MedCrave
Step into the World of Research

Journal of Cardiology & Current Research

General Mental Health Status of Out-Patients with Atypical Chest Pain, a Case Control Study

Abstract

Objectives: Psychological problems could have some relationship with undetermined chest pain. The aim of this study was to compare the general mental health status of out-patients with atypical chest pain with a reference age and sex matched controls.

Materials and methods: Patients less than 40 years old, with atypical chest pain and low probability of ischemic heart disease were included in the study. The control group were age and sex matched. The Iranian translation of 28 item general health questionnaire (GHQ-28) was used to evaluate the mental status.

Results: Totally 113 cases in each group completed the study. Mean age of the study group was 26.33 ± 5.77years and 148 cases (65.5%) were female. Mean GHQ-28 score in the atypical chest pain and the control groups were 31.37±14.69 and 21.31±9.97 respectively (P<0.001). Abnormal GHQ-28 scores (≥24) was seen in 71(62.8%) of the atypical chest pain group and 38(33.6%) of the controls (odds ratio: 3.34, 95% confidence interval =1.93-5.76). Multivariate analysis showed that after adjustment for possible confounding factors, atypical chest pain was an independent predictor of abnormal GHQ-28(odds ratio: 3.32, 95% confidence interval: 1.31-8.47).

Discussion: The results of the present study showed that our patients with atypical chest pain had worse general mental health state. It is not clear that worse general health state is a cause of atypical chest pain or an incidental concomitant finding.

Keywords: Chest Pain; Diagnosis; Etiology; Mental Health; Surveys and Questionnaires; Depression; Insomnia; Somatosensory Disorders

Research Article

Volume 5 Issue 4 - 2016

Mehdi Mousavi[1], Seyed Abbas Mousavi[2]*, Mahsa Akbarian[3], Mostafa Raiesi[3], Delara Salehifar[4], Sadafsadat Mirkarimi[3], Afsaneh Momtaz[5] and Mansoor Mirzaei Ghomi[6]

[1]*Cardiologist, Assistant professor, Alborz University of Medical Sciences, Iran*
[2]*Psychiatrist, Associate professor, Shahroud University of Medical Sciences, Iran*
[3]*Islamic Azad University, Iran*
[4]*Students research committee, Alborz University of Medical Sciences*
[5]*Shahroud University of Medical Sciences, Iran*
[6]*Psychiatrist, Iran*

***Corresponding author:** Seyed Abbas Mousavi, Associate Professor of psychiatry, Center for Health Related Social and Behavioral Sciences Research, Shahroud University of Medical Sciences, Shahroud, Iran, Tel: +982332342007; Email: mmm89099@gmail.com

Received: April 01, 2016 | **Published:** April 14, 2016

Background

Chest pain is a common complain among patients presenting to the Emergency Departments [1], however more than half of these patients with acute chest pain experience chest pain in the absence of identifiable organic etiology [2-6]. There are some evidence that psychological problems are common among patients with undetermined chest pain [2,3,5-11]. Psychiatric disorders including panic disorder, anxiety, and depressive disorder, may cause chest pain or worsen it [12,13]. On the other hand many patients with chest pain might be anxious about recurrences of chest pain and proper heart functioning [4,8,12,14].

Although it seems that chest pain without ischemic etiology have a better prognosis [1], it may be associated with reduced quality of life [12], and be recurrent and persistent [4,12] such that results in increased costs due to repeated medical visits and probably hospitalization [7,12].

General mental health status has not been sufficiently studied among patients with atypical chest pain in our country. The aim of this study was to compare the general mental health status of out-patients with atypical chest pain with a reference age and sex matched control group from the general population.

Methods

Included patients were 13-40 years old out-patients presenting to clinic with atypical chest pain. Patient's with 35- 40 years old with atypical chest pain were included if the exercise test or myocardial perfusion scan was normal.

A typical chest pain was defined as one of the following:

I. Pleuritic chest pain (chest pain by respiratory movements or cough),

II. Pain localized at the tip of one finger,

III. Constant pain that persists for many hours,

IV. Very brief episodes of pain.

Excluded patients were those with known or documented psychological disease, recent history of trauma to chest wall, apparent mechanical chest pain, osteoarthritis of neck, herpes zoster, documented gastrointestinal disorders including active peptic ulcer disease or reflux esophagitis, anemia, patients with pericarditis or myocarditis, aortic dissection or aneurism, documented hypertrophic cardiomyopathy, abnormal electrocardiography or abnormal echocardiography

(except mitral valve prolapse with less than moderate mitral regurgitation) and unwilling of patient to sign informed consent or complete questionnaire.

