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Mood and anxiety disorders in patients with cardiac arrhythmias from Lublin City and its province – pilot study

Zaburzenia lękowe oraz zaburzenia nastroju u pacjentów z zaburzeniami rytmu serca z Lublina i jego okolic – badanie pilotażowe

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Key words

cardiac arrhythmias, anxiety, emotional control, province, place of living, city, depression

Słowa kluczowe

zaburzenia rytmu serca, lęk, depresja, kontrola emocji, miejsce zamieszkania, miasto, wieś

Summary

Introduction. Co-existance of heart problems with mood and anxiety disorders creates the vicious circle of activation of autonomic nervous system, somatic symptoms and unpleased emotions, on which patients focus their attention. Due to this process emotional arousal may influence electro-stability of the heart.

Aim. Aim of the study was the investigation and detailed specification of mood and anxiety disorders patients living with cardiac arrhythmia according to their place of dwelling.

Material and methods. The study was carried out among 75 patients with cardiac arrhythmias, from Lublin City (group I) and Lublin's province (group II). Anxiety was measured with the IPAT Anxiety Scale Cattell, emotional control with Courtauld Emotional Control Scale – CECS by Watson, Greer and BDI – Beck Depression Inventory. Sociodemographic questionnaire gathered data concerning sex, age, place of living, level of education, maintenance and occupational situation.

Results. The conducted research revealed that there is a statistical difference in depression level, no statistical difference however, between levels of anxiety and emotional control in patients with cardiac arrhythmias from Lublin City and its province. Moreover, the coexistence between specific types of arrhythmia and elements of anxiety structure was stated.

Conclusions. In conclusion, should be stated that there is no difference in emotional pattern between rural and urban patients with cardiac arrhythmias. However, rural patients presents slightly increased levels of anxiety and all its components, as well as emotional control. Level of depression however, clearly differentiates both groups. Depression and free floating anxiety disorder is higher in rural citizens.

Streszczenie

Wstęp. Chorobom kardiologicznym często towarzyszą zaburzenia nastroju oraz zaburzenia lękowe, które tworzą koło pobudzenia autonomicznego układu nerwowego. Proces ten przyczynia się do rozchwiania układu bodźco-przewodzącego serca.

Cel pracy. Celem pracy jest szczegółowa analiza stanów emocjonalnych u pacjentów z zaburzeniami rytmu serca.

Materiał i metody. Badanie zostało przeprowadzone na grupie 75 pacjentów z zaburzeniami rytmu serca, pochodzących z Lublina (grupa I) i jego okolic (grupa II). Lęk mierzono Skalą Samopoznania Cattella, kontrolę emocji skalą CECS (Courtauld Emotional Control Scale) Watsona i Greera, natomiast do pomiaru depresji użyto Inwentarza Objawów Depresyjnych Becka. Ankieta własna posłużyła do zebrania danych socjodemograficznych, takich jak: płeć, wiek, miejsce zamieszkania, poziom wykształcenia i sytuacja zawodowa.

Wyniki. Wyniki wskazują na istnienie istotnej statystycznie różnicy pomiędzy poziomem depresji w badanych grupach. Pozostałe wyniki nie różnicują badanych grup, jed-

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nakże odnotowano współwystępowanie poszczególnych rodzajów arytmii z elementami struktury lęku.

Wnioski. Charakterystyka lęku oraz kontroli emocji nie różnicuje badanych grup, w odróżnieniu od poziomu depresji, który jest statystycznie wyższy w grupie II, w której obserwuje się także niewielkie podwyższenie wszystkich wyników. Oznacza to znaczne nasilenie depresji oraz lęku uogólnionego w grupie pacjentów pochodzących z okolic Lublina.

INTRODUCTION

According to World Health Organization (1) in developed countries cardiovascular diseases remains the main cause of death. In 1995, 14 million people died from cardiovascular diseases. By 2015 however, this number will rise to 20 million (2).

Netherless, it is hard to track number of people who survived stroke or live with serious cardiovascular disease. What is more, the most common complication after survived stroke is development of heart rhythm abnormalities like arterial and ventricular fibrillation (VF). Still however, many patients develop cardiac arrhythmias as a primary sickness like inborn Wolff-Parkinsone-White syndrome (WPW).

