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Chair and Department of Cardiology,
Medical University of Lublin

ALICJA NASIŁOWSKA-BARUD

# *Anxiety and fear level in patients after myocardial infarction over five years of rehabilitation*

Anxiety and neurotic fear accompany many somatic diseases and distinctly prevail in the personality structure of patients with cardiovascular disease.

The authors of pioneering studies of the 1940s characterise patients with heart ischaemia as persons with strong tendencies towards social and professional achievements, domineering and extremely dedicated to strict accomplishment of their duties. They have not time for relaxation and try to hide their neurotic features from family and acquaintances. They undertake very responsible tasks and hence live under constant tension, anxiety and fear (2, 5, 8, 12).

Later studies carried out in the 80s and 90s characterise patients after myocardial infarction as persons with low self-esteem, but strongly competitive. Therefore, suppressed hostility for the environment, lack of life satisfaction and anger occur in them. Anger is associated with high anxiety and fear level and neurotic inner tension (3, 6, 9, 14).

Numerous reports in recent years also emphasise that high level of anxiety and fear in the course of myocardial infarction complicates the process of treatment and rehabilitation (4, 6, 7, 8, 14).

The aim of the study is to characterise the structure of anxiety and fear in patients after myocardial infarction observed during their five-year rehabilitation.

## MATERIAL AND METHODS

The study comprises 114 men aged 24–63 years (mean age 47 years) treated in the Chair and Department of Cardiology of the Medical University of Lublin with recent myocardial infarction. The basic criterion for qualifying to a study group was diagnosis

of the first myocardial infarction supported with clinical examinations. The patients qualified for the study met functional criteria of health condition according to NHYA required for carrying out physical and psychological rehabilitation (13, 14).

In the treatment period of fresh myocardial infarction in all examined subjects echocardiography and psychological examinations were performed apart from basic clinical examinations. Control echocardiographic and psychological examinations were done right after a month sanatorium treatment. After completion of the first clinical treatment the patients were organised outpatient post-infarct rehabilitation for a period of five years. During these years the patients stayed for 4 weeks each year in the Sanatorium Cardiology Hospital in Nałęczów where under control they intensively exercised and were undergoing planned psychotherapeutic care. During the five-year period the patients were given permanent cardiology and psychological ambulatory care. 50 (44%) patients had higher education, 32 (28%) secondary education, 23 (20%) vocational education and 9 (8%) primary education.

For the assessment of anxiety and fear level R. B. Cattell's IPAT Self-Analysis Inventory was used (9, 11, 12).

## RESULTS

The results of psychological tests obtained on the basis of R. B. Cattell's IPAT Self-Analysