Original Article

Quality of Life in Patients with Premature Ventricular Contraction: A single-center study in Iran

Tala Sarmastzadeh[1*], Elnaz Sarmastzadeh[2], Morteza Safi[1], Mohammad Ali Akbarzadeh[1]

[1] Cardiovascular Research Center, Shahid Beheshti University of Medical Sciences, Tehran, Iran
[2] Shandong Medical University, Jinan, China

Received: 05 November 2022; Accepted: 25 December 2022

Abstract

Background: Premature ventricular contraction (PVC) symptoms have a direct relationship with, hospitalization and cardiovascular mortality, and finally, the quality of life of patients. The difference in the quality of life between men and women in different arrhythmias has been reported. In this study, the quality of life of PVC patients was evaluated using the arrhythmia-specific questionnaire in tachycardia and arrhythmia (ASTA) questionnaire

Methods: A cross-sectional study was conducted on 200 patients with PVCs who were referred to the heart clinic of Modares Hospital in Tehran in 2019. The demographic characteristics and evaluation of the patient's symptoms were recorded through the ASTA questionnaire. The relationship between the answers to the questionnaire and the gender of the patients was measured with statistical tests.

Results: 200 patients with abnormal ventricular contraction (88 females and 112 male PVC) with an average age of 16.4 ± 52.7 years (minimum 25 years and maximum 85 years) were studied. The chi-square test did not show a significant relationship between the questions of the ASTA questionnaire and the gender of the patients.

Conclusion: The findings of this study show that quality of life and ASTA questionnaire items in PVC patients have no significant relationship with the gender of this category of patients.

Keywords: Gender, ASTA questionnaire, Premature ventricular contraction

***Corresponding Author:** Tala Sarmastzadeh, Cardiovascular Research Center, Shahid Beheshti University of Medical Sciences, Tehran, Iran. Email: t.sarmastzadeh@sbmu.ac.ir

Please cite this article as: Sarmastzadeh T, Sarmastzadeh E, Safi M, Akbarzadeh MA. Quality of Life in Patients with Premature Ventricular Contraction: A single-center study in Iran. Novel Biomed. 2023;11(1):30-7.

Introduction

Cardiac arrhythmias are abnormalities or disturbances in the activation or natural beat of the heart myocardium[1]. Arrhythmias are often divided into four groups: extra beat, supraventricular tachycardia[2], ventricular arrhythmia[3], and bradyarrhythmia[4]. The severity of cardiac arrhythmia depends on the presence or absence of structural heart disease[5].

During a premature ventricular contraction (PVC), the Purkinje fibers initiate the heartbeat instead of the SA node[6]. PVCs can be created individually or in repetitive patterns. It is important to note that three or more consecutive PVCs are classified as ventricular tachycardia. PVC appears in most patients as palpitations. They are usually benign and do not require treatment[7].

In the vast majority of cases, PVCs have no known cause and develop spontaneously. Commonly known causes include excessive caffeine consumption, excess catecholamines, high levels of anxiety, and electrolyte abnormalities[8]. Specific electrolyte changes found in people experiencing PVCs are low blood potassium, low blood magnesium, and high blood calcium. Patients

who suffer from lack of sleep also experience PVC.

Many cardiac and non-cardiac pathologies cause PVCs. Among the cardiac factors that can be mentioned are cardiomyopathy, mitral valve prolapse, and myocardial infarction. Any structural heart disease that changes conduction pathways due to tissue changes can cause PVCs. Non-cardiac examples are hyperthyroidism, anemia, and even high blood pressure.

The risk factors of PVC are old age, male gender, blood pressure, African American race, hypomagnesemia, bundle branch block, hypokalemia, and underlying ischemic heart disease[9].

PVC may feel like a skipped beat, although this is not the case and PVC is even caused by an extra beat. They may also cause chest pain, feeling weak, tired, or hyperventilating after exercise[10].

Healthy patients without structural heart disease who rarely experience PVCs have a similar prognosis to the general population. However, those who have recurrent PVCs (more than 1000 per day) are at risk of developing dilated cardiomyopathy[11]. For those with heart disease, PVCs are an indicator of an increased risk of mortality[12].

The main goal in the treatment of arrhythmia patients can be achieving relief of symptoms. When evaluating the severity of the disease and the effectiveness of the intervention, examining not only objective parameters such as ECG measurements, where patient-reported results (1PROs) are also important for evaluating patients' mental health and daily life status[13-15].

Also, studies that examine gender differences in cardiovascular diseases have shown that women are at greater risk of mortality and use of higher health care than men, And women with cardiovascular diseases report a worse quality of life (QOL) than men based on physical performance and mental health measures[16,17].