The control group was age and sex matched healthy people without history of chest pain from the same community of the atypical chest pain group (healthy accompanying relatives of patients who were visited in the out-patient clinic).

Measures

General Health Questionnaire (GHQ), consisting 60 questions, was originally designed by Goldberg at 1969 and is one of the best defined screening for psychiatric illnesses. Translation into other languages, age, social class, gender, educational level and living in developing countries seems to have no significant effect on the validity of the GHQ [15]. A shorter, 28-item GHQ (GHQ-28) was proposed by Goldberg and Hillier consisting of 4 subscales including severe depression, anxiety and insomnia, somatic symptoms and social dysfunction [16]. Validity and reliability of Iranian version of GHQ-28 have been approved [17] and the best clinical cut-off point for total score was found to be 24 [18,19] and ≥ 6 for each sub scale [20] with Likert scoring styles (0-1-2-3). The estimation for sensitivity, specificity for a GHQ–28 cut-off score of 24 in Iranian population has been found 0.80, 0.99 [18] and for sub scale cut off of 6, 84.7%, 93.8% respectively [17].

In the present study the Iranian translation of the GHQ–28 was used. Patients answered the questionnaire and if the patients were unable to answer, a researcher helped them filling the forms. Accompanying symptoms and other risk factors were also asked. Total scores of ≥ 24 were accepted as abnormal GHQ-28 and sub scale scoring was done by Likert scoring styles (0-1-2-3), and 3 cut points for GHQ-28 sub scale scores of ≥ 6, >8 and >14 (as critical) were presented.

Sample size and statistical analysis

Sample size was calculated based on a pilot study. In the pilot study abnormal GHQ score was seen in 34.7% of the control group and 54% of the atypical chest pain group. Consequently, we concluded that 113 patients were needed in each group with a confidence interval of 95% and power of 80%.

The statistical analysis were conducted using the statistical software SPSS version 16.0 for Windows (SPSS Inc., Chicago, IL). The data are presented as mean ± standard deviation for the numerical variables and numbers and percentages (%) for the categorical variables. The continuous variables were compared using the Student t-test or nonparametric Mann-Whitney U test whenever the data did not appear to have a normal distribution, and the categorical variables were compared using the Pearson chi-square or the Fisher exact test, as required. P values ≤ 0.05 were considered statistically significant.

Results

Totally 226 cases (113 atypical chest pain and 113 controls) completed the study. Mean age of the study group was 26.33± 5.77years and 148 cases (65.5%) were female. Of the 113 patient with atypical chest pain, localized chest pain was reported by 39(35.1%), 62(55.9%) had very brief duration of pain, whereas pain was constant in 15(13.5%). Baseline characteristics of the atypical chest pain and the control group are presented in Table 1. Different accompanying symptoms are given in Table 2. Palpitation, dyspnea and sensation of difficulty in deep breathing were more prevalent in the atypical chest pain group (Table 2).

Table 1: Baseline characteristics of the atypical chest pain and control groups. Data are presented as number (%) and mean ± standard deviation.

Variable	Atypical Chest Pain Group n=113	Control Group n=113	Total n=226	p-value
Sex (female)	74 (65.5)	74 (65.5)	148 (65.5)	1
Age	26.31 ± 5.78	26.35 ± 5.79	26.33± 5.77	0.95
Hypertension	5 (4.4)	0	5 (2.2)	0.06
Diabetes mellitus	3 (2.7)	1 (0.9)	4 (1.8)	0.622
Cigarette smoking*	5 (6.5)	5 (7)	10 (6.8)	1
Hyperlipidemia	3 (2.7)	2 (1.8)	5 (2.2)	0.68
Family history of premature CAD	20 (17.9)	15 (13.5)	35 (15.7)	0.373
Body mass index	23.62 ± 4.55	23.39 ±3.86	23.52 ± 4.26	0.75
Heart rate	79.32 ± 13.96	78.49 ± 8.61	78.90 ± 11.54	0.77
Systolic blood pressure	117.13 ± 12.74	114.96 ± 10.30	116.03 ± 11.59	0.43
Diastolic blood pressure	75.35 ± 10.45	75.04 ± 7.15	75.19 ± 8.91	0.55
Coffee use	8 (7.1)	16 (14.7)	24 (10.8)	0.068
Drug intake	12(10.7)	6(5.3)	18(8)	0.135
Residential area (urban VS rural)*	78(72.9)	65 (89.0)	143 (79.4)	0.008
Employed	88 (77.9)	58 (51.3)	146 (67.6)	<0.001
Student*	18(20.5)	26(44.8)	44(30.1)	0.002
Housewife*	49(55.7)	27(46.6)	76(52.1)	0.28
MVP in echo**	23 (31.1)	0	23 (29.1)	0.314

*There were missed data, because the cases did not answer this question due to personal reasons

**Echocardiography data was available in 74 (65%) of the atypical chest pain group and only 5 (4%) of the control group

CAD: Coronary Artery Disease

Table 2: Accompanying symptoms in the atypical chest pain and the control groups data are presented as number (%) and mean ± standard deviation.

