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Original Research Article

A Study of Clinical Profile, Characteristics and Outcome of Patients Presenting with Chest Pain to the Tertiary Care Center (Teaching Hospital), Belagavi

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Abstract

Introduction: Chest pain may be a symptom of a number of serious conditions and is generally considered a medical emergency. Patients presenting with chest pain are a common daily occurrence in emergency medicine. Chest pain is quite common and up to 25% of the general population experience it in some form during their lifetime. The causes for cardiac-mimicking chest pain are numerous, but the most common causes can be narrowed down by system: musculoskeletal, gastrointestinal, psychological, and pulmonary. Proper management of non-cardiac chest pain is also important for patient well-being and it also reduces health care costs and increases the quality of life of patients.

Objectives: To study the clinical profile, characteristics and outcome of patients presenting with chest pain to tertiary care centre (teaching hospital), Belagavi.

Methods: The Observational Cross-Sectional study was conducted on 200 patients presenting to the tertiary care centre (teaching hospital), Belagavi from January 2018 to December 2018, among patients presenting with chest pain who satisfied the inclusion criteria.

Results: Out of 200 patients who reported to the emergency department with complaints of chest pain, 74 (37%) patients had CVS cause of chest pain, 48 (24%) had GIT cause, 46 (23%) had MSK cause, 18 (9%) had a respiratory cause, 10 (5%) had psychiatric cause and 4 (2%) patients had other causes of chest pain.

Conclusion: As chest pain is the most common symptom in general practice and the present study also suggests that cardiac causes should be considered as the prime cause until they are ruled out. Therefore, thorough history and physical examination should be part of the initial evaluation of all patients with chest pain.

Keywords: chest pain, MSK, Git, psychiatry, respiratory.

Introduction

Chest pain is one of the most common reasons for admitting patients to the emergency room [1]. Chest pain is quite common and up to 25% of the general population experience it in some form during their lifetime [2]. Chest pain is the third most

common reason for visits to the ED globally. Some of these patients will have serious, life-threatening causes of their pain, such as acute myocardial infarction (AMI), unstable angina, pulmonary embolus, aortic dissection, and pneumothorax [3]. By elimination or confirmation of the most serious causes, a diagnosis of the origin of the pain may be made. Delay in diagnosis and appropriate treatment can lead to increased morbidity and mortality in these patients [4].

However, many patients with chest pain may have less serious disorders, for example, costochondritis, oesophagal pain, gastroesophageal reflux, mitral valve prolapse or referred GI pain. The ability to rapidly and accurately diagnose the 15- 25% of patients who present with chest pain that is a manifestation of ACS is of critical importance because the short-term mortality for patients with myocardial infarction who are mistakenly discharged from the hospital is double the rate of those who are admitted. 50 to 80% of the patients admitted to the ED because of chest pain are eventually discharged with a diagnosis of non-cardiac chest pain or chest pain of unknown cause [5]. Few physicians pay attention to the potential source of the pain in this particular subgroup but focus on the risk of missing coronary disease [6].

The causes for cardiac-mimicking chest pain to the eventually discharged with a diagnosis of noncardiac chest pain or chest pain of unknown cause physicians pay attention to the potential source of the pain in this particular subgroup but focus on the risk coronary disease. The causes for cardiac mimicking chest pain are numerous, but the most common causes can be narrowed down by system: musculoskeletal, gastrointestinal, psychological, and pulmonary [7].

Proper management of non-cardiac chest pain will lead to better utilization of resources, reduced health care costs, and increased quality of life for patients. The approach to chest pain, therefore, is to exclude benign conditions and to rapidly identify and treat potentially fatal and serious conditions[8]. Sometimes as symptoms and presentation may overlap each other and it may be difficult for the primary physician to distinguish and come to a conclusion. This study was conducted to investigate the common cause of chest pain presenting to the emergency room.

Objectives:

To study the clinical profile, characteristics and outcome of patients presenting with chest pain to tertiary care centre (teaching hospital), Belagavi.

Material and Methods:

Study Area: The study was conducted in the Department of Medicine, tertiary care center (teaching Hospital), Belagavi.

Study Duration: Period of one year from January 2018 to December 2018.

Study Design: Observational Cross-Sectional Study.

Study Population: All patients presenting with the chief complaint of chest pain to the tertiary care centre (teaching hospital), Belagavi and those who satisfied the inclusion criteria.