Living with such a medical burden like endured stroke and facing new heart problems like heart rhythm disturbances, influences psychological functioning of patients. Socioeconomic factors, like place of living moderate emotional coping strategies, which can be transform to emotional disorders.

This paper proposes a differentiation of patients with cardiac arrhythmias accordingly to their place of living – Lublin city and its province. Mainly it considers the co-existence of anxiety, emotional control and depression of people suffering from cardiac conduction abnormalities.

AIM

Aim of this article was to take a look at psychological problems of patients with heart rhythm abnormalities according to the place of living and put some light on the co-existence of specific emotional states and some types of heart rhythm abnormalities.

MATERIAL AND METHODS

The study has been conducted among 75 randomly selected patients both men and women, mean age 52.25 years from hospitalized with cardiac arrhythmias or cardiac conduction abnormalities from the Department of Cardiology Medical University of Lublin in year 2011. Examined patients were divided into two groups according to the place of living. Group I consisted of 39 patients from Lublin; group II gathered 36 from Lublin's province. Research has been carried out personally by the inquirers. All of the tests were completed and valid.

Three types of psychological methods were used in the research: first – Self Analysis Form The IPAT Anxiety Scale by Raymond B. Cattell (3); second Courtauld Emotional Control Scale – CECS by M. Watson, S. Greer (4) and BDI – Beck Depression Inventory.

IPAT Anxiety Scale consists out of 40 items which represent five supplementing scales of anxiety: (1) "Q3" perfectionism, (2) "C-" emotional stability, (3) "L" vigilance, (4) "O" apprehension and (5) "Q4" tension. Each item can be evaluated from 0 to 2 points. IPAT scale divides anxiety into two main types: implicit – inner, unconscious, often reflected in psychosomatic ailment and explicit type reveled in nervousness and observable behavior. First 20 items of test corresponds with implicit anxiety, next 20 – with explicit anxiety. Total sum of both parts represents the general level of anxiety. The scores for each supplementing scale consisted out of indicated items, then summed up and normalized to standard ten according to sex and age of the respondent. Normalized scores can be marked in 10 points scale, where 1-3 is low, 4-7 average, and 8-10 high level of anxiety.

Courtauld Emotional Control Scale – CECS method has been created to measure subjective sense of controlling emotions in demanding situations. Four scales assess anger – AG, depression – D, anxiety – AX and general emotional control. Questionnaire is constructed with 21 items then divided into 3 scales, where every scale contains seven items. Maximum score for every scale is 28. Total score is a sum of all scales and reflects the general emotional control where it can be reached 84 points. The higher is the score, the higher is emotional control.

Scores gathered by BDI – Beck Depression Inventory establish level of depression. Scores from 0-11 revels no signs of depression, scores from 12-27 suggest mild depression, scores above 27 major depressive disorder.

All mean scores and standard deviation are gathered in table 1.

Data from medical history were used for medical characteristic of the groups and conducted information like type of arrhythmia and type of treatment.

Statistical analysis was done with the STATISTICA 6 package. After check-up of data with the Kolmogorov-Smirnow (K-S) test and the Shapiro-Wilk W test statistical analysis was performed with the t-Student test, Spearman's correlation rank test and the U Mann-Whitney test. $P < 0.05$ was considered as statistically significant. Statistical results are presented in figures and tables.

RESULTS

Medical characteristic

All of the patients have been admitted to the Cardiological Department due to poor heart condition or

Table 1. Mean scores and standard deviation.

Group I (Lublin citizens, N = 39)		
IPAT Anxiety Scale	**MD**	**SD**
Q3	4.23	1.98
C-	5.77	2.35
L	5.17	2.89
O	6.77	2.51
Q4	8.05	2.06
IA	15.28	5.59
CECS	**MD**	**SD**
AG	16.87	5.00
D	17.62	4.40
AN	18.21	4.39
Total Emotional Control	**MD**	**SD**
	52.44	11.53
BDI	**MD**	**SD**
	11	9.12
Group II (Province citizens, N = 36)		
IPAT Anxiety Scale	**MD**	**SD**
Q3	4.14	1.71
C-	6.22	2.59
L	5.83	2.44
O	7.22	2.41
Q4	8.75	1.76
IA	16.22	4.99
GA	17.06	7.67
CECS	**MD**	**SD**
AG	17.81	5.36
D	19.14	4.31
AN	18.92	5.04
Total Emotional Control	**MD**	**SD**
	54.75	9.76
BDI	**MD**	**SD**
	14.6	8.51

heart discomfort. In all, 2 groups of cardiac arrhythmia were specified (1) life threatening heart rhythm disturbances – heart diseases and arrhythmias with indications for implantation cardioverter defibrillator (ICD), as a primary or secondary prevention of sudden cardiac death (SCD) (ventricular tachycardia/ventricular fibrillation VT/VF), (2) cardiac arrhythmias with recommendation to catheter ablation (focal ventricular arrhythmia, atrial fibrillation and flutter, tachycardia with narrow QRS, Wolff-Parkinson-White syndrome).

There was not observed any statistical difference in the type of cardiac arrhythmias in examined groups. Dominate disorder in patients from Lublin province (group II) life threatening ventricular tachycardia or flutter (33.33%). On the contrary, Lublin inhabitants (group I) mainly suffered from arterial fibrillation and flutter (33.33%). There was no difference in prevalence of tachycardia with narrow QRS in both groups. However the WPW syndrome, was more common for patients from group II (fig. 1).

All of the patients have applied several types of medical treatment e.g.: pharmacotherapy, peacemaker, ICD, ablation. Some patients had more than one kind of treatment in their medical history. Regarding to collected data, vast majority, that is 94.87% of the group I and 94.44% of group II patients was treated with pharmacotherapy. On the other hand, 44.44% of rural area representatives (group II) had a peacemaker implantation comparing to the 20.51% of city patients (group I). ICD and ablation distribution was even in group I and II (ICD: 35.89 vs. 38.89% respectively, ablation: 46.15 vs. 41.67% respectively) (fig. 2).

Psychological characteristics

IPAT Anxiety Scale measures stable personality traits which have their origin in aetiological functioning of central nervous system. Figure 3 illustrates mean scores distribution of IPAT Anxiety Scale. Although, there is no statistical difference between levels of anxiety in group I and II, some general tendencies can be observed. In three out of five main scales of IPAT Anxiety Scale scores reached middle level (between 4 and 6 sten) and two scales reached high level (> 6 sten). Scales which reached middle level are “Q3” perfectionism, “C-” emotional stability (in province > 6) and “L”

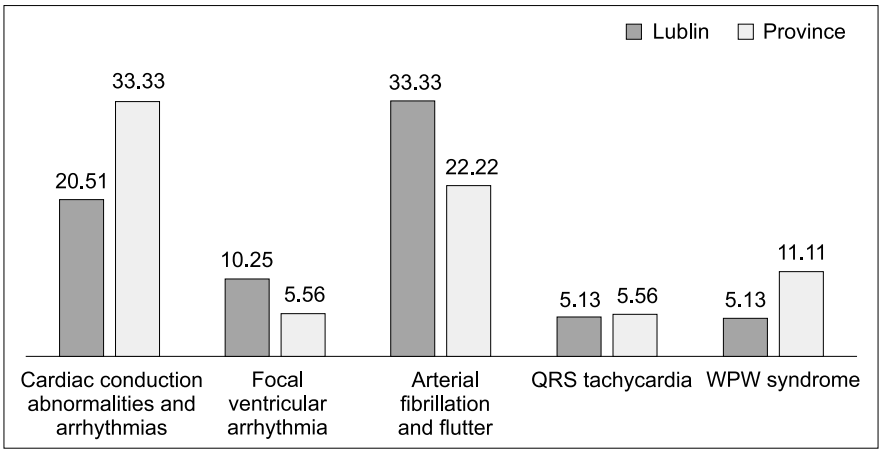

Fig. 1. Percentage distribution of type of cardiac arrhythmia.

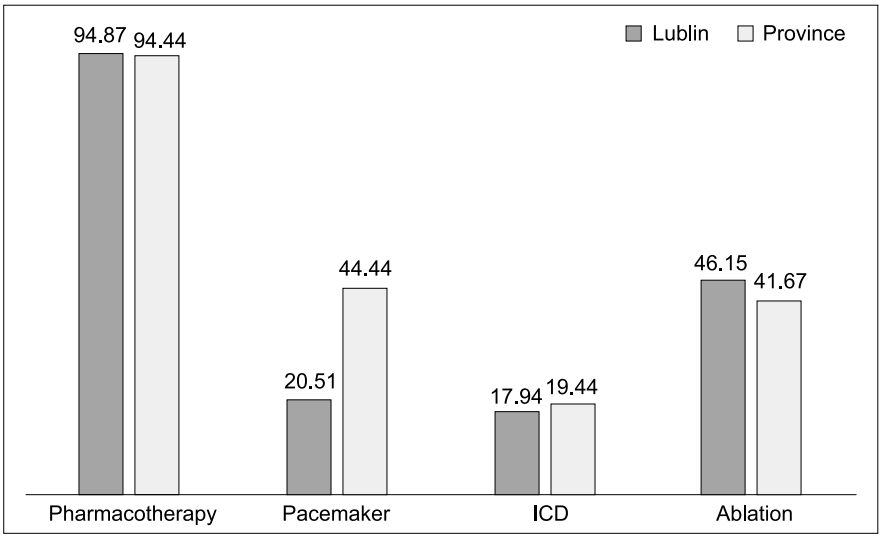

Fig. 2. Percentage distribution of type of medical treatment.

vigilance. In comparison, apprehension "O" and tension "Q4" scales presented high level in both groups (> 6). Slightly increased score refers also to general anxiety scale (GA). Patients from the rural area (group II) show higher levels of five from six anxiety scales C-, L, O, Q4 and GA in comparison to Lublin patients (group I). Results were not statistically significant (fig. 3).

Anxiety scales showed no significant disproportion between implicit and explicit anxiety in both groups (fig. 4).

Correspondingly to the difference of anxiety level, there is also no statistically significant difference in distribution of controlling emotions (fig. 5). Each out of three main scales remained basically on the same level between 16.87 and 19.14 points in the group I and II. Patients from the group I (Lublin inhabitants) control less their anger than province dwellers (group II), however level of depression is higher in group II. Anxiety level stays essentially even. There was also two point difference in total sum of controlling emotions. This mean slightly stronger emotional control in group II (fig. 5).

Conducted research presents differences in mean level of depression between group I (11.00) and II (14.06). After statistical analysis significance between levels of depression was proven (fig. 6). The mean level of depression was statistically significantly higher among people from rural area than urban citizens ($p < 0.05$).

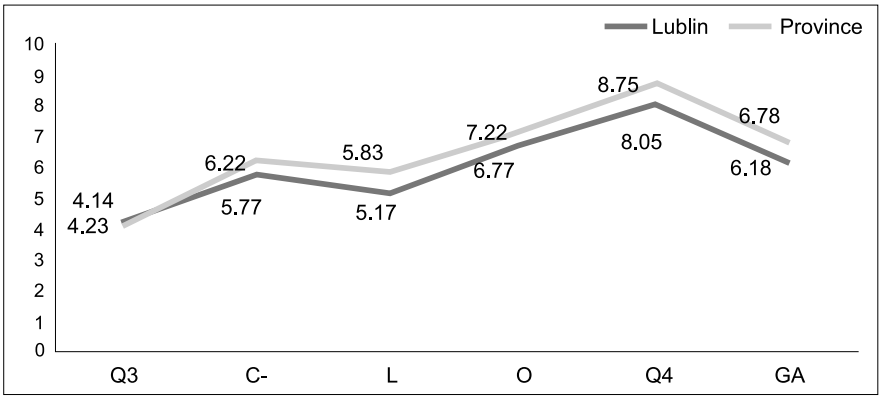

Fig. 3. Mean scores of IPAT Anxiety Scale.

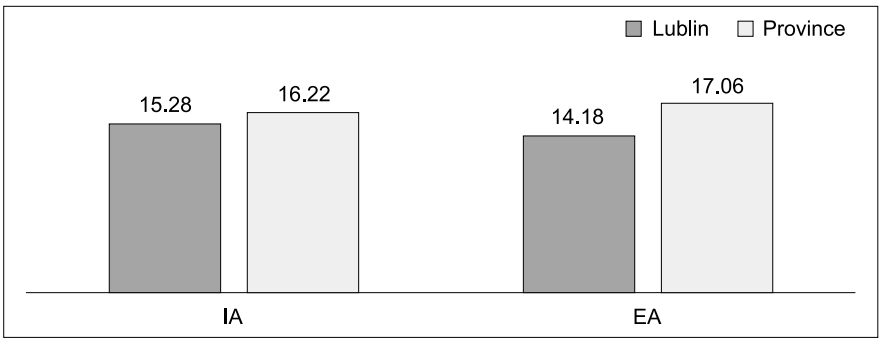

Fig. 4. Mean scores of implicit (IA) t and explicit anxiety (EA).

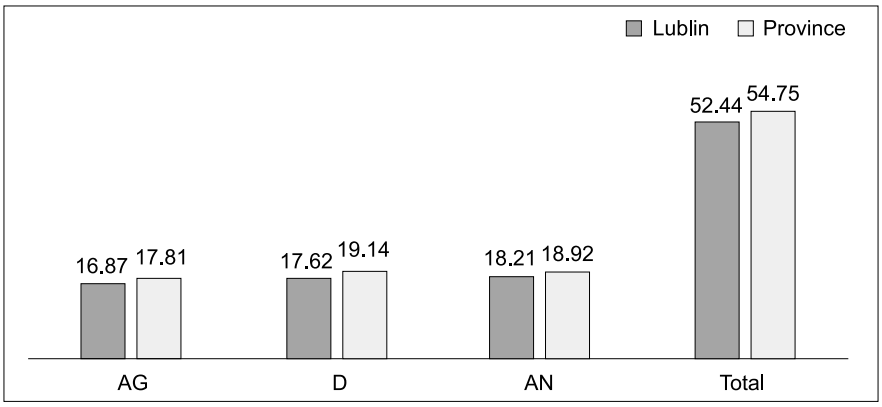

Fig. 5. Mean scores of Courtland Emotion Control Scale.

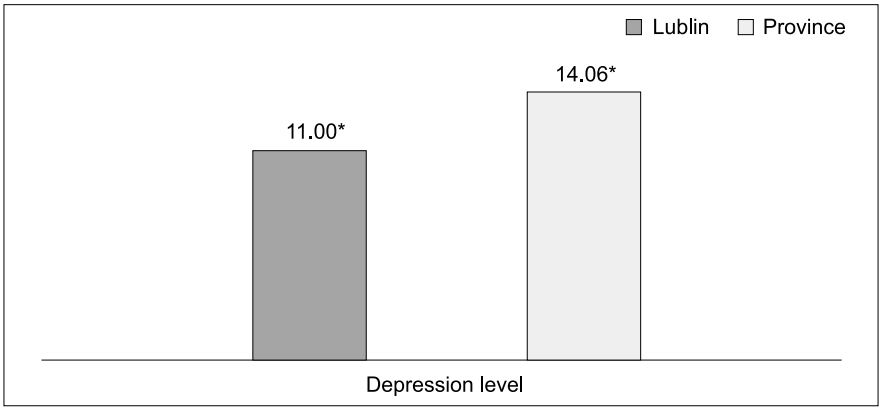

Fig. 6. Level of depression in BDI.
*Statistical significance

In rural citizens, the mean level of depression reached 14 points – mild depression, whereas 11 points for urban citizens – ower range of mild depressive disorder.

Relations between examined variables within groups were tested by the r-Spearman correlation test. Table 1 present correlation between emotional factors and type of arrhythmia according to place of living. Table 2 presents relation between ventricular tachycardia or flutter, QRS – tachycardia with narrow QRS, WPW syndrome and analyzed psychological scales. Results clearly show differences between mentioned factors and the dwelling place. Patients from Lublin (group I) show two statistically significant correlations between life threatening heart rhythm disturbances and scale "O" apprehension and WPW syndrome with scale "C-" emotional stability from IPAT Anxiety Scale. Whereas province dwellers (group II) reveal statistically significant correlation between total emotional control and the QRS tachycardia as well as the WPW syndrome; scale "Q4" tension and "IA" implicit anxiety scale from IPAT Anxiety Scale (tab. 1).

Other non-statistical differences were not taken under consideration.

DISCUSSION

Analysis of the results, leads to the conclusion that patients with arrhythmia may suffer from subclinical type of depression, free floating anxiety disorder and high levels of emotional control, what reinforces maladaptive coping strategies (5). What is more research presents co-occurrence between different type of cardiac arrhythmia, anxiety components and emotional control according to dwelling place.

Table 2. Chosen correlation coefficients for IPAT Anxiety Scale, Courtland Emotional Control Scale and types of cardiac arrhythmias according to statistical significance.

	Lublin inhabitants (group I)			Province inhabitants (group II)		
	VT/VF	QRS	WPW	VT/VF	QRS	WPW
C-	0.0798	-0.1878	-0.3444*	0.0258	-0.1413	-0.3262
O	0.3818*	-0.1565	-0.1669	-0.0173	0.1071	-0.2081
Q4	0.1939	-0.0699	-0.0430	-0.1238	0.1960	-0.04619*
IA	0.2580	-0.1713	-0.2906	-0.0284	-0.1698	-0.3328*
Total Emotional Control	0.1101	-0.1758	0.1654	-0.1762	0.3510*	-0.3113

*Statistical significance

Depression is one of those psychological factors, which is highly associated with health problems, including heart diseases. Its record in neuro- biochemical traits and behavioral patterns leaves no doubt of its significance in health well-being. The role of co-appearing anxiety, however is often neglegate. Although in new ICD-10 and DSM-IV classifications anxiety is avoided in psychopathological picture of depression, it is still the most common non- specific symptom. In course of depression anxiety often have free floating character with increased psychosomatic tension and somatic complains (6). With characteristic *pavor precordialis* in its picture. Anxiety is an emotional state which occurs when there is an inability to predict or control events, what triggers the feeling of threat causing physiological response (7, 8). This emotion affects cardiac autonomic response what increases the risk of occurring arrhythmia episode (9). In their studies Sirois and Burg (10) proved that people with ventricular arrhythmias gain higher scores in anxiety tests than general population, what was confirmed in own studies. Surprisingly, some specific psychological factors can be connected with different types of cardiac arrhythmias according to the place of resistance. In own study among patients from urban area emotional instability was linked to the WPW syndrome and apprehension to conduction abnormalities. However in rural areas, the WPW syndrome was connected with tension and implicit anxiety whereas the QRS tachycardia with total emotional control.

Emotional regulation, especially increased emotional control may lead to various health problems (11). According to literature, researchers have found evidence for relation between emotions and cardiac arrhythmias, some of them suggest that "negative emotions such as anxiety and depression can affect the electrical stability of the heart alerting the autonomic regulation (specifically, reducing the cardiac rate variability)" (7). The results of our study showed that the province dwellers had a tendency in controlling depression and anxiety, more than urban dwellers. However both groups, had slightest problems with controlling anger.

Results of investigation presented a complexity of emotional patterns as well as socioeconomic and medical influences among cardiac patients with heart rhythm abnormalities according to place of residence. Results of the research clearly show the coexistence of mentioned factors (emotions and sociodemographic data) with different kinds of arrhythmia in patients from urban and rural area. This evaluation should be included in health education and emotional support given to these patients, as well as medical personell.

CONCLUSIONS

1. Both groups suffer from subclinical free floating anxiety disorder.
2. Both groups present picture of mild depression.
3. There is no statistically significant differences in emotional pattern between rural and urban patients with cardiac arrhythmias.
4. Both groups present neurotic tension reflected in higher levels of apprehension and somatic tension.
5. Comparing to urban dwellers rural patients have slightly increased levels of anxiety, anger and general emotional control.
6. There is a statistical difference between level of depression.
7. Statistically significant relationships were confirmed between psychological factors and types of cardiac arrhythmias in patients from Lublin and its province.
8. In patients from Lublin statistically significant correlations were confirmed between "Q3" perfectionism and WPW syndrome as well as "O" apprehension – life threatening heart rhythm disturbances ICD and arrhythmia.
9. In patients from Lublin province total level of anxiety correlates with QRS tachycardia, "Q4" tension and implicit anxiety with WPW syndrome.

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