Symptom	Atypical Chest Pain Group n=113	Control Group n=113	P-value
Palpitation	72(65.5)	39(34.8)	<0.001
Dyspnea	61(55)	15(13.4)	<0.001
Feeling of desire for deep breath	77(71.3)	68(60.2)	0.082
Feeling difficulty in deep breath	32(28.8)	8(7.1)	<0.001

Table 3: A comparison of mean ± standard deviation of scores of GHQ-28 and it's subscales in the atypical chest pain and the control groups.

Variable	Atypical Chest Pain Group	Control Group	p-value
Severe depression	5.46±5.54	2.21±3.06	<0.001
Anxiety and insomnia	9.06±5.06	6.27±3.57	<0.001
Somatic symptoms	8.51±4.09	5.48±3.66	<0.001
Social dysfunction	8.30±3.31	7.41±2.91	0.028
GHQ-28 score	31.37±14.69	21.31±9.97	<0.001

GHQ-28: Iranian translation of General health questionnaire with 28 questions.

A comparison of mean ± standard deviation of scores given to GHQ-28 and its subscales are given in Table 3. Mean value for all of the subscales and total GHQ-28 score was more in the atypical chest pain group in comparison to controls. Abnormal GHQ-28 scores and abnormal sub scales of severe depression, anxiety and insomnia, somatic symptoms and social dysfunction were seen more in the atypical chest pain group in comparison to the controls but critical social dysfunction did not reach statistically significance (Table 4). Logistic regression analysis showed that after adjustment for possible confounding factors, including having atypical chest pain or hypertension, living in urban areas being unemployed, housekeeper or student, having atypical chest pain was an independent predictor of abnormal GHQ-28 (odds ratio: 3.32, 95% confidence interval: 1.31-8.47).

Discussion

Anxiety [2,5-8,10-12,21] (including panic disorder [3,5,6,10] and phobia [8], sleep problems [11], depression [2,3,5-8,10,21] somatization [8,10] and alexithymia (literally no words for feelings) [12], may be more prevalent among patients with non cardiac or atypical chest pain and the prevalence of anxiety and depression among patients with non-specific chest pain range from 21.4% to 57% [2,5-7,10].

Table 4: Abnormal and critical GHQ-28 total and sub scale scores in atypical chest pain and the control groups. Critical sub scale and abnormal total GHQ-28 score was assumed to be > 14 and and≥ 24 respectively. Data are presented as number (%)

Variable	Atypical Chest Pain Group n= 113	Control Group n=113	Odds Ratio (95% Confidence Interval)	p-value
Severe depression (score ≥6)	47(41.6%)	14(12.4%)	5.04 (2.57-9.87)	<0.001
Anxiety and insomnia (score ≥6)	79(69.9%)	57(50.4%)	2.28 (1.32-3.94)	0.003
Somatic symptoms (score ≥6)	81(71.7%)	46(40.7%)	3.69 (2.12-6.42)	<0.001
Social dysfunction (score ≥6)	94(83.2%)	85(75.2%)	1.63 (0.85-3.13)	0.14
Severe depression (score >8)	31(27.4)	6(5.3)	6.74 (2.69-16.92)	<0.001
Anxiety and insomnia (score>8)	60(53.1%)	28(24.8%)	3.44 (1.95-6.05)	<0.001
Somatic symptoms (score>8)	53(46.9%)	25(22.1%)	3.14 (1.75-5.54)	<0.001
Social dysfunction (score>8)	48(42.5)	33(29.2)	1.79 (1.03-3.11)	0.037
Critical severe depression	11(9.7%)	0	-	0.001
Critical anxiety and insomnia	15(13.3%)	4(3.5%)	4.17 (1.34-12.99)	0.008
Critical somatic symptoms	9(8%)	1(0.9%)	9.69 (1.21-77.83)	0.01
Critical social dysfunction	6(5.3%)	2(1.8%)	3.11 (0.62-15.76)	0.28
Abnormal GHQ-28 score	71(62.8%)	38(33.6%)	3.34 (1.93-5.76)	<0.001

GHQ-28: Iranian translation of 28 item General health questionnaire.