Inclusion criteria:

1. Patients presenting with chest pain as the chief complaint

2. Patients aged ≥18 years

Exclusion criteria:

1. Patients with a history of trauma.

2. Patients not willing to give consent

Methodology:

All the patients who presented to the emergency with the complaint of chest pain and those who satisfy the inclusion criteria were included in the study. Written informed consent was taken from all participants. A detailed history was taken and recorded as per

the case recording format. All patients were subjected to detailed clinical examination and relevant laboratory investigations as per required.

History:

Three key clinical features of chest pain can help predict the risk of CAD: (1) location (2) aggravating factors and (3) alleviating factors. Chest pain with all 3 characteristics was considered angina chest pain. If only 2 of the 3 characteristics were present, chest pain was considered atypical angina. Non-anginal chest pain, with only 1 of the 3 characteristics present. ACS included acute myocardial infarction (AMI) and unstable angina. Once a cardiac origin for the chest pain was excluded, the next evaluation was to search for evidence of significant gastroesophageal reflux. Factors that might suggest an oesophagal origin included symptoms that continue for hours, retrosternal pain without any lateral radiation, pain that was related to meals or that interrupted sleep, and pain that was relieved by antacids, or the presence of heartburn, dysphagia, or other oesophagal symptoms. Patients of NCCP of pulmonary origin may complain of chest pain that ranges from sharp and pleuritic to dull and substernal. Physical examination revealed fever, rales, decreased breath sounds or bronchial breath sounds and varying degrees of respiratory distress. Patients with NCCP of musculoskeletal origin result in acute, well-localized, sharp chest pain. Patients, who appear otherwise well, felt increased discomfort with deep respiration or movement. Patients of NCCP of psychiatric origin had attacks of chest pain which were accompanied by any four of the following symptoms: palpitations, diaphoresis, tremor, dyspnea, choking, nausea, dizziness, derealization or depersonalization, fear of losing control or dying, paresthesia's, chills or hot flushes. All patients were subjected to haematology, biochemical tests, ECG and Chest X-Ray. Cardiac biomarkers, Echocardiography, Endoscopy and Ultrasonography were done in patients wherever required.

Statistical Analysis

Data collected were entered in a Microsoft excel sheet & SPSS software version 22 was used for statistical analysis. Data were analysed using a chi-square test to determine the association between statistical variables. A P- the value of <0.05 was considered significant.

Results:

A total number of 200 patients with chest pain were enrolled in the study, of which 61% were males and 39% were females. The maximum number of the patients (31%) were in the age group of 36-45 years (Table 1).

Table 1: Age and Sex Distribution of Study Population (N=200)

Age Groups	N (%)
18-35 years	37(18.5%)
36-45 years	62(31%)
46-55 years	47(23.5%)
56-65 years	27(13.5%)
>66 years	27(13.5%)

The onset of chest pain was sudden in 116 (57.9%) patients out of which 77 (66.2%) were males. Among these 116 patients,66 patients (56.89%) had the cardiovascular cause of chest pain. Among patients with the cardiovascular cause of chest pain, 38 (51.35%) had retrosternal chest pain and 24 (32.43%) had left-sided chest pain while 32 (66.66%) patients with GIT cause had retro-sternal chest pain. In patients with CVS cause