The new Arrhythmia specific questionnaire in tachycardia and arrhythmia (ASTA) questionnaire has shown good reliability and validity in examining the burden of arrhythmia symptoms And it has good psychomotor properties[18]. This questionnaire consists of 3 parts. The first part is about the frequency of arrhythmia experiences. The second part is about the symptoms related to arrhythmia. The third part of the questionnaire is related to the patient's quality of life, communication with the people around them, and daily activities[19].

Patients with PVC are less confident about the diagnosis, treatment, and prognosis of their disease than other patients. Therefore, mental load and stress are high in these patients and patients limit their daily activities for fear of the recurrence of symptoms. Therefore, it is vital to properly understand the symptoms of the disease and the factors affecting the occurrence of symptoms.

Therefore, in this study, in addition to examining the status of the ASTA questionnaire in PVC patients, we also evaluated the status of this questionnaire according to the gender of the patients and the relationship of these items with each other.

Methods

This is a cross-sectional descriptive study with the study population of patients with PVC referring to the heart clinic of Modares Hospital in Tehran in 2019. After obtaining the necessary permits from the ethics committee, this cross-sectional descriptive study was started at Shahid Modares Hospital in Tehran.

Among the suspected arrhythmia patients who refer to the Cardiac Clinic of Modares Hospital in Tehran, 24-hour Holter was used to identify patients with PVCs. Sampling was consecutive and non-random and 200 patients with PVC were included in the study. The existence of underlying diseases and accompanying other arrhythmias is not a criterion for exclusion from the study. First, the demographic characteristics of the patients, including age and gender, were recorded.

Then patients' symptoms were evaluated through an ASTA questionnaire. This questionnaire consists of 2 parts that measure the symptoms of the patients.

The information obtained based on the questionnaire was entered into SPSS software. Then, the relationship between clinical symptoms and the gender of patients was investigated according to the Chi-square test. Finally, the relationship between clinical symptoms and gender in patients with PVC referred to Shahid Modares Hospital in Tehran in 2019 was investigated and concluded.

The time and place of conducting the study of PVC patients are in Modares hospital and 2019.

Participation in this study was voluntary, and the different stages of the study and the working methods

were explained to the patients. The surveys conducted on the participants were harmless and no fees were charged to the participants. Necessary permissions were obtained to review the files and after review by the ethics committee of Shahid Beheshti University of Medical Sciences, the code of ethics was adopted (IR.SBMU.RETECH.REC.1399.778).

All information related to patients will remain completely confidential and confidential information such as patient names will not be published anywhere. The collected data were entered into the SPSS software and the frequency distribution of the different criteria of the questionnaire was calculated. The relationship between the gender of the patients and the answers to the questionnaire was evaluated by the chi-square test. P-value less than 5% was considered significant.

Results

In this study, 200 patients with premature ventricular contraction (PVC) (88 women and 112 men) with an average age of 52.7 ± 16.4 years (minimum 25 years and maximum 85 years) were examined. Table 1 briefly shows the characteristics of the study participants.

The response of patients with abnormal ventricular contraction is shown in Table 2. In these 12 questions asked to the patients, the attitude of the people toward their disorders is considered (Table 2).

By using the Chi-square test, it was found that the difference in answers to the questionnaire questions based on gender was not statistically significant in any case (Table 3).

Discussion

Studies that examine the experiences of patients from the perspective of gender and age have shown significant differences between men and women, as well as the effect of gender on the impact of arrhythmia on symptoms and HRQoL[20,21]. Taking into account the effect of gender on the quality of life of patients with PVC, the main finding of this study is that the quality of life of PVC patients measured using the ASTA questionnaire has no significant relationship with the gender of these patients.

In investigating the relationship between gender and PVC in a cross-sectional study in 2002 in the United States on 15,792 patients (45 to 65 years old), it was shown that old age, male gender, along with other factors such as African American race, heart disease, Low serum magnesium, low serum potassium, and high heart rate are directly related to the prevalence of PVC[22]. Also, in another study in 2012 in the United States of America on 241 patients with PVC who were referred for ablation, it was observed that men were more prevalent in the group of patients with cardiomyopathy with PVC than in the group with normal cardiac function. It was also shown that the PVC burden in the group with cardiomyopathy with PVC was significantly higher than in the group with normal cardiac function[23]. These studies show the effects of gender on PVC. However, until the present study, the relationship between the quality of life of PVC patients and their gender has not been evaluated.

The findings of our study are contrary to the findings of the study of Paquette and colleagues, who investigated the effect of gender on the quality of life of AF patients and showed that the quality of life of women with AF is worse than men[24].

To investigate the relationship between the quality of life using the ASTA questionnaire with age and gender in AF arrhythmia, in a study in 2019 on patients with AF who needed catheter ablation, investigating the quality of life of this group of patients using the ASTA questionnaire showed that women had significantly more symptoms than men and had a greater negative impact on all concerns related to the quality of life, except for the negative impact on sex life, which men had more are affected. Also, in this study, no significant relationship between age and quality of life of these patients was shown[25]. The type of arrhythmia investigated as well as the gender distribution in these studies is different from our study.

In another study in Iran in 2019 on 31 patients, with to investigate of life of patients with PVC after ablation, the ASTA questionnaire was used and it was shown that The total score, rental scale score, ad ASTA physical scale score significantly improve 6 months after ablation[26]. Although this study did not evaluate the relationship between the gender of the patients and the score of the ASTA questionnaire, it shows the utility of using the ASTA in PVC patients.

Table 1: The characteristics of the study participants.

Variable		result
The last time they felt arrhythmia, N(%)	1) I feel continuously	30(15)
	2) I feel on/off every day	54(27)
	3) less than a week ago	53(26.5)
	4) less than a month ago	32(16)
	5) 1 month-less than 3 months ago	13(6.5)
	6) 3 months- less than 6 months ago	1(5)
	7) 6monthsh- less than 12monthsh ago	1(5)
	8) more than 1monthsth ago	15(7.5)
Drug usage, N(%)	Positive	118(59)
	negative	82(41)
How many times did they feel erythema, N(%)	1) never	14(7)
	2) less than 5 times	57(28.5)
	3)between 5-15 times	40(20)
	4) between 16-30 times	45(22.5)
	5) more than 30 times (but I didn't experience it every day)	21(10.5)
	6) 6) I felt on/off every day	23(11.5)
Duration of feeling erythema, N(%)	1) less than an hour	175(87.5)
	2) between 1-7 hours	19(9.5)
	3) between 7-24 hours	2(1)
	4) 24 hours- less than 2 days	0(0)
	5) 2-7 days	0(0)
	6) more than 7 days	4(2)
The longest time erythema has taken, N(%)	1) less than an hour	157(78.5)
	2) 1 hour-less than 7 hours	19(9.5)
	3) 7 hours- less than 24 hours	7(3.5)
	4) 24 hours- less than 2 days	6(3)
	5) 2-7 days	1(0.5)
	6) more than 7 days	10(5)
Symptoms felt in erythema, N(%)	1) My heart beats fast	84(42)
	2) My heart beats normally	18(9)
	3) My heart beats irregularly	35(17.5)
	4) My heart beats harder than usual	43(21.5)
	5) My heart does not beat (misses) 1-2 beats.	9(4.5)
	6) A brief episode of irregular heartbeat lasting less than a minute	9(4.5)
	7) I did not experience any of the above	2(1)
The occurrence of erythema in a specific position, N(%)	Positive	74(37)
	negative	126(63)
feeling anxious, N(%)	1) Very much	16(8)
	2) almost too much	61(30.5)
	3) to a certain extent	84(42)
	4) negative	39(19.5)
Active shortness of breath, N(%)	1) Very much	0(0)
	2) almost too much	33(16.5)
	3) to a certain extent	77(38.5)
	4) negative	90(45)
Shortness of breath at rest, N(%)	1) Very much	10(5)
	2) almost too much	19(9.5)
	3) to a certain extent	53(26.5)
	4) negative	118(59)
dizziness, N(%)	1) Very much	0(0)
	2) almost too much	15(7.5)
	3) to a certain extent	54(27)
	4) negative	131(65)
	1) Very much	0(0)

cold sweat, N(%)	2) almost too much	34(17)
	3) to a certain extent	36(18)
	4) negative	130(65)
weakness, N(%)	1) Very much	15(7.5)
	2) almost too much	33(16.5)
	3) to a certain extent	66(33)
	4) negative	86(43)
tiredness, N(%)	1) Very much	6(3)
	2) almost too much	35(17.5)
	3) to a certain extent	75(37.5)
	4) negative	84(42)
Chest pain, N(%)	1) Very much	2(1)
	2) almost too much	25(12.5)
	3) to a certain extent	45(22.5)
	4) negative	128(64)
Discomfort in the chest, N(%)	1) Very much	2(1)
	2) almost too much	43(21.5)
	3) to a certain extent	50(25)
	4) negative	105(52.5)
Fainting during arrhythmia, N(%)	positive	24(12)
	negative	176(88)
The fainting feeling during erythema, N(%)	positive	43(21.5)

