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CLINICAL CHARACTERISTICS OF PATIENTS PRESENTING WITH TYPICAL AND ATYPICAL CHEST PAIN IN EMERGENCY DEPARTMENT: A CLINICAL AUDIT

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ABSTRACT

Objective:To determine and compare the frequency, clinical characteristics and outcomes of patients reporting in Emergency Department of AFIC& NIHD with typical and atypical chest pain.

Study Design: Comparative cross-sectional study.

Place and Duration of Study: Emergency Department of Armed Forces Institute of Cardiology & National Institute of Heart Diseases Rawalpindi, from 1stDecember 2016 till 31stDecember 2016.

Material and Methods: All the patients presented with typical and atypical chest pain during our study time period were included in the study. A data collection tool was formulated by R & D Department to collect the relevant information.

Results:There were total 215 patients recruited with chest pain in emergency department during our study period. The mean age of the patients was 56.17 ±10.98 years.130(60.4%) patients had typical chest pain while 85(39.5%) patients presented with atypical chest pain. Male patients were found to be more with typical chest pain 105(80.7%). Clinical Characteristics and co-morbidities showed, diabetes in 58(44.6%) patients of typical chest pain (p=0.01), 65 (50.0%) patients were hypertensive (p=0.88) and 36(27.6%) hadischemic heart disease (p=0.02). Family history of cardiovascular disease was positive in 34(26.1%) with$p$-value=0.01. The most common diagnosis of typical chest patients were acute myocardial infarction 80(37.9%) with statistically significant p value (p<0.01).Underlying causes for the majority of atypical chest pain patients 77(90.5%) were gastric causes and anxiety related issues (p=0.01). About 25(11.6%) patients under went primary PCI, injection streptokinase were administered to 15(11.5%) patients, 16(12.3%) patients were late for injection streptokinase, 15(11.5%) patients were referred to OPD while 53(40.7%) were admitted for further evaluation.

Conclusion: Patients with life threatening etiologies for chest pain may appear deceptively well, manifesting neither vital sign nor physical examination abnormalities. Emergency doctors must recognize and refer them for treatment and hospital admission.

Keywords: Atypical chest pain, Injection Streptokinase, Typical chest pain,Unstable Angina.

INTRODUCTION

Chest pain comes in many varieties; patients present with a spectrum of signs and symptoms reflecting the many potential etiologies of chest pain[1]. Diseases of the heart, aorta, lungs, esophagus, stomach, mediastinum, pleura and abdominal viscera may all cause chest discomfort[1,2]. Chest pain can be the presenting complaint in a myriad of disorders ranging from life threats such as acute myocardial infarction (AMI) to mild self-limiting disorders such as muscle strain. Possible cardiac chest pain can be viewed as a continuum, ranging from acute myocardial infarction to simple short lived angina[3,4]. Within this spectrum lie the acute coronary syndromes with critical cardiac ischemia and minimal myocardial damage[2,5].

Chest pain and symptoms consistent with myocardial ischemia are one of the most common reasons for emergency department evaluation, accounting for approximately 8% to 10% of the 119 million emergency department visits yearly around the world[3,6]. Chest pain contributes approximately six million annual visits to

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emergency departments in the United States, making chest pain the second most common complaint[7-9]. In the United Kingdom 2%–4% of all new attendances at emergency departments present with chest pain[10]. South Asian countries account for about quarter of world's population and contribute the highest proportion of the burden of cardiovascular diseases[11]. In Pakistan it is estimated that one in five middle aged adults may have underlying cardiovascular diseases[3,12]. Prevalence of myocardial infarction is 11.2%, more common in males 13.3% than females 7.9%[13-14].

The management of patients with chest pain is a common and challenging clinical problem. Although most of these patients do not have a life-threatening condition, the clinician must distinguish between those who require urgent management of a serious problem such as acute coronary syndrome (ACS) and those with more benign entities who do not require admission[15].

Table-I: Comparison of demographic and clinical features of typical and atypical chest pain patients.

