ORIGINAL ARTICLE

Annals of Agricultural and Environmental Medicine 2013, Vol 20, No 4, 767–772
www.aaem.pl

Pain-coping strategies in women with ischemic heart disease

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Nasiłowska-Barud A, Fedorovich V, Zapolski T, Sikorska-Jaroszyńska M, Wysokiński A. Pain-coping strategies in women with ischemic heart disease. Ann Agric Environ Med. 2013; 20(4): 767–772.

Abstract

Introduction and objective: The objective of the study was evaluation of the level and structure of anxiety and fear, and the characteristics of pain coping strategies used by females with ischemic heart disease (IHD). The detailed aim was assessment of the mutual relationships between the fear and pain coping strategies applied.

Material and methods: The study covered 75 females aged 33 – 80 (mean age 61; SD±9.66), hospitalized in the Cardiology Clinic who had coronary angiography performed in order to assess the state of coronary vessels. Psychological studies were conducted by means of the IPAT Anxiety Scale by R. B. Cattell and the Pain Coping Strategies Questionnaire CSQ by A. C. Rosenstiel and F. J. Keefe.

Results: The results obtained indicated that in the group of 75 females with IHD in the structure of anxiety and fear there dominated strong tendencies towards self-blaming and the experiencing of a sense of guilt, as well as a high level of internal tension. The strategy of the greatest importance in coping with pain among females with IHD was 'Praying and Hoping'. The strategies used with similar frequency were: 'Coping Self-Statements', 'Diverting Attention' and 'Increased Behavioural Activities'.

Conclusions: In females with IHD, the application of psychotherapy is recommended, aimed at reducing the level of auto-aggression tendencies and decreasing a high level of internal tension. Psychotherapeutic activities carried out among females with ischemic heart disease should focus on the strengthening of strategies of coping with pain, such as: 'Coping Self- Statements', 'Increased Behavioural Activities', and focusing attention on serious life problems.

Key words

ischemic heart disease, females, anxiety, pain coping strategies

INTRODUCTION

Pain complaints are among the most frequent symptoms experienced by patients with ischemic heart disease (IHD). Pain is a subjective phenomenon causing unpleasant sensations which result in suffering for the patient. In 1979, the International Association for the Study of Pain and the Taxonomy Working Group formulated a definition of pain as: 'an unpleasant sensory and emotional experience associated with actual or potential tissue damage, or described in terms of such damage' [1, 2, 3]. The main symptoms of psychical response to pain are anxiety and fear, pain causes anxiety and anxiety reinforces pain [2, 4].

Typical pain symptoms accompanying ischemic heart disease are gripping pain or expanding pain localized behind the sternum, occurring after physical activity and subsiding at rest. It often radiates towards the upper left extremity, mandible, and causes the sensation of breathlessness. These symptoms are usually accompanied by panic and anxiety, which is an emotional response to retrosternal pain [5, 6]. Mental stress-induced ischemia is more common than exercise-induced ischemia in patients with clinically stable coronary heart disease [7]. The meta-analysis performed by Richardson et al. suggests that high perceived stress is associated with moderately increased risk of incident IHD [8]. The pain and anxiety as a mental stressors may aggravate myocardial ischemia in the vicious circle mechanism.

Based on many years of clinical observations and scientific reports, it may be concluded that the clinical symptoms of IHD are different in females, compared to males. Gender is associated with differences between females and males regarding behaviour and disease, as well as with inequality of life conditions [9]. Therefore, some researchers suggest distinguishing the so-called 'female pattern' of ischemic heart disease, characterized by persistent, often atypical chest pain, positive results of non-invasive test evaluating ischemia, and no significant changes in coronary angiography [10, 11, 12]. Chest pain is non-typical more often among females than males; it is therefore differently experienced and interpreted. Chest pain can present with many disguises, such as abdominal pain, pain in the region of the back and shoulders, while retrosternal pain during physical effort is perceived by females as weakness and fatigue. Very often, chest pain is considered to be the result of indigestion, neuralgia or excessive physical activity resulting in 'muscle fatigue'. Females very rarely realize that pain may be connected with cardiac muscle ischemia or infarction. [5, 13, 14, 15, 16]. Females, unmarried males, and individuals living alone are at higher risk of mental stress-induced ischemia [7].

Panic attack is the most frequent and most intense emotional response to the occurrence of retrosternal pain. Studies by Fleet et al. conducted among a population of patients who had undergone myocardial infarction, showed that anxiety disorders occurred more often among females

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Received: 2 November 2012; accepted: 4 March 2013

than males [17]. Also, the results of studies by Frasure-Smith et al. indicated that heart diseases, during the acute phase, intensify the symptoms of panic [18, 19, 20].

During the last two decades, researchers dealing with the psychological aspects of pain concentrated their attention on the pain-coping capabilities of patients experiencing pain. The results of their observations showed that patients suffering from pain can actively attempt to control the degree and nature of their sensations, as well as everyday functioning. The skill of coping with pain is actually an attempt to change the style of perceiving and thinking about pain [21, 22, 23].

According to the concept by Lazarus and Folkman, coping with pain is understood as the effortful attempt to adapt to pain, or manage one's own negative response to the pain stimulus. Therefore, the aim of treatment should be to equip a patient with more efficient strategies for controlling non-adaptive thoughts, feelings and behaviours [22, 24, 25].

Due to the fact that most studies concerning pain and anxiety related to IHD were conducted among males, it is difficult to unequivocally indicate typical stenocardial pain coping strategies in females. Therefore, it seems justifiable to analyze the correlation between pain and anxiety, as well as the methods of coping in situations when heart-related pain occurs in a group of females with IHD.

OBJECTIVE

The objective of the study was evaluation of the level and structure of anxiety and fear, description of stenocardial pain-coping strategies used by females, as well as assessment of the correlations between anxiety and pain-coping strategies applied by females with ischemic heart disease.

MATERIALS AND METHOD

The study was conducted among females hospitalized in the Cardiology Clinic who had undergone coronary angiography in order to evaluate the condition of their coronary vessels.

Females who had been treated for ischemic heart disease for at least 3 months were qualified for the study. Exclusion criteria were either the occurrence of acute coronary event or the presence of other diseases within 3 months before the beginning of the study, or the presence of any systemic diseases. The study covered 75 women aged 33–80 (mean age 61 SD±9.66). All patients expressed their consent for psychological examination constituting a part of the complex treatment process.

Before completing the questionnaire, a detailed psychological history was taken from each patient, including questions concerning somatic ailments, neurotic disorders, mood, family situation, occupation and material standard, as well as treatment possibilities.

The level and structure of anxiety and fear was examined using the R. B. Cattell IPAT Anxiety Scale Questionnaire (authorized translation by Z. Płużek and K. Hirszel), and the Pain Coping Strategies Questionnaire (CSQ) by A. C. Rosenstiel and F. J. Keefe. The psychological questionnaires applied have been adapted to the Polish conditions [24, 25].

The American version of the R. B. Cattell IPAT Anxiety Scale Questionnaire is used for the evaluation of intensity and structure of anxiety as understood by the author. The American version consists of 40 items, while the Polish version includes 20 additional experimental questions. The test describes the structure of anxiety using 5 factors: personal integrity (Q_3^-), emotional stability (C^-), vigilance (distrust towards others) (L^+), apprehension (tendency to self-blaming) (O+) and internal or neurotic tension (Q_4^+). The enumerated factors constitute elements of general anxiety structure (EN). The characteristic feature of anxiety, as understood by Cattell, is the tendency towards long-term association with personality traits and possibly the most delayed reaction to past conflicts and stress.

The test provides information concerning the general level of anxiety, as well as about the implicit and explicit anxiety. The range of results obtained using the R. B. Cattell IPAT Anxiety Scale were transformed into the sten scale; sten values 1–4 considered as low, 5–6 – moderate and 7–10 – high [26].

The Pain Coping Strategies Questionnaire (CSQ) was constructed in 1987 by A. C. Rosenstiel and F. J. Keefe, and the Polish adaptation of the questionnaire was developed by Z. Juczyński. The questionnaire is designed for the evaluation of adults experiencing pain. It consists of 42 statements describing various methods of coping with pain, which can be grouped into 7 main pain coping strategies, and of 2 questions concerning the evaluation of the patient's own ability to use various strategies of coping with pain and to decrease pain intensity. Pain coping strategies are reflected by 6 cognitive strategies and 1 behavioural strategy, which are a part of 3 factors of cognitive coping – Cognitive Coping and Suppression, Pain Control and Rational Thinking, Helplessness / Emotion-Focused Coping.

For each strategy, the calculated results remain within the range 0–36 scores. The higher the result, the more importance is attributed to a given pain-coping method. In the case of questions concerning the degree of pain management and possibility of pain reduction, the results are within the range 0–6. The higher the result, the more significance is attributed to the patient's own capability of pain management and pain reduction [27].

The results of the study obtained were subjected to statistical analysis (Statistica 8.0). Normality of distribution was assessed by the Kołmogorova-Smirnowa test, and means values and standard deviation calculated. The significance of the differences was evaluated by t-Student test. The relationships between the variables were calculated with the use of r-Pearson correlation coefficients. Percentage distribution was established in order to obtain a more discerning psychological interpretation.

RESULTS

Angiographic evaluation of the coronary vessels demonstrated that 17 patients had 1 vessel coronary artery disease (CAD), 13 patients had 2 vessel CADs, and 8 patients had 3 vessel CADs. In the case of 37 women, non-significant minor changes were observed.

It was found that among women aged 30–40, only 1(1.3%) had IHD, among those aged 41–50 was 10 (13.3%), and in the age group 51–60, 23 (30.7%) females had IHD, whereas patients aged 61–70 constituted the largest group of respondents with IHD-27 (36%). Among females aged 71–80, IHD occurred in 14 (18.7%) patients. In the study

group, only 12 (16%) patients were occupationally active, 20 (26.7%) received health allowance, and 43 (57.3%) females were retired.

All the females claimed that they were actively engaged in housework as much as possible, 47 (62.6%) were socially active, keeping lively contacts with their family, neighbours, friends and acquaintances, while 18 (24%) women declared limited social activity. Ten women (13.4%) kept contacts only with their family and close friends, but even these were very limited. This concerned patients aged 71–80. The respondents from the oldest age group considered the social support they received as extremely important.

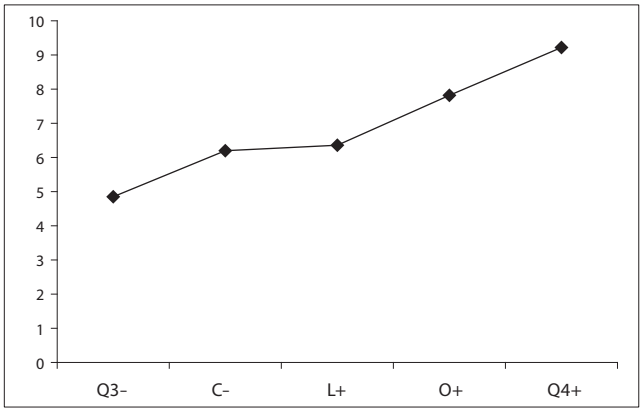

Figure 1. R. B. Cattell IPAT Anxiety Scale. Mean profile of females with ischemic heart disease (N=75).
personal integrity – Q_3^- (X=4.85, SD±1.96)
emotional stability – C^- (X=6.20, SD ±2.11)
vigilance – L^+ (X=6.36, SD±2.12)
apprehension – O^+ (X=7.82, SD±1.96)
neurotic tension – Q_4^+ (X=9.22, SD±1.20)

Table 1. Percentage distribution of results obtained based on the R. B. Cattell IPAT Anxiety Scale – low (1-4), medium (5-6) and high (7-10), and A. C. Rosenstiel, F. J. Keefe Pain Coping Strategies Questionnaire (CSQ) – low (0-12), medium (13-24) and high (25-36) in the group of females with IHD, N=75.

R. B. Cattell IPAT Anxiety Scale	Percentage distribution of results		
	low 1-4(%)	medium 5-6(%)	high 7-10(%)
Personal integrity – Q_3^-	38.7	34.6	26.7
Emotional stability – C^-	16.0	34.7	49.3
Vigilance – L^+	5.4	36.0	58.6
Apprehension – O^+	4.0	28.0	68.0
Neurotic tension – Q_4^+	0.0	4.0	96.0
General anxiety – EN	6.7	22.5	70.8
C. Rosenstiel, F. J. Keefe Pain Coping Strategies Questionnaire (CSQ)			
	low 0-12(%)	medium 13-24(%)	high 25-36(%)
Diverting Attention – DA	10.7	48.0	41.3
Reinterpreting Pain Sensations – RS	51.4	41.9	6.7
Catastrophizing – CAT	31.1	51.3	17.6
Ignoring Pain Sensations – IS	31.1	58.1	10.8
Praying and Hoping – PH	6.8	21.6	71.6
Coping Self Statements – CSS	10.8	48.6	40.6
Increased Behavioural Activites – IBA	16.0	45.3	38.7

The study results obtained using the R. B. Cattell IPAT Anxiety Scale demonstrated that within the group of 75 patients with IHD, 73.3% had a high level of self-concept control (Q_3^-), whereas 26.7% had problems with personality integration and were susceptible to crises of values. Almost half of the respondents (49.3%) displayed problems connected with decreased emotional stability (C^-), and over 58.6% experienced vigilance (L^+) and apprehension, and were distrustful towards the environment. In the group of examined females with IHD, two factors of anxiety structure were dominant: tendency towards self-blame (O^+) and neurotic internal tension (Q_4^+). A strong tendency towards auto-aggression, self-blame and experiencing guilt was noted in 68% of respondents. Almost all the females with IHD (96%) lived in a constant state of internal neurotic tension (Q_4^+) and had problems with relaxing. The level of general anxiety oscillated towards neurotic anxiety (Fig.1 and Tab.1).

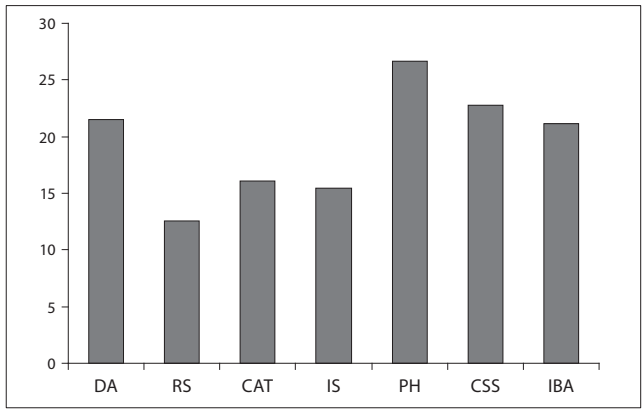

Figure 2. A. C. Rosenstiel and F. J. Keefe The Pain Coping Strategies Questionnaire (CSQ). Mean profile of females with ischemic heart disease (N=75).
Diverting Attention – DA – (X=21.49, SD ±8.15)
Reinterpreting the Pain Sensations – RS – (X=12.54, SD±8.85)
Catastrophizing – CAT – (X=16.10, SD±8.75)
Ignoring Pain Sensations – IS – (X=15.46, SD±8.69)
Praying and Hoping – PH – (X=26.70, SD±6.69)
Coping Self Statements – CSS – (X=22.78, SD±7.54)
Increased Behavioural Activities – IBA – (X=21.10, SD±7.45)

The strategies of coping with pain were evaluated in the group of 75 patients with IHD by means of the Pain Coping Strategies Questionnaire (CSQ). The most frequently used strategy was 'Praying and Hoping'. The mean frequency of application of the above-mentioned strategy by the females in the study was 26.54±6.71. Other pain-coping strategies used by IHD patients with similar frequency were 'Coping Self-Statements', 'Diverting Attention', and 'Increased Behavioural Activities'. Less frequently used strategies were 'Catastrophizing', 'Ignoring Pain Sensations' and 'Reinterpreting the Pain Sensations' (Tab. 1).

Correlation analysis showed statistically significant relationships between high and moderate levels of Self-Concept Control (Q_3^-) and an increased frequency of using such strategies as: 'Diverting Attention' (DA) ($r=-0.25$, $p\leq0.03$), 'Praying and Hoping' (PH) ($r=-0.24$, $p\leq0.03$), and 'Coping Self-Statements' (CSS)($r=-0.30$, $p\leq0.007$). Obtaining such results allows drawing of the conclusion that females with IHD with high personality integration avoid concentrating on their pain sensations, seek for and adopt rational strategies for their management, pray and have faith in Providence. Similarly, the negative correlation observed between emotional stability (C^-) and 'Catastrophizing' (CAT)

Table 2. Analysis of correlation (Pearson r correlation) between results obtained using R. B. Cattell IPAT Anxiety Scale, A. C. Rosenstiel and F. J. Keefe Pain Coping Strategies Questionnaire(CSQ) in the group of females with IHD (N=75).

R. B. Cattell IPAT Anxiety Scale Personality Factors		A. C. Rosenstiel, F. J. Keefe Pain Coping Strategies Questionnaire (CSQ)						
		DA	RS	CAT	IS	PH	CSS	IBA
Personal integrity – Q_3^-	r	**–0.25**	–0.21	0.12	–0.17	**–0.24**	**–0.30**	–0.19
	p	**0.03**	0.06	0.30	0.14	**0.03**	**0.00**	0.09
Emotional stability – C^-	r	0.12	–0.01	**0.45**	0.06	0.02	–0.08	–0.06
	p	0.28	0.90	**0.00**	0.58	0.83	0.48	0.60
Vigilance – L^+	r	–0.14	**–0.23**	0.20	–0.20	–0.07	–0.20	**–0.25**
	p	0.22	**0.04**	0.08	0.07	0.52	0.07	**0.02**
Apprehension – O^+	r	–0.13	–0.19	**0.41**	–0.19	–0.01	–0.19	–0.12
	p	0.26	0.09	**0.00**	0.08	0.87	0.09	0.29
Neurotic tension – Q_4^+	r	0.15	–0.11	**0.45**	–0.16	0.06	–0.10	–0.06
	p	0.18	0.33	**0.00**	0.16	0.55	0.39	0.60
Anxiety implicit – Ai	r	–0.02	–0.03	**0.50**	–0.09	0.01	–0.20	–0.09
	p	0.83	0.77	**0.00**	0.40	0.93	0.08	0.42
Anxiety explicit – Ae	r	–0.12	**–0.26**	**0.45**	–0.18	–0.03	**–0.28**	**–0.30**
	p	0.29	**0.02**	**0.00**	0.12	0.75	**0.01**	**0.00**
General anxiety – EN	r	–0.12	–0.20	**0.50**	–0.15	–0.04	**–0.22**	**–0.24**
	p	0.27	0.07	**0.00**	0.18	0.67	**0.04**	**0.03**

(r=–0.45, p≤0.00) showed that with the decreasing level of emotional stability and occurrence of traits of emotional instability, an increase was noted in the tendency towards 'Catastrophizing', as well as difficulties in seeking other, more radical ways of coping with pain. Together with an increase in vigilance (L^+), a decrease was observed in 'Reinterpreting of the Pain Sensations' (RS) (r=–0.23, p≤0.04), and in the ability to cope with pain by 'Increased Behavioural Activities' (IBA) (r=–0.25, p≤0.02). An increase in the tendency towards self-blame and guilt (O+) was accompanied by an increased tendency to 'Catastrophizing' (CAT) (r=0.41, p≤0.00). Similarly, 'Catastrophizing' own situation increased with the intensification of the following factors: neurotic tension (Q_4^{+}) (r=0.45, p≤0.00), general anxiety (EN) (r=0.50, p≤0.00), implicit anxiety (Ai) (r=0.50, p≤0.00) and explicit anxiety (Ae) (r=0.45, p≤0.00). Patients who were incapable of coping with the pain experienced claimed that pain overwhelmed them and their life lacked meaning (Tab. 2).

The females with IHD examined were divided into groups according to the number of coronary vessels lesions – Coronary Artery Disease (CAD). In the selected groups, a comparative analysis of results obtained from the R. B. Cattell IPAT Anxiety Scale and A. C. Rosenstiel and F. J. Keefe Pain Coping Strategies Questionnaire (CSQ) was performed.

Table 3. R.B. Cattell IPAT Anxiety Scale. Comparative analysis of significance of the relationships between the group of females with not significant minor changes (Group 0, N=37), and those with one vessel CAD (Group 1, N=17), evaluated by t-Student test.

R. B. Cattell IPAT Anxiety Scale Personality Factors	Group 0		Group 1		t	p
	X	SD	X	SD		
Emotional stability – C^-	5.64	2.13	6.88	1.80	–2.09	0.04
Apprehension – O^+	7.00	1.97	8.88	1.65	–3.42	0.00
Neurotic tension – Q_4^+	8.89	1.37	9.65	0.86	–2.09	0.04
General anxiety – EN	6.70	1.70	7.94	1.48	–2.59	0.01
Anxiety explicit – Ae	17.54	6.33	22.06	7.99	–2.24	0.03

Table 4. R. B. Cattell IPAT Anxiety Scale, A. C. Rosenstiel and F.J. Keefe The Pain Coping Strategies Questionnaire (CSQ). Comparative analysis of significance of the relationships between the group of females with not significant minor changes (Group 0, N=37) and those with two vessel CAD (Group 2, N=13), evaluated by t-Student test.

R. B. Cattell IPAT Anxiety Scale Personality Factors	Group 0		Group 2		t	p
	X	SD	X	SD		
Anxiety implicit – Ai	15.30	5.18	18.85	4.28	–2.21	0.03
C. Rosenstiel, F. J. Keefe Pain Coping Strategies Questionnaire (CSQ)						
Catastrophizing – CAT	13.38	7.09	21.00	9.26	–3.07	0.00

Table 5. R. B. Cattell IPAT Anxiety Scale, A. C. Rosenstiel and F.J. Keefe Pain Coping Strategies Questionnaire (CSQ). Comparative analysis of significance of relationships between the group of females with not significant minor changes (Group 0, N=37) and those with 2 vessel CADs (Group 2, N=13), evaluated by t-Student test.

R. B. Cattell IPAT Anxiety Scale Personality Factors	Group 0		Group 3		t	p
	X	SD	X	SD		
Apprehension – O^+	7.00	1.97	8.88	1.46	–2.53	0.02
Anxiety implicit – Ai	15.30	5.18	19.75	6.54	–2.11	0.04
A.C. Rosenstiel and F.J. Keefe The Pain Coping Strategies Questionnaire (CSQ)						
Catastrophizing – CAT	13.38	7.09	19.88	10.22	–2.17	0.04

The study results demonstrated that a group of patients in whom coronary angiography revealed lesions in one vessel (Group 1) were characterized by a higher tendency towards the occurrence of symptoms of emotional instability (C^-), stronger feeling of guilt (O^+) and higher levels of: neurotic tension (Q_4^{+}), explicit anxiety (Ae) and general anxiety (EN), compared to patients (Group 0) with only non-significant minor changes diagnosed (Tab. 3). Similarly, females with 2–3 vessel CADs (Group 2 and Group 3) demonstrated a stronger tendency to self-blame (O^+), a higher level of implicit anxiety (Ai), and the tendency to 'Catastrophizing' (CAT) when in a pain situation, compared to those with non-significant minor changes (Group 0) (Tab. 4, 5).

DISCUSSION

Pain complaints may occur in almost all somatic diseases, and very few nosologic units are free from this bothersome symptom. In ischemic heart disease (IHD), pain is among the most frequent and most onerous symptoms. Expanding, gripping chest pain is usually the first signal to a patient of the presence of the disease [5]. Pain is not only a somatic symptom conditioned by physiological response, but it is closely related with psychological response. Each individual experiences pain stimulus in a subjective and unique way. The response to a pain stimulus is modulated by cognitive processes, emotions, beliefs, situation assessment, social context, etc. [28, 29, 30].

Pain plays an important role in an individual's adjustment, is frequently a sign of serious risk for the body, and allows avoidance of this risk. Studies have shown the significant effect of emotions experienced by males on the perception of

pain stimulus. Positive emotions result in a weaker sensing of pain, whereas negative emotions contribute to its stronger perception. Emotions such as anxiety and fear intensify pain and, in turn, pain intensifies anxiety [3, 29].

Many scientific studies conducted both at the end of the 1980s and currently focus on the relationship between the psychical resources of an individual, and the pain coping strategies applied. Patients with chronic pain convinced about their ability to control this pain can evaluate their actual health status, function better, and obtain better results in pain therapy. Beliefs concerning own competences play a crucial role in the strategies of coping with pain, have a strong motivation function and help in struggling more efficiently with adversities in order to achieve the aim. Cognitive assessment of the situation by a patient is unique; therefore, revealing this assessment enables the prediction of how important the pain stimulus is for patients, and what will be their supposed way of coping with it [30, 31, 32].

The presented study of 75 females with ischemic heart disease allowed identification of the factors dominating the structure of anxiety. The dominant factors were (O^+), which revealed tendencies towards self-blaming and experiencing the feelings of guilt, and (Q_4^+), internal neurotic tension, as well as the sense of distrust and insecurity (L^+). In nearly a half of the females in the study, the symptoms of emotional liability were observed. The examined group of females with IHD was characterized by a discrepancy between aspirations and own abilities, these traits being accompanied by an excessive sensitivity to failures. The level of general anxiety and fear indicates its neurotic character.

The most characteristic strategy applied by respondents with IHD was 'Praying and Hoping', followed by 'Coping Self-Statements', 'Diverting Attention', and undertaking 'Increased Behavioural Activities'.

Numerous studies carried out among patients with ischemic heart disease have emphasized that anxiety is one of the earliest and most intense responses to pain events in this disease [5, 7, 8, 9].

The presented study conducted among 75 females with IHD confirmed the presence of these relationships. An increase in the level of general anxiety in the situation of the occurrence of stenocardial pain was accompanied by an increase in the tendency towards the use of the strategy focused on catastrophizing own situation. A decrease was observed in the tendencies towards the application of such strategies as: Coping Self-Statements and undertaking Increased Behavioural Activities. The sense of insecurity increased, while a decrease was noted in the Reinterpreting of Pain Sensations and possibilities to control pain by undertaking active measures. Analysis of the results of coronary angiography showed that in the group of 75 females, in as many as 37 of the patients, only non-significant minor changes were observed in arterial vessels. Despite the minor changes, the respondents reported pain complaints. Patients with one vessel CAD diagnosed in coronarographic examination were characterized by greater proneness to explicit anxiety (Ae), emotional liability (C^-), auto-aggression (O^+), internal tension (Q_4^+), and a high level of general anxiety (EN), compared to those with non-significant minor changes. Females with 2 vessel CADs diagnosed showed a higher level of implicit anxiety (Ai) and stronger tendencies towards catastrophizing (CAT) own situation, than those with minor changes. However, patients burdened with 3 vessel CADs presented a higher level of implicit anxiety (Ai), stronger feeling of guilt (O^+), and tendency towards catastrophizing (CAT) own situation. Females who had the diagnosis of one vessel CAD in coronary angiography showed the highest level of general anxiety, and the highest level of 3 factors creating its structure, i.e. emotional liability, tendency towards self-blaming, high internal tension. Possibly, while experiencing pain in the chest, the patients responded by strong anxiety; however, they did not attempt to control this pain by 'Coping Self Statements" (25.05 ±6.25). In females with 2 and 3 vessel CADs diagnosed by coronary angiography, the pain could have lasted considerably longer and recurred with greater frequency. Initially, the patients might have tried to disguise their anxiety from their surroundings; however, when the intensity of pain increased they catastrophized their situation. This problem requires a more comprehensive analysis of a larger population of females with IHD.

The few studies concerning the scope of problems of pain-coping strategies in females with IHD do not indicate unequivocal methods of coping. The results of studies by Zachariae et al. and Keogh confirmed differences in experiencing and sensing of pain by males and females. Females show a lower threshold of pain tolerance and a greater intensity of the pain experienced, compared to males [33, 34]. Considering the effect of stress factors, including pain and anxiety on decreasing quality of life, some researchers recommend that a psychologist trains coping strategies to ischemic heart disease patients, together with medical and invasive treatments, in order to improve recovery, maintain health and reduce recurrence [35]

The results of the studies obtained are promising, and therefore require continuation on a larger population of females with ischemic heart disease.

CONCLUSIONS

1. In females with ischemic heart disease the application of psychotherapy is recommended, aimed at the reduction of the level of anxiety, tendencies towards auto-aggression and high level of internal tension.
2. Psychotherapeutic activities conducted among females with ischemic heart disease should concentrate on the strengthening of such pain-coping strategies as Coping Self Statements, Increased Behavioural Activities and focusing attention on serious life problems.
3. Due to psychotherapeutic activities, females with IHD should be ready to apply the adaptation methods of coping with anxiety and pain.

Acknowledgements
The authors wish to express their gratitude to the women hospitalized in the Cardiology Clinic who participated in the presented psychological study.

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