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Depression symptoms, anxiety and personality traits in patients with coronary artery disease versus patients with chronic pancreatitis hospitalised due to exacerbation of the disease

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A – Study Design, B – Data Collection, C – Statistical Analysis, D – Data Interpretation, E – Manuscript Preparation,
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Summary **Background.** Coronary artery disease (CAD) is a common cause of hospitalisation in cardiac wards, while chronic pancreatitis (CP) is in gastroenterology wards. Both diseases are chronic and the clinical picture is dominated by pain.
Objectives. The objective was to describe the psychological characteristics of patients hospitalised for the worsening of CAD and CP.
Material and methods. The sample comprised 30 patients with CAD and 30 with CP. Participants completed personal questionnaires, the Eysenck Personality Questionnaire-Revised, STAI, Beck Depression Inventory and Scale A-Framingham.
Results. Mild depression occurred in 20% of patients with CAD and 30% with CP. A severe degree of depression was found in 20% of patients with CAD and in 15% with CP while the highest levels of anxiety (9–10 sten) were found in 30% of patients with CP and in 20% of patients with CAD. In relation to introversion-extraversion personality dimension, 74% of patients with CAD and 53% of patients with CP were classified as ambivert or introvert. In both groups, most patients had moderate emotional balance as follows: 47% patients with CAD and 43% with CP.
Conclusions. Compared to patients with CAD, patients with CP presented more severe depression symptoms and anxiety. The subjects with high intensification of neurotic traits more often presented high levels of anxiety and depression wherein more than half of these patients had severe anxiety and depression. Patients with low physical activity had significantly higher levels of anxiety than patients who were active daily or several times per week.
Key words: depression, chronic pancreatitis, anxiety, coronary artery disease.

Background

In the second part of the 20th century, chronic non-communicable diseases had become a major cause of death in the developed countries [1]. Quality of life (QoL) became increasingly acknowledged as an important outcome measure in cardiac patients. This fact has changed the role of psychology and psychoterapy in long-term prognosis.

Long life treatment processes, requiring fundamental lifestyle changes, drew the attention of researchers and drove them to examine the relationships between mechanisms of reaction, personality characteristics and somatic diseases. Anxiety, depression and certain personality features were scrutinized by researchers and physicians as factors modifying the course of some diseases. Special attention was turned towards two non-communicable diseases: coronary artery disease (CAD) and chronic pancreatitis (CP). Those diseases appear frequently in the Polish population. Main manifestation of both diagnosis is pain which occurs with varying intensity The impact of modifiable risk factors is crucial in both diseases [2, 3]. CAD is now the main cause of death in Poland. All over the world, more than 7 million people die because of CAD every year; this disease accounts for 12.8% of deaths for all reasons. One in every six men

and one in every seven women in Europe die due to myocardial infarction (MI) [4, 5]. Concerning CP, there are data that indicate that acute pancreatitis (AP) progresses to recurrent AP and then to CP in a disease continuum [6]. Proportional mortality has decreased over time, likely from better intensive and supportive care, clarity on optimal timing of interventions for complications and increased detection of milder cases. Although data are limited, it has been shown that patients with CP have worse prognoses than the general population, but mostly die from non-pancreatic causes such as other chronic diseases, cancers, or infections. The number of deaths each year from pancreatic cancer is approximately equal to the number of new cases, and the 5-year survival rate is roughly 6% [7].

Many studies examining the influence of chronic stress have confirmed its negative effect on emotional and physical functions. A relation between stress, emotional characteristics and ways of coping with it has been shown. In both analysed conditions, it is possible to pinpoint lifestyle as a factor favouring their occurrence. In developed countries, including Poland, where alcohol consumption is significant, CP develops in almost 80% of patients with alcohol dependence, which is frequently a consequence of difficulties in coping. Recent studies have also indicated a relation between cardiovascular diseases and psychological function-

ing. It has been concluded that type A – characterised by a strong need for achievements, excessive vigilance, responsibility and time pressure – as well as type D – characterised by negative emotionality and social inhibition – are factors that increase the risk of developing cardiovascular disease, including CAD and MI [8, 9].

Objectives

The main objective of the current study was comparing psychological factors and possible lifestyle conditions of patients hospitalised due to chronic diseases with exacerbated CAD and CP.