Table 2: Distribution of responses of patients with abnormal ventricular contraction to 12 questions of the ASTA questionnaire

Abundance	**Very much, N(%)**	**almost too much, N(%)**	**to a certain extent, N(%)**	**negative, N(%)**
Q1) Have you felt unable to do your daily activities due to arrhythmia?	0	25(12.5)	68(34)	107(53.5)
Q2) Do you spend less time with family/friends due to arrhythmia?	0	11(5.5)	52(26)	137(68.5)
Q3) Do you spend less time with people you don't know/know less because of arrhythmia?	6(3)	12(6)	50(25)	132(66)
Q4) Are you worried about planning your free time/travel due to arrhythmia?	0	15(7.5)	49(24.5)	136(68)
Q5) Is your physical activity impaired due to arrhythmia?	2(1)	40(20)	38(19)	120(60)
Q6) Do you feel depressed and uncomfortable due to arrhythmia?	5(2.5)	43(21.5)	42(21)	110(55)
Q7) Do you feel irritable and angry due to erythema?	22(11)	28(14)	56(28)	94(47)
Q8) Have you had trouble sleeping due to arrhythmia?	1(0.5)	30(15)	51(25.5)	118(59)
Q9) Is your sexual activity impaired due to arrhythmia?	15(7.5)	23(11.5)	26(13)	136(68)
Q10) Do you feel afraid of death due to erythema?	4(2)	15(7.5)	44(22)	137(68.5)
Q11)Has your situation and living conditions deteriorated due to arrhythmia?	6(3)	33(16.5)	42(21)	119(59.5)
Q12) Are you worried that your erythema symptoms will repeat when you don't feel erythema?	20(10)	23(11.5)	56(28)	101(50.5)

Table 3a: Distribution of patients with abnormal ventricular contraction based on answers to the ASTA questionnaire by sex

	Men				**Women**				**The significance level**
	Very much	almost too much	to a certain extent	negative	Very much	almost too much	to a certain extent	negative	
Q1) Have you felt unable to do your daily activities due to arrhythmia?	0	17	34	61	0	8	34	46	0.29
Q2) Do you spend less time with family/friends due to arrhythmia?	0	6	30	76	0	5	22	61	0.96
Q3) Do you spend less time with people you don't know/know less because of arrhythmia?	3	7	28	74	3	5	22	58	0.99
Q4) Are you worried about planning your free time/travel due to arrhythmia?	0	9	28	75	0	6	21	61	0.92
Q5) Is your physical activity impaired due to arrhythmia?	1	23	21	67	1	17	17	53	0.99
Q6) Do you feel depressed and uncomfortable due to arrhythmia?	4	22	28	58	1	21	14	52	0.26
Q7) Do you feel irritable and angry due to erythema?	13	18	30	65	9	10	26	43	0.77
Q8) Have you had trouble sleeping due to arrhythmia?	0	17	30	65	1	13	21	53	0.69
Q9) Is your sexual activity disturbed due to arrhythmia?	7	17	15	73	8	6	11	63	0.28
Q10) Do you feel afraid of death due to erythema?	3	8	24	77	1	7	20	60	0.88
Q11)Has your situation and living conditions deteriorated due to arrhythmia?	4	19	22	67	2	14	20	52	0.91
Q12) Are you worried that your erythema symptoms will repeat when you don't feel erythema?	20	23	56	101	9	12	28	39	0.45

Among the limitations of this study is the lack of a classification of patients based on background factors such as previous ablation, which can be considered a selective and confusing bias. Also, the descriptive and cross-sectional nature of the study does not make it possible to draw cause-and-effect conclusions.

Conclusion

The findings of this study show that quality of life and ASTA questionnaire items in PVC patients have no significant relationship with the gender of this category of patients.

Acknowledgment

None.