In the present study comparing the Iranian translation of GHQ-28 as a screening tool to evaluate general mental health of patients with atypical chest pain with age and sex matched controls we found that patients with atypical chest pain had more abnormal scores in comparison with their age and sex matched controls (Table 4). Considering 4 subscales of the GHQ-28, abnormal and even critical subscales, including somatic symptoms, anxiety and insomnia and severe depression were more prevalent among patients with atypical chest pain and social dysfunction trended to be more (Table 4).

Beheshti and coworkers [8] studied a similar group of patients with chest pain of non-cardiac origin from Semnan (a city from the same province of our study), using Deragotis questionnaire and found that prevalence of depression; anxiety and somatization were 66.02%, 65.4% and 25% respectively [8]. These prevalence (except for somatic symptoms), are similar to the results of cut off point of ≥ 6 in our study. The incongruity of the result could be due to different screening method and studied age group (the mean age of their studied population was 47.18 ± 12.6 and ours was 26.33 ± 5.77).

Eken et al. [2] studied the patients with chest pain in the emergency department using the Hospital Anxiety and Depressive scale and did not report any statistically significant difference in prevalence of anxiety and depression in cardiac and non-cardiac chest pain [2]. On the basis of Diagnostic and Statistical Manual of Mental Disorders-IV (DSM-IV) criteria, the prevalence of psychiatric disorders in Iran, has been estimated to be 10.81%, and 8.35% and 2.98% for anxiety and major depressive disorder respectively [22].

Noorbala et al. [20] showed that 20.5–21.5 of Iranian had mental disorders when evaluated by GHQ-28 questionnaire [20]. The estimated percentage of the depressive, anxiety symptoms, somatic and social dysfunction symptoms had been 21%, 20.8%, 17.9%, and 14.2% respectively [20].

In the present study abnormal GHQ-28 score was seen in 38(33.6%) of the control population and the prevalence of depressive, anxiety, somatic and social dysfunction symptoms were 12.4%, 50.4%, 40.7%, and 75.2% respectively (with cut off score of ≥ 6) and 5.3%, 24.8%, 22.1% and 29.2% (with cut off score of >8). This high prevalence of abnormal scores of GHQ-28 and anxiety, somatic and social dysfunction symptoms in the population of our study, may be explained by the sampling methods (younger age), cultural and possibly psychosomatic differences of the study population that was living in a township.

Patients with atypical chest pain maybe hypersensitive to physical sensations [12] and thus with the same physical stimulations, suffer more pain in comparison to other people. Anxious people may be vigilant and fearful of other physical sensations that they perceive as catastrophic danger to the heart, specifically a heart attack [9,12]. Thus anti-depressants (e.g. sertraline) may be beneficial in reducing non-cardiac chest pain [23].

In our study some other symptoms including palpitation, dyspnea and subjective complain of difficulty in deep breathing were more prevalent among the atypical chest pain group (Table 2). Indeed these symptoms could be attributable to more anxiety and possibly other psychiatric problems in this group of patients.

Study Limitations

Because we deemed to study the patients with atypical chest pain with low probability of coronary artery disease, we designed our study for a younger age group (13-40 years old), such that the mean age of our study group was 26.33± 5.77 years. We matched the atypical chest pain group with the controls by age and sex, but there were some differences regarding living in urban areas, employment and studies that might have an effect on psychiatric status, however after adjustment for these confounding factors atypical chest pain was still a predictor of abnormal GHQ-28.

Acknowledgement

This study was part of a M.D. dissertation. The authors wish to thank the Shahroud Azad University of medical sciences.