Material and methods

This cross-sectional study was performed in the departments of cardiology, gastroenterology and hepatology. All patients provided informed consent to participate in this study. The study included 60 patients (21 F, 39 M) aged 55 ± 9 years, including 30 patients with CAD after MI hospitalised due to exacerbation of CAD and 30 patients hospitalised due to exacerbation of CP. The age and gender of patients in both groups did not differ significantly (CAD: 10 F, 20 M, 57 ± 8 yrs; CP: 11 F, 19 M, 54 ± 9 yrs; $p > 0.05$).

The following tools were used in the study:

1. A personal questionnaire including questions about clinical symptoms of a given disease, comorbidities, frequency and type of physical activity and patient's lifestyle including exercise, diet and habits like alcohol consumption and smoking.
2. Eysenck Personality Questionnaire – Revised (EPQR), included 100 questions in the form of self-description, allowing assessment of the levels of neuroticism, extraversion, psychoticism and untruthfulness, assessing social appreciation expressed as a tendency to self-describe in a positive way. In this study we utilised a Polish version of this questionnaire by Brzozowski and Drwal [10].
3. STAI (State Trait Anxiety Inventory) questionnaire, developed by Spielberger, Gorsuch and Lushene, consistsing of two parts, related to anxiety as a state and anxiety as a characteristic. The sten gradation contains 10 points and the possible results range from: 1–4 low or no anxiety as a state or characteristic; 5–6: average level of anxiety as a state or characteristic; 7–10: high level of perceived anxiety.
4. Beck Depression Inventory (BDI) – consistsing of 21 statements ranked by the intensity of symptoms, defining the well-being of the patient. In each statement, the tested patient has to choose one answer that describes his or her state during the last month most accurately. The BDI contains 21 most common symptoms of depression including depressed mood, pessimism, guilt, self-hatred, irritability, tearfulness, inability to work, sleep disturbances, loss of libido etc.
5. Framingham Type A Behaviour Pattern Measure – Type A contains 10 statements about characteristics and properties typical for a person, feelings at the end of a typical day, and time pressure. The scale comprises two factors characterising type A – rush and rivalry. It is used for the assessment of certain behavioural conditioning of cardiovascular diseases and certain somatic disorders [8].
6. International Physical Activity Questionnaire (IPAQ) – assesses physical activity undertaken across a comprehensive set of domains including: leisure time physical activity, domestic and gardening activities, work-related physical activity, transport-related physical activity. The IPAQ form asks about three specific types of activity undertaken in the four domains introduced above. The specific types of activity that are assessed are walking, moderate-intensity activities and vigorous-intensity activities.

Statistical analysis. To analyse the results, the program STATISTICA 2008 was used. To compare characteristics between groups of patients with coronary artery disease and patients with chronic pancreatitis the chi^2 test and the Kruskal–Wallis test were used. P-values less than 0.05 were considered significant.

Results

Characteristics of the study group

Patients with CAD

All patients had experienced MI. The largest group (24% of the population) consisted of patients who had one MI, the second largest group ($n = 6.20\%$ of the population) had experienced two MIs, while the smallest number of respondents ($n = 2.7\%$ of the population) had suffered three MIs. In all patients a primary angioplasty as a treatment for MI was performed. Twenty patients (66% of respondents) experienced comorbidities. These included and occurred with the indicated number of cases as follows: hypertension: 4, diabetes: 3, osteoarthritis: 2, prostate disease: 2, kidney failure (each stage): 1, peptic ulcer disease: 1, rheumatoid arthritis: 1, psoriasis: 1, Raynaud's disease: 1, hyperlipidaemia: 1, myopathy: 1, bronchial asthma: 1, chronic pulmonary obstructive disease: 1. The most commonly reported clinical symptom was chest pain (93% of patients).

Patients with CP

Twenty two patients (73% of respondents) had experienced co-morbidities. These included and occurred within the indicated number of cases as follows: diabetes mellitus: 10, hypertension: 6, osteoarthritis: 3, epilepsy: 3, depression: 2, nephrolithiasis: 1, cancer: 1.

The complaints that patients reported most frequently were abdominal pain and bloating. Four patients did not report any pain or other symptoms.

Psychological characteristics of patients with CAD and CP

Type A Behaviour Pattern

Type A pattern was observed in 31% ($n = 19$) of subjects. Among those with CAD, type A was present in 33% ($n = 10$) of the sample and among those with CP in 30% ($n = 9$) of the sample.

Depressive symptoms assessed by Beck's Depression Inventory

A mild form of depression was found in 20% of patients with CAD and in 26% of patients with CP. Depression of moderate severity occurred in 3% of patients with CAD and 30% in subjects with CP. A severe degree of depression occurred in 20% of patients with CAD and 15% of patients with CP. Depression was not observed in 57% of patients with CAD and in 30% of patients with CP.

In the group with CAD, the most common symptoms included sleep problems (43% of respondents), pessimism, fatigue, and decreased libido (37%).

The most common symptoms in the group with CP (60% of cases) were sleep problems and fatigue (in 60%), health concerns (57%), difficulty with mobilisation (50%), and loss of appetite and body weight (47%).

Anxiety as a state

Among patients with CAD, the largest group (37%) comprised people whose level of anxiety shown in "sten" was 5. In patients with CP the largest (27%) group had a level of anxiety shown in "sten" as 6. The highest level of anxiety (sten 9 and 10) was observed in patients with CP, representing 30% of this group. This level of anxiety (sten 9 and 10) represented 20% of the CAD group. The lowest value of anxiety (in sten), which occurred in the entire group of respondents, was 3 and occurred only in patients with CAD.

Lifestyle

Physical activity

Sixty five percent of patients with CAD declared that they performed physical activity every day; 14% did not perform exercise at all. Fifty percent of patients with CP performed exercise daily, while 17% of the group led a sedentary lifestyle.

Walking and cycling were the most common types of physical activity in patients with CAD, while patients with CP most frequently declared their lack of recreational activities or, less frequently, they chose cycling or walking as pastime.

The results of the analysis led to the conclusion that a different intensity of physical activity affected the level of anxiety ($p = 0.01$, Kruskal–Wallis nonparametric test). Patients with CAD who were physically active only a few times a month or not at all (1) exhibited significantly higher levels of anxiety than the group of people active several times (2) a week or daily. There was no statistically significant correlation between the frequency of physical activity and anxiety in the group with CP. Forty seven percent of patients with CP led a peaceful and moderate lifestyle; 37% declared that stress occurred every day, but they were coping well with it; 17% claimed that they had a very stressful lifestyle that often they could not handle.

Leisure and sleep

Fifty seven percent of patients with CAD preferred active ways of spending leisure time, while 43% preferred a passive way. The amount of sleep a day in patients with CAD was as follows: 60% of respondents usually slept less than 8 hours, 37% slept 8 hours, and 3% usually slept more than 8 hours per day. Sixty three percent of patients with CP slept less than 8 hours a day, 27% slept more than 8 hours, and 10% slept 8 hours a day.

Discussion

This article examined the concept of the holistic and functional nature of humans, taking into consideration the co-existence of biological, psychological and social factors. Compared with the group of patients with CAD, patients with CP presented a higher degree of depression and state anxiety. This study supported results presented by other authors which concluded that people with low physical activity or who preferred a sedentary lifestyle showed significantly higher levels of anxiety than those who were physically active [9].

Simple psychological tools used in the study, namely the Questionnaire Self-STAI, BDI and the IPAQ, can help family medicine and primary care physicians to identify patients who, apart from pharmacological treatment, require psychological consultation and often long-term psychotherapy, and also patients who need education regarding physical activity. More advanced tools such as Eysenck's Personality Questionnaire (EPQR) and scale A-Framingham should be interpreted by a psychologist as a method of helping with the analysis of the causes of anxiety and identification of the psychological approaches to reducing them.

Literature provides a range of psychological descriptions of patients with ischaemic heart disease, but reports on the psychological sphere of patients with CP were few. One of the factors that played a significant role in recovery was emotional support. Low levels of support from close relatives increase the risk of MI and mortality [11].

The main arguments that support the relationship between CAD and type A behaviour come from many prospective studies, including the Western Collaborative Group Study (San Francisco), the Framingham Heart Study (Framingham), French Belgian Cooperative Study Heart and the Belgium Heart Disease Prevention Trial. These studies revealed a correlation between type A behaviour [12] and the occurrence of CAD. Similar studies were carried out at the Duke University Medical Centre, finding that in the group with the largest atherosclerotic lesions in coronary arteries, 93% of people had type A behaviour, which is characterised by extreme rivalry in lifestyle, aggression, struggle and a strong need for achievement, hyperactivity, feeling the pressure of time, excessive vigilance and responsibility. It is a factor that increases the likelihood of cardiovascular disease, including CAD and MI [12]. However, some studies have questioned the impact of certain styles of behaviour on the occurrence of CAD including the Multicenter Post Infarction Research Group [13], the Honolulu Heart Program [14] and others. The results did not confirm the relationship between personality type A and CAD.

In the study group, only 33% of patients were characterised as having type A personality; the other subjects were characterised by a moderate type B or intermediate type of personality. However, these results may have been affected by the diversity of the population in terms of age and professional activity. The group also consisted of pensioners who tended to experience greatly reduced time pressures and competition.

Previous studies have confirmed that depression, and even a small worsening of depressive symptoms, is a risk factor for the increased incidence of CAD, as well as worsening prognosis [15]. Throughout the sample, depression occurred in 43% of patients after MI; symptoms indicating mild depression, scores of 10–15 points, were seen in 26% of patients, moderate depression in 30%, and severe depression in 15%. The frequency of reporting depressive symptoms was different in both groups.

The most commonly reported symptoms in a CAD group were as follows: sleep problems (43%), pessimism (37%), fatigue (37%) and impaired libido (37%). Patients with CP most frequently reported depressive symptoms manifested as sleep problems, fatigue, health concerns, difficulty with mobilisation, loss of appetite and weight. In both groups, the least frequently occurring specific depressive symptoms were suicidal thoughts and expectation of punishment. Patients with a greater extent of non-specific symptoms of depression may perceive these symptoms as being affiliated with their somatic disease (CAD or CP) or as a psychological reaction to the same disease and not depression itself. It is known that people with high anxiety levels are more likely to experience a variety of symptoms, compared to individuals with low levels of anxiety. Patients with CP had a higher level of anxiety than patients with CAD. However, this was not a prospective study, so the above assumption should be treated with caution.

In this study, it was observed that in both groups the most frequent personality characteristic was ambivert, that is, those that have some personality traits of extra- and some of introversion and these results were similar to observations in the general population. Patients with CAD and patients with CP have presented more often with introverted rather than extroverted personalities. Another feature that was tested among patients was neuroticism. The largest subgroup of all patients consisted of people with moderate emotional balance. Neuroticism occurred more frequently among patients with CAD than in patients with CP.

In relation to acquired results, related to neurotic characteristics, it is worth noticing that they corresponded with results of studies on type D of personality, where negative emotionality and accompanying social inhibition significantly affected the course of treatment [16, 17]. This is why it would be interesting to include the DS-14 questionnaire, and thus assess type D personality in both groups of patients: with CAD and patients with CP hospitalised due to exacerbation of the disease. Furthermore, it was observed that a lack of depression resulted in significantly lower anxiety levels in patients with CAD.

The study also evaluated the impact of physical activity on the level of anxiety. Earlier studies have shown that physical activity is associated with a significant decrease in anxiety levels, even after one episode of physical exercise [18]. People who for a long time have been physically active have a lower level of anxiety. In addition, physical exercise reduces the level of anxiety, but also increases the level of optimism, improves mood, and thus the quality of life [18]. Based on the obtained data, it was found that patients with CAD who are physically active only a few times a month, or lead a sedentary lifestyle, exhibit significantly higher levels of anxiety than a group of people who are physically active several times a week or daily. In patients with CP and low physical activity, anxiety levels were higher.

A weakness of this study was the small number of patients in both tested groups and the use of the BDI to assess the depression intensity; this tool should rather be used for screening and is more efficient for an early depression assessment [19]. However, this test was chosen because it is easy to use and relatively well known by physicians. In addition, the methodology of the study was largely based on the analysis of the frequency and comparisons of the percentage of the survey characteristics; the results can rather be used for predicting differences between patients with a diagnosis of CAD and CP.

In summary, this study contributes to the understanding of the psychological characteristics of patients with CAD and CP. Especially in patients with CP, physicians should pay attention to the causes and treatment of anxiety as a state as well as symptoms of depression, as these features are more pronounced than among CAD patients. In both groups of patients, emphasis should be placed on education about physical activity, as lack of exercise may result in increased levels of anxiety.

Conclusions

Compared to patients with CAD, patients with CP presented more severe depression symptoms and anxiety. The subjects with high intensification of neurotic traits more often presented high levels of anxiety and depression wherein in more than half of these patients, anxiety and depression were assessed as severe. Patients with low physical activity had significantly higher levels of anxiety than patients who were active daily or several times per week.

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