References

1. Fu D-g. Cardiac arrhythmias: diagnosis, symptoms, and treatments. Cell biochemistry and biophysics. 2015;73(2):291-6.
2. Mathew J, Hunsberger S, Fleg J, et al. Incidence, predictive factors, and prognostic significance of supraventricular tachyarrhythmias in congestive heart failure. Chest. 2000;118(4):914-22.
3. John RM, Tedrow UB, Koplan BA, et al. Ventricular arrhythmias and sudden cardiac death. The Lancet. 2012;380(9852):1520-9.
4. Dresing TJ. Bradyarrhythmias. Current treatment options in cardiovascular medicine. 2001;3(4):291-8.
5. Wyndham CR. Atrial fibrillation: the most common arrhythmia. Texas Heart Institute Journal. 2000;27(3):257.
6. Gianni C, Burkhardt JD, Trivedi C, Mohanty S, Natale A. The role of the Purkinje network in premature ventricular complex-triggered ventricular fibrillation. Journal of Interventional Cardiac Electrophysiology. 2018;52(3):375-83.
7. Fitzpatrick JK, Goldschlager N. A case of narrow complex bigeminy, what is the underlying rhythm? Journal of Electrocardiology. 2018;51(3):379-81.
8. Frigy A, Csiki E, Caraşca C, Szabó IA, Moga V-D. Autonomic influences related to frequent ventricular premature beats in patients without structural heart disease. Medicine. 2018;97(28).
9. Ribeiro WN, Yamada AT, Grupi CJ, Silva GTd, Mansur AJ. Premature atrial and ventricular complexes in outpatients referred from a primary care facility. PLoS One. 2018;13(9):e0204246.
10. Akdemir B, Yarmohammadi H, Alraies MC, Adkisson WO. Premature ventricular contractions: Reassure or refer. Cleveland Clinic journal of medicine. 2016;83(7):524-30.
11. Panizo JG, Barra S, Mellor G, Heck P, Agarwal S. Premature ventricular complex-induced cardiomyopathy. Arrhythmia & electrophysiology review. 2018;7(2):128.
12. Massing MW, Simpson Jr RJ, Rautaharju PM, Schreiner PJ, Crow R, Heiss G. Usefulness of ventricular premature complexes to predict coronary heart disease events and mortality (from the Atherosclerosis Risk In Communities cohort). The American journal of cardiology. 2006;98(12):1609-12.
13. Cleeland CS. Symptom burden: multiple symptoms and their impact as patient-reported outcomes. Journal of the National Cancer Institute Monographs. 2007;2007(37):16-21.
14. Darbar D, Roden DM. Symptomatic burden as an endpoint to evaluate interventions in patients with atrial fibrillation. Heart Rhythm. 2005;2(5):544-9.
15. Ferrans CE, Zerwic JJ, Wilbur JE, Larson JL. Conceptual model of health- related quality of life. Journal of nursing scholarship. 2005;37(4):336-42.
16. Wolinsky FD, Wyrwich KW, Gurney JG. Gender differences in the sequelae of hospitalization for acute myocardial infarction among older adults. Journal of the American Geriatrics Society. 1999;47(2):151-8.
17. Czajkowski SM, Terrin M, Lindquist R, et al. Comparison of preoperative characteristics of men and women undergoing coronary artery bypass grafting (the Post Coronary Artery Bypass Graft [CABG] Biobehavioral Study). The American journal of cardiology. 1997;79(8):1017-24.
18. Fayers PM, Machin D. Quality of life: the assessment, analysis and interpretation of patient-reported outcomes: John Wiley & Sons; 2013.
19. Walfridsson U. Assessing Symptom Burden and Health-Related Quality of Life in patients living with arrhythmia and ASTA: Arrhythmia-Specific questionnaire in Tachycardia and Arrhythmia, Linköping University Electronic Press; 2011.
20. Bazemore TC, Bolger LE, Sears SF, Sadaf MI, Gehi AK. Gender differences in symptoms and functional status in patients with atrial fibrillation undergoing catheter ablation. Pacing and Clinical Electrophysiology. 2019;42(2):224-229.
21. Walters TE, Wick K, Tan G, et al. Symptom severity and quality of life in patients with atrial fibrillation: Psychological function outweighs clinical predictors. International journal of cardiology. 2019;279:84-89.
22. Simpson Jr RJ, Cascio WE, Schreiner PJ, Crow RS, Rautaharju PM, Heiss G. Prevalence of premature ventricular contractions in a population of African American and white men and women: the Atherosclerosis Risk in Communities (ARIC) study. American heart journal. 2002;143(3):535-40.
23. Yokokawa M, Kim HM, Good E, et al. Relation of symptoms and symptom duration to premature ventricular complex–induced cardiomyopathy. Heart Rhythm. 2012;9(1):92-5.
24. Paquette M, Roy D, Talajic M, et al. Role of gender and personality on quality-of-life impairment in intermittent atrial fibrillation. The American journal of cardiology. 2000;86(7):764-8.
25. Walfridsson U, Steen Hansen P, Charitakis E, et al. Gender and age differences in symptoms and health- related quality of life in

patients with atrial fibrillation referred for catheter ablation. Pacing and Clinical Electrophysiology. 2019;42(11):1431-9.
26. Amir M, Rabby RA, Kabo P, Setiadji R. The Short-term Post-Ablation Outcome of Patients with Low-Burden Premature Ventricular Complexes. Iranian Heart Journal. 2021;22(4):25-33.