References

1. Sabatine MS, Cannon CP (2015) Approach to the Patient with Chest Pain. In: Mann DL, Bonow RO, Zips DP, Braunwald E, Libby P, editors. Braunwald's heart disease A textbook of cardiovascular medicine. (10th edn), Elsevier saunders, Philadelphia, USA, pp 1057-1067.
2. Eken C, Oktay C, Bacanli A, Gulen B, Koparan C, et al. (2010) Anxiety and depressive disorders in patients presenting with chest pain to the emergency department: a comparison between cardiac and non-cardiac origin. J Emerg Med 39(2): 144-150.
3. Beitman BD, Basha I, Flaker G, DeRosear L, Mukerji V, Lamberti JW (1987) Major depression in cardiology chest pain patients without coronary artery disease and with panic disorder. J Affect Disord 13(1): 51-59.
4. Yingling KW, Wulsin LR, Arnold LM, Rouan GW (1993) Estimated prevalences of panic disorder and depression among consecutive patients seen in an emergency department with acute chest pain. J Gen Intern Med 8(5): 231-235.
5. Wulsin LR, Hillard JR, Geier P, Hissa D, Rouan GW (1988) Screening emergency room patients with atypical chest pain for depression and panic disorder. Int J Psychiatry Med 18(4):315-323.
6. Wulsin LR, Arnold LM, Hillard JR (1991) Axis I disorders in ER patients with atypical chest pain. Int J Psychiatry Med 21(1): 37-46.
7. Demiryoguran NS, Karcioglu O, Topacoglu H, Kiyan S, Ozbay D, et al. (2006) Anxiety disorder in patients with non-specific chest pain in the emergency setting. Emerg Med J 2006 23(2): 99-102.
8. Beheshti A, Irajian G, Darabian M, Shafaeian M, Ghorbani R, et al. (2006) Determination of frequency and intensity of psychical disorders in patients with chest pain with non-cardiac origin referred to cardiovascular clinics (2004-2005). Koomesh 7(1):101-106.
9. White KS, Craft JM, Gervino EV (2010) Anxiety and hypervigilance to cardiopulmonary sensations in non-cardiac chest pain patients with and without psychiatric disorders. Behav Res Ther 48(5): 394-401.
10. Hocaoglu C, Gulec MY, Durmus I (2008) Psychiatric comorbidity in patients with chest pain without a cardiac etiology. Isr J Psychiatry Relat Sci 45(1): 49-54.
11. Jerlock M, Kjellgren KI, Johansson GF, Lissner L, Manhem K, et al. (2008) Psychosocial profile in men and women with unexplained chest pain. J Intern Med 264(3): 265-274.
12. White KS, McDonnell CJ, Gervino EV (2011) Alexithymia and anxiety sensitivity in patients with non-cardiac chest pain. J Behav Ther Exp Psychiatry 42(4): 432-439.
13. Pelland ME, Marchand A, Lessard MJ, Belleville G, Chauny JM, et al. (2011)Efficacy of 2 interventions for panic disorder in patients presenting to the ED with chest pain. Am J Emerg Med 29(9): 1051-1061.
14. Cormier LE, Katon W, Russo J, Hollifield M, Hall ML, et al. (1988) Chest pain with negative cardiac diagnostic studies. Relationship to psychiatric illness. J Nerv Ment Dis 176(6): 351-358.

15. Goldberg DP, Gater R, Sartorius N, Ustun TB, Piccinelli M, Gureje O, et al. (1997) The validity of two versions of the GHQ in the WHO study of mental illness in general health care. Psychol Med 27(1): 191-197.

16. Goldberg DP, Hillier VF (1979) A scaled version of the General Health Questionnaire. Psychol Med 9(1): 139-145.

17. Noorbala AA, Mohammad K, Bagheri Yazdi SA, et al. (1999) Validation of GHQ-28 in Iran. Hakim Magazine 5: 101-110.

18. Ebrahimi A, Molavi H, Moosavi G, Bornamanesh A, Yaghoubi M (2007) Psychometric Properties and Factor Structure of General Health Questionnaire 28 (GHQ-28) in Iranian Psychiatric Patients. Journal of Research in Behavioural Sciences 5(1): 5-12.

19. Yaghoobi H (2008) Screening of psychological disorders (Article in Farsi). Quarterly Journal of Mental Health 1(spring): 39-51.

20. Noorbala AA, Yazdi SAB, Yasamy MT, Mohammad K (2003) Mental health survey of the adult population in Iran. The British Journal of Psychiatry 184(1): 70-73.

21. Fagring AJ, Kjellgren KI, Rosengren A, Lissner L, Manhem K, et al. (2008) Depression, anxiety, stress, social interaction and health-related quality of life in men and women with unexplained chest pain. BMC Public Health 8: 165.

22. Mohammadi MR, Davidian H, Noorbala AA, Malekafzali H, Naghavi HR, et al. (2005) An epidemiological survey of psychiatric disorders in Iran. Clin Pract Epidemiol Ment Health 1: 16.

23. Keefe FJ, Shelby RA, Somers TJ, Varia I, Blazing M, et al. (2011) Effects of coping skills training and sertraline in patients with non-cardiac chest pain: a randomized controlled study. Pain 152(4): 730-741.

Citation: Mousavi M, Mousavi SA, Akbarian M, Raiesi M, Delarasalehifar, et al (2016) General Mental Health Status of Out-Patients with Atypical Chest Pain, a Case Control Study. J Cardiol Curr Res 5(4): 00170. DOI: 10.15406/jccr.2016.05.00170