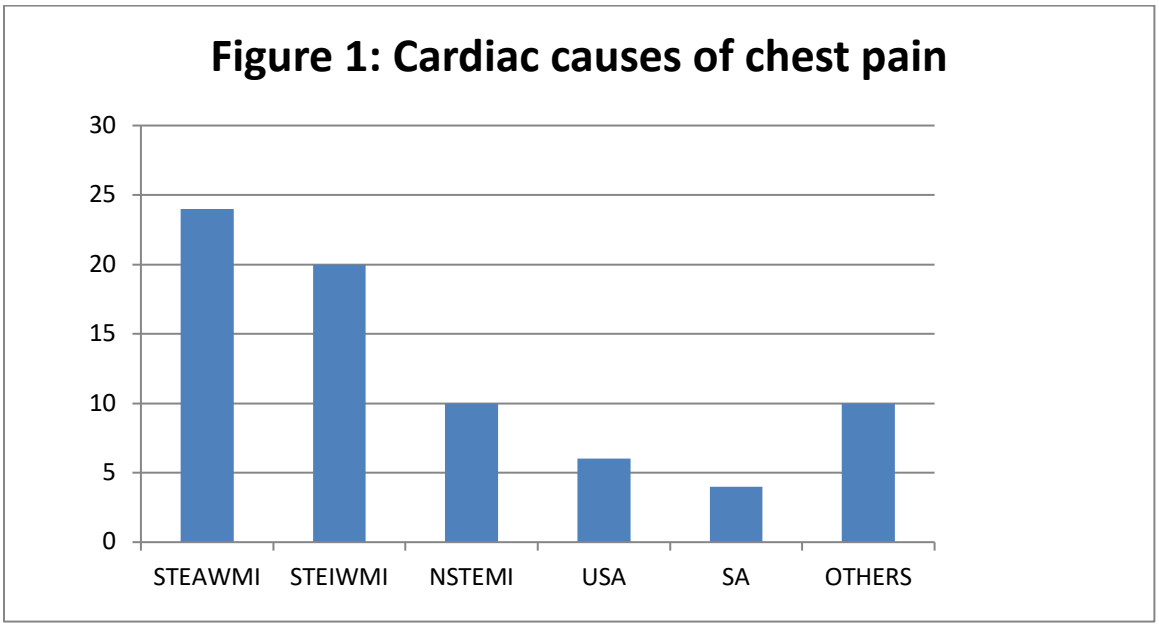
of chest pain, 34 (45.94%) had constricting type while 27(36.48%) had pain in form of tightness. Among patients with GIT cause of chest pain, 33 (69.2%) had a burning type. Among MSK causes 25 (54.34%) patients had pain in form of tightness. Exertion is an aggravating factor for chest pain in 59(29.5%) patients and all these patients had CVS cause of chest pain. Pressure over the area is an aggravating factor in 24 (12%) patients and 23 (97%) of these had MSK caused by chest pain. 23 (11.5%) patients had meals as an aggravating factor and all had GIT cause of chest pain. 41(20.5%) had no aggravating factor. Among all patients 130(65%) patients who presented with chest pain had no relieving factors while 35 (17%) had rest as relieving factor out of which 19 (54.28%) had CVS cause and 14 (40%) had a musculoskeletal cause. 2 (5.72%) patients had meals as relieving factor and all these patients had GIT cause of chest pain. Among patients with chest pain, 16(8%) had hypertension, 14(7%) were diabetics and 6(3%) patients had both diabetes and hypertension. Among diabetics, 10 (71.42%) had CVS cause of chest pain and 2(14.28%) had GIT cause of chest pain and 2(14.3%) had other causes. Among hypertensives, 10(62.5%) had CVS cause of chest pain,3(18.75%) had Git cause of chest pain and 3(18.75%) were other causes of chest pain. 64 (32%) patients were found to be current smokers, 116 (58%) were non-smokers and 20 (10%) were ex-smokers. The percentage of the cardiovascular cause of chest pain is high in current smokers as compared to non-smokers ($p<0.001$).On the contrary, GIT and MSK causes of chest pain are significantly higher in non-smokers ($p<0.05$). ECG was done in all patients who presented to us with chest pain (Table 2).

Table 2: ECG changes of study participants

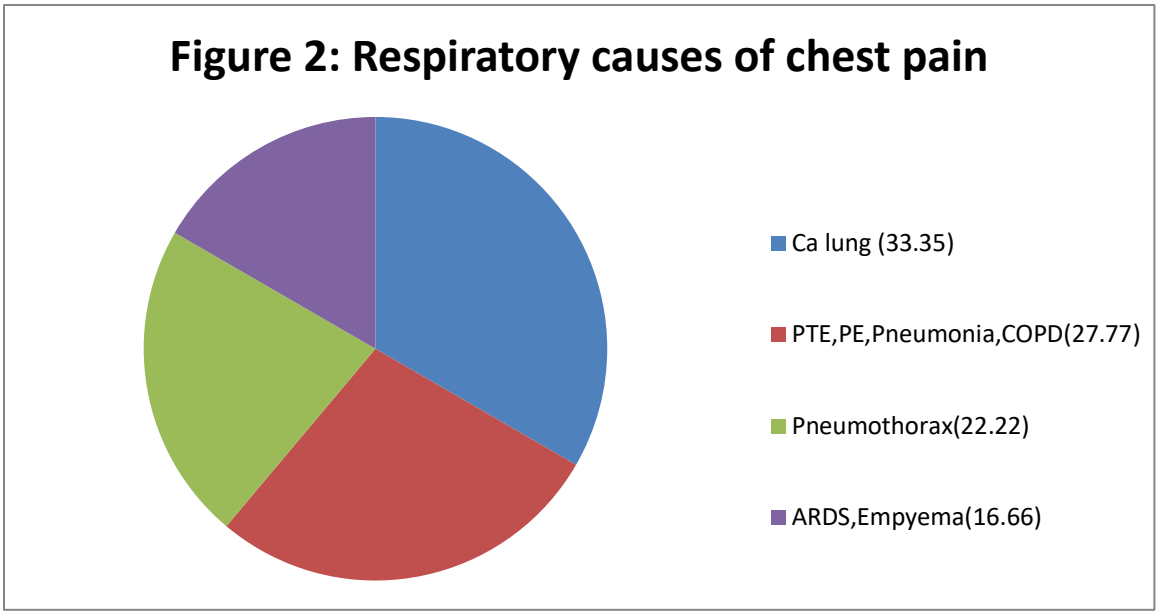
ST/T Changes	N (%)
Normal	126 (63%)
ST Elevation Anterior Leads	24(32.44%)
ST Elevation Inferior Leads	20 (27.02%)
NSTEMI	10(13.51%)
Unstable angina	6(8.10%)

