pain. There were total 33% patients that were suffering from acute coronary syndrome. Among these patients there were 7% patients that had unstable angina and 10% had NSTEMI, with only 17% patients suffering from STEMI. The positive correlation of acute coronary syndrome with smoking hypertension age, gender was observed.
Conclusion: ACS is the lethal forms of pain. It causes serious health issues especially in patients above 40 years. The prevalence of ACS and its link with chest pain in patients at the tertiary health center was analyzed. The prevalence of the disease has strong connection with the risk factors.
Keywords: Acute coronary syndrome (ACS), hypertension, atherosclerotic plaque, chest pain and risk factor.

INTRODUCTION

The symptom of chest pain is associated with different diseases. ACS is known as significant differential diagnosis. It is also associated with the cardiac chest pain. The major factor associated with the chest pain is acute coronary syndrome[1-2]. The flow of the blood is restricted by the formation of atherosclerotic plaque inside the coronary arteries. The coronary arteries events are observed, after every twenty-five seconds, in the women or men around the globe [3-4]. The highest cases of morbidity and mortality are associated with the ACS. The need of the hour is to timely recognize the disease and initiate the therapies as soon as possible. The previous studies have showed the ischemic nature of chest pain[5]. The studies have reported the close association of the ACS with gender, smoking, family history and age. The type of chest pain which is provoked by the exertion is called as the sub-sternal chest pain. The chest pain having two characteristics is called atypical while the chest pain with less than two characteristics is called as non-specific. The chest pain with all three characteristics is called as typical chest pain[6-7]. The risks of coronary artery CAD are higher in typical anginal chest pain while CAD risks are intermediate in the atypical anginal chest pain. The women above 50 years have the higher risk for non-specific chest pain[8].

It is the one of the recognized cause of mortalities in developing countries. This disease shares the highest burden in the South Asian countries. It is the major cause of premature deaths. The 8.1 million deaths cases of ischemic heart disease (IHD) were reported by the WHO. The associated deaths cases have increased by 42%. These are recognized as leading causes of hospital deaths in Pakistan. The evolving myocardial infraction and unstable angina are the main symptoms of the ACS[9]. The psychiatric disorder like panic, anxiety and depressive disorders are associated with non-cardiac chest pain. These range from 16%-43%. While their incidence ranges were from 23%-57% in the patients with the non-specific chest pain. About 15% of the patient suffering from anxiety has the symptom like chest pain. The patients suffering from ACS normally observed with the peripheral artery disease (PAD). The inadequate and limited knowledge about prevalence of ACS in Pakistan is reported. There is need to find the prevalence rates of ACS in Pakistanis[10].

MATERIAL AND METHODS

This observational study was conducted in the teaching hospitals of our institute from Dec 2021 to May 2022. The 101 patients participated in this study. The review board of our institute approved the study. The patients of the age below 18 years were excluded from the study. The patients having complaint of chest pain resulted from any thoracic surgery, local infection and trauma were also excluded. The informed consent was taken. The sample size was calculated. The chest pain type was characterized. The type of chest pain which is provoked by the exertion is called as the sub-sternal chest pain. The chest pain having two characteristics is called atypical while the chest pain with less than two characteristics is called as non-specific. The chest pain with all three characteristics is called as typical chest pain. The result obtained from electrocardiogram and cardiac biomarker such as creatinine phosphokinase myocardial band confirmed the ACS diagnosis.

The patients were further characterized into non-ST segment elevation myocardial infraction (NSTEMI), unstable angina and ST-segment elevation myocardial infraction (STEMI). The patients were categorized as STEMI if they have ST elevation of 1mm or more in two contagious ECG. Those in which no ST elevation was observed but have positive biomarkers were labeled as NSTEMI. Those which don't either have ST elevation, neither positive biomarker were labeled as unstable angina. Focusing on the history of smoking diabetes and hypertension the participants involved in the study were interviewed. The acute coronary syndrome (ACS) prevalence rate was calculated. For the statistical analysis the SPSS was used. The linear regression analysis was performed to find the correlation with the variables. The values were considered significant if these are less than 0.05.

RESULTS

The 101 number of patients contributed in this study. Among them there were 75% were male participants, rest of them were female. The incidence of hypertension was also found in patients with 37% patients showing symptoms of hypertension. There were 26% patients that reported diabetes and among the total 101 patients there were 23% smokers. The general characteristics of participants are explained in table 1. Multiple patients reported chest pain that was non-specific (50%). Among them there were 31% patients that had atypical sort of chest pain and 18% of them had typical chest pain. The nature of the pain is shown in the table no.2. There were total 33% patients that were suffering from acute coronary syndrome. Among these patients there were 7% patients that had unstable angina and 10% had NSTEMI, with only 17% patients suffering from STEMI.