Variables	Typical Chest Pain (n=130)	Atypical Chest Pain (n=85)	*p*-value
Demographics			
Gender			
Male	105 (80.7%)	61 (71.7%)	0.57
Female	25 (19.2%)	24 (28.2%)	
Age			
≤ 20 yrs	1 (0.7%)	2 (2.3%)	
21-33yrs	6 (4.6%)	7 (8.2%)	
34-46 yrs	19 (14.6%)	13 (15.2%)	0.04
47-60 yrs	28 (21.5%)	31 (36.4%)	
61-73 yrs	57 (43.5%)	26 (30.5%)	
≥ 74 yrs	19 (14.6%)	6 (7.0%)	
Clinical Investigations			
Raised CK & CKMB	117 (19.0%)	45 (52.9%)	0.78
Troponin I Positive	108 (83.0%)	32 (37.6%)	0.55
ECG Changes			
ST Segment Elevation	64 (49.2%)	6 (7.0%)	
ST Segment Depression	48 (36.9%)	9 (10.5%)	0.93
New Onset LBBB	11 (8.4%)	3 (3.5%)	
Normal ECG	7 (5.3%)	67 (78.8%)	

OPERATIONAL DEFINITIONS

Typical Chest Pain: It is defined as chest pain that meets the three of the following characteristics; 1) Substernal chest discomfort of characteristic quality and duration, 2) Provoked by exertion or emotional stress, 3) Relieved by rest and/or nitroglycerine[7].

Atypical Chest Pain: It is defined as chest pain or discomfort with two of the above characteristics[7].

MATERIAL AND METHODS

It was a comparative cross-sectional study which was conducted at emergency department of AFIC &NIHD, Rawalpindi. Study was carried out from 1stDecember till 31stDecember, 2016. All the patients presenting in ER with typical and atypical chest painwere included in the

study.While patients presenting with the complaint of chest pain other than typical and atypical chest pain (palpitations, shortness of breath) and already diagnosed cases of myocardial infarction were excluded from the study.

Sampling Technique was convenient based purposive sampling. Data collection tool having different demographic and clinical variables related with chest pain, was used. Data were collected on daily basis in ER and was entered into the computer on the same day to maintain the quality. SPSS-21 was used to enter and analyze the data.

RESULTS

There were total215 patientsrecruitedwith chest pain in emergency departmentduring our study duration. The mean age of the patients was 56.17 ±10.98 years. Minimum age was 15 years while maximum age of the patients was 86 years. Out of 215 patients of chest pain, 130(60.4%) patients had typical chest pain while 85(39.5%) patients presented with atypical chest pain. Male patients were found to be more with typical chest pain 105(80.7%) while females were 25(19.2%) and this result was not statistically significant with*p*-value 0.57 as shown in table-I.

Table-II: Comparison of co-morbid, diagnosis and clinical outcome of typical and atypical chest pain patients.

Variables	Typical Chest Pain(n=130)	Atypical Chest Pain(n=85)	*p*-value
Co-Morbids			
Diabetes	58(44.6%)	24(28.2%)	0.01
Hypertension	65(50.0%)	42(57.6%)	0.88
Hyperlipidemia	1(0.7%)	3(3.5%)	<0.01
Ischemic heart disease	36(27.6%)	7(8.2%)	0.02
Smoking	31(23.8%)	17(20.0%)	0.01
Asthma/COPD	10(7.6%)	8(9.4%)	0.01
Inactive life style	13(10.0%)	10(11.7%)	0.01
Family history of cardiovascular diseases	34(26.1%)	31(36.4%)	0.01
Diagnosis			
Acute MI	80(61.5%)	5(5.8%)	0.01
Unstable angina	22(16.9%)	1(1.1%)	0.40
Pulmonary embolism	4(3.0%)	2(2.3%)	0.16
Gastric causes	4(3.0%)	26(30.5%)	0.01
Aortic dissection	2(1.5%)	-	1.20
Other causes	18(13.8%)	51(60.0%)	0.01
Outcome			
Primary PCI done	23(17.6%)	2(2.3%)	0.01
Injection streptokinase given	15(11.5%)	1(1.1%)	
Late for injection streptokinase	16(12.3%)	-	
Admitted due to complications of MI	6(4.6%)	-	
Referred to OPD	15(11.5%)	59(81.1%)	
Admitted for further evaluation	53(40.7%)	13(15.2%)	
Death	2(1.5%)	-	

Clinical Characteristics and co-morbidities showed, diabetes in 58(44.6%) patients of typical chest pain (*p*=0.01), 65 (50.0%) patients were hypertensive with typical chest pain (*p*=0.88), 36(27.6%) patients had ischemic heart disease (p=0.02), while 31(23.8%) patients with typical chest pain had the history of smoking (*p*=0.01).Time since the start of chest pain is shown in figure.Family history of cardiovascular disease was positive in 34(26.1%) typical chest pain patients with statistically significant *p*-value (*p*=0.01).The most common diagnosis of typical chest patients was found to be, acute myocardial infarction 80(61.5%) with statistically significant *p*-value (*p*=0.01), followed by unstable angina 22(16.9%). Underlying causes for the majority of atypical chest pain patients 77(19.5%) were noted to be gastric causes and anxiety related issues (*p*=0.01). Outcome of the patients with typical chest pain was, primary PCI done on 23(17.6%) patients, injection streptokinase was administered to 15(11.5%) patients, 16(12.3%) patients were late for injection streptokinase, 15(11.5%) patients were referred to OPD while 53(40.7%) were admitted for further evaluation. Mortality of the patients was 1.5% as shown in table-II.

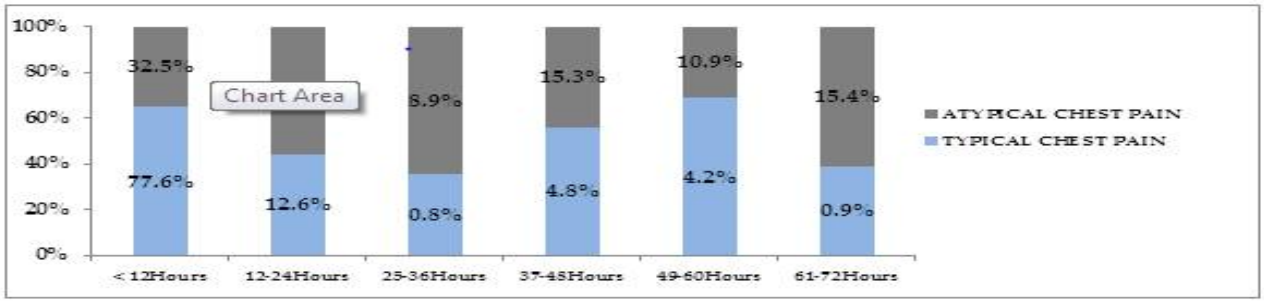

Figure: Percentage of patients presenting at different time.

DISCUSSION

Chest pain is one of the few disease processes in which patients may initially appear to be well but in fact have an underlying life-threatening condition. Inadvertent discharge of patients with acute coronary syndrome has been associated with a short-term mortality of 2%[3]. Identifying patients with chest pain who are at risk of adverse events is important not only to emergency department physicians but also to all physicians who evaluate such patients[5].Clinicians in the emergency department must focus on the immediate recognition and exclusion of life-threatening causes of the chest pain[6,10].

The present study helped us to understand various factors associated with the management of patients of chest pain in our local population.In this study the mean age of the patients was 56.17 ± 10.9 years with majority of the patients being above the age group 40 years. While in Western countries as well as in other Asian countries, majority of the patients presenting with chest pain in emergency departments, also belonged to the older age groups[3,9-11]. One possible reason for the typical chest pain being common in older age groups, is the development of risk factors of cardiovascular diseases with advancing age[2]. Male patients were more in number and this result was in accordance with results of various national and international studies[3,6,14]. Most common co-morbid were found to be diabetes mellitus (44.6%), then hypertension (50.0%), positive family history (26.1%), smoking history (23.8%) and ischemic heart disease (27.6%). This is in agreement with the documented data from the developed and third world countries[4,12]. Majority of the patients of typical chest pain were diagnosed with acute myocardial infarction 80(61.5%) and unstable angina 22(16.9%). Showing the very strong relation of typical chest pain with myocardial ischemia (*p*<0.01). Similar

findings have been reported in previous studies[10,13-15].

CONCLUSION

Patients with life threatening etiologies for chest pain may appear deceptively well, manifesting neither vital sign nor physical examination abnormalities. Emergency doctors must recognize those patients who may have acute myocardial infarction or unstable angina, and refer them for treatment and hospital admission. The consequences of not diagnosing, but discharging home, patients with significant cardiac pathology, may be serious. Not only may the patient be denied life-saving treatment for cardiac arrhythmias, but also the chance of benefiting from thrombolytic and anti-platelets therapy become less.

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CONFLICT OF INTEREST

This study has no conflict of interest to declare by any author.

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