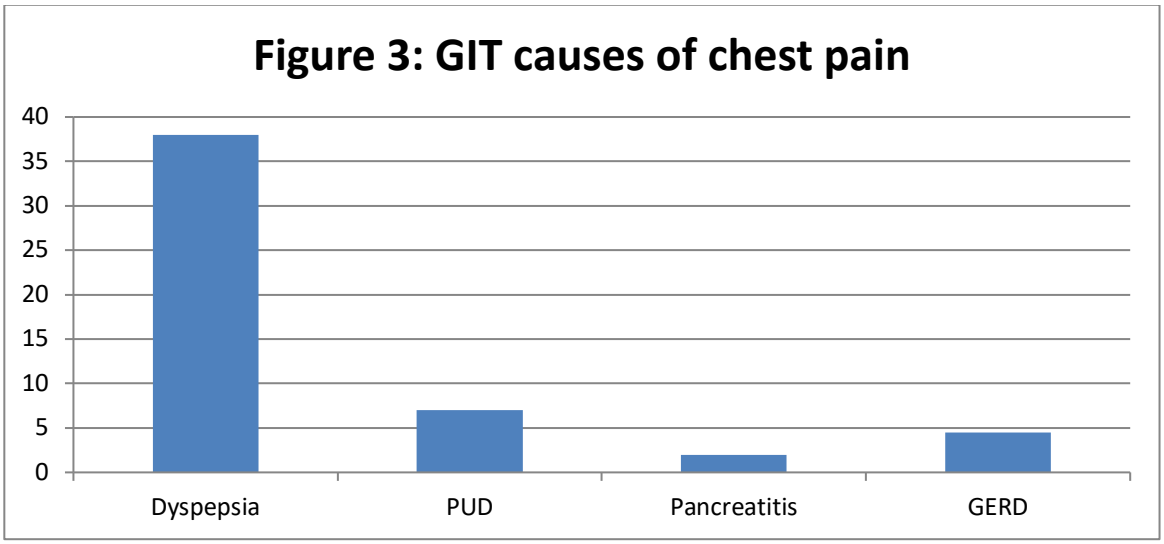
Out of 200 patients who reported to emergency with complaints of chest pain, 74 (37%) patients had CVS cause of chest pain, 48 (24%) had GIT cause, 46 (23%) had MSK cause, 18 (9%) had a respiratory cause, 10 (5%) had psychiatric cause and 4 (2%) patients had other causes of chest pain. Among patients with CVS cause of chest pain, 44 (59.45%) patients had ST elevated MI, 10 (13.51%) patients had NSTEMI, 4 (5.40%) patients had stable angina, 6 (8.10%) had unstable angina and Other CVS causes include 3 (4.05%) patients of RHD, 4 (5.40%) patients had ADHF, 2 (2.70%) had DCMP and 1 (1.35%) patient had HTN Urgency (Figure 1). In patients with respiratory causes of chest pain, 6 (33.33%) had CA Lung, 4 (22.22%) had pneumothorax, 5 (27.77%) patients had acute PTE, pleural effusion, pneumonia, COPD, while 3 (16.66%) patient had empyema and ARDS (Figure 2). Among patients with GIT cause of chest pain, 38 (79.16%) patients had dyspepsia, 7 (14.58%) had PUD, 2 (4.16%) had pancreatitis and 1(2.08%) patient had GERD (Figure 3). Out of a total of 200 patients, 115 (57.6%) were discharged from emergency and 85 (42.4%) were admitted. Among patients with CVS cause of chest pain, 5 (6.75%) were discharged from emergency and 69 (93.24%) were admitted. Among patients with the respiratory cause of chest pain, 15 (83.33%) were admitted and 3 (16.66%) were discharged from the emergency.

All patients with MSK and psychiatric causes were discharged from the emergency. There was an association (p<0.001) between CVS, GIT and respiratory cause of chest pain and immediate outcome (Admitted/ Discharged). The proportion of CVS and Respiratory cause of chest pain is high in those admitted compared to those discharged. Out of the total of 200 patients, 13 (6.5%) died during their stay in the hospital while 50 (25%) were referred to a higher centre for cardiac intervention and the remaining 137(68.5%) were discharged after a full recovery. Among the patients who died, 10 (76.92%) were admitted with CVS cause of chest pain while the rest 3 (23.07%) were admitted with respiratory cause of chest pain. The proportion of those who died is high in patients with CVS cause of chest pain (76.92%) compared to all other causes of chest pain (p<0.001).



USA-Unstable angina SA-Stable angina





Discussion:

In our study, out of 200 patients, 61% were males and 39% were females. The age of the study participants ranged from 18 years to 85 years, with the maximum number of patients (31%) in the age group of 36-45 years. Incidence of the cardiovascular cause of chest pain increases with age as 52% of patients were above 46 years of age. In a study conducted by palchadze Nino, where 58% were males and 39% were females [9]. Almost 35% of patients admitted with chest pain symptoms were in the 30-45 age group. In patients with CVS cause of chest pain 45.9% had constricting type while 34.7% had pain in form of tightness. Among patients with GIT cause of chest pain 69.2% had a burning type. Similarly, in a study by Zaimi et al, the most common type of pain was squeezing in 39.6% of patients and burning pain in 11.5% of patients [10]. In our study, exertion is an aggravating factor for chest pain in 29.5% of patients and all these patients had CVS cause of chest pain. In another study conducted by Jim Christenson et al, 32.8% of patients had pain that increases with a deep breath [11]. In the present study among patients with CVS cause of chest pain 12.2% had a history of past cardiac disease while 8% of patients with the respiratory cause of chest pain had a history of cardiac disease. While in the study of Laurence D. Prina pre-existing CAD was present in 27.0% patients of with chest pain [12]. In our study diabetes mellitus was found in 7% of patients and hypertension was present in 8% of patients with chest pain. 2.9% of patients had both diabetes and hypertension. In another study conducted by Richard Body et al, hypertension was found in 49.3% of patients who had AMI while Diabetes mellitus was present in 15.5% of patients [4]. In our study aetiology of chest pain is assigned to 200 patients out of which 37% patients had CVS cause of chest pain, 24% had GIT cause,23% had MSK cause, 9% had a respiratory cause, 5% had psychiatric cause and 2% patients had other causes of chest pain. While in the study of Buntinx et al, 7% had a musculoskeletal condition, 3% had a gastrointestinal disease, 54% had serious cardiovascular disease, 9% had a psychiatric disease, 12% had a pulmonary disease and 15% had nonspecific chest pain [11]. Among patients with CVS cause of chest pain 59.45% had ST elevated MI,13.5% had NSTEMI, 5.40% had stable angina, 8.10% had unstable angina and 13.5% had other cardiac causes of chest pain. In a study conducted by KJ Raihanathul et al. NSTEMI/ UA in 44.02% and STEMI in 55.98% of patients [13]. There was a

significantly high proportion of CVS and Respiratory causes of chest pain patients being admitted compared to those discharged ($p<0.001$), which is similar to the study of Geyser M et al, in which 56% of chest pain patients were managed and discharged by the ED doctors [14,15].

Conclusion

The main causes of chest pain in the present study were found to be cardiovascular (37%) followed by gastrointestinal (24%), musculoskeletal (23%), respiratory (9%), psychiatric (5%) and other (2%). The majority of the patients were in the age group of 36-45 years. The probability of being admitted was highest for patients with cardiovascular disease, and respiratory disease whereas the probability of being discharged was the highest for patients with gastrointestinal, musculoskeletal and psychiatric disorders. The presence of a history of sudden onset, retrosternal exertional chest pain and/or a past medical history of diabetes, hypertension and risk factors such as smoking and/or an abnormal ECG increases the likelihood of CVS cause of chest pain, while patients with retrosternal pain with relation with meals increases the likelihood of GIT cause of chest pain. The IHD was the most frequent CVS cause of chest pain, dyspepsia was the most frequent cause of GIT for patients presenting to our hospital. As chest pain is the most common symptom in general practice and the present study also suggests that cardiac causes should be considered as the prime cause until they are ruled out. Therefore, a thorough history and physical examination should be part of the initial evaluation of all patients with chest pain.

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