There were several linear regression studies carried out that showed quite significant relation of age, chest pain, hypertension and gender. Smoking and diabetes also play a very important role in causing acute coronary syndrome. The table 2 shows the studies of variables and their p values in detail.

The data entry and the statistical studies were carried out in statistical package. The P values were calculated and the value less than 0.05 was taken as significant.

Table 1: Basic features of the patients

Features	Values
Average age of participants	54± 16.5
Male (frequency)	66 (66%)
HTN	37 (37%)
Diabetes mellitus	30 (30%)
Smokers	26 (26%)

Table 2: The type of chest pain

Nature of chest pain	Percentage
Non specific	50%
Atypical	30%
Typical	19%

Table 3: Studies and p values of relationship of variable with acute coronary syndrome

Features	Coefficients B (unstandardized)	Standard error of Coefficient B	Coefficients B (standardized)	t	P value
Age	0.005	0.004	0.208	2.45	0.015
Sex	-0.180	0.08	-0.1.70	-2.14	0.034
Type of pain	-0.180	0.52	-0.265	-3.33	0.002
HTN	0.233	0.78	0.234	2.987	0.004
Diabetes mellitus	0.078	0.87	0.078	0.899	0.378
Smoking	0.244	0.99	0.236	2.6	0.013

DISCUSSION

The mean age of the participants that contributed in this study was 53 ± 15 years. Majority of the participant were male. This work was carried out on 101 patients to find out that the prevalence or occurrence of acute coronary syndrome in the patients that were reported with chest pain in the hospital1[11-12]. The data was gathered and the studies and analysis was carried out the tables above shows all the data arranged in a precise way. According to a study carried out by Bjornson and his fellows the mean age of the patients that usually report chest pain at the hospital was above 60 [13-14]. And there were almost 56% patients in their study. As per studies by Sharma and his fellows the chest pain was reported in patients that had average age 35-45 years and among them there were 68% male. In our study it was found that the incidence or occurrence of hypertension in the participants with chest pain was 37%, with 236% patients reported about diabetes and 23% of them were smokers [15-16]. As per studies by Gandhi and his fellows it was found that among the patients that reported chest pain at the tertiary care center, 61% of them had hypertension and 30% of them had diabetes mellitus. However, after studies by Mohamed it was found that the case of non-traumatic chest pain was in 7% of the patients and 23% of them had diabetes mellitus [17]. Among the participating individuals that had chest pain, 33% of them reported about acute coronary syndrome. As per studies by Martinez-Selles and his fellows there were 15% cases of ischemic pain in their patients. Another study revealed that ACS was found as etiology of chest problem in case of 23% of the patients.

Another study by Belguith and his fellows showed that there was non-traumatic chest pain in 48% of the patents that contributed in the study [18-19]. The occurrence and prevalence of acute coronary syndrome in case of our study was found to be in between and quite comparable to that of the data published in previous articles. The data clearly shows that there is a link of acute chest pain and the prevalence of acute coronary syndrome and it is also in accordance with the previous analysis carried out in the literature. There are some factors that showed a slight variation and that can be because some factors like racial, geographical differences among the patients contribute to different rate of prevalence[20]. If the degree of health care facilities and other parameters are well taken care off in any area, then the prevalence can be less in that region. Such factors might have played its role in making variations in the degree of prevalence at some points.

In other studies, ischemic sort of chest pain was also reported in patients in various proportions. There was a very significant link found between the factors like HTN, family history of cardiovascular issues and gender in causing acute coronary syndrome in case of patients that reported chest pain at the hospital[21]. As per our studies it was found that there is a link between age, gender, smoking habits, diabetes mellitus and the nature of the pain in the chest region that can contribute to cause acute coronary syndrome in patients that report chest pain in the tertiary health care unit. There were number of studies that support these results as several other findings have also found that the above mentioned parameters have link with the acute coronary syndrome. This study therefore puts effort to report that the link between diabetes mellitus, degree of chest pain, age, gender and hypertension has role in prevalence of acute coronary syndrome in case of patients with chest pain at the tertiary health care unit. However, there can be a number of limitations that can be overcome with care for future reference[22]. Like in our study the time duration was not as such appropriate, it was limited that may have contributed in producing variations in the results. Moreover, there were very few disease causing factors were selected for the analysis, a more detailed analysis with additional risk factors can prove to be effective for future studies. Thus larger study groups with more elaborate risk factors can help produce comprehensive results for the future use[23-24].

CONCLUSION

ACS is the lethal forms of chest pain that cause serious health issues specially in patients above 40. The prevalence of ACS and its link with chest pain in patients at the tertiary health center was analyzed and it was found that there was a strong link between the risk factors and the prevalence of the disease. Therefore, if any of these symptoms are observed in patients they should be given proper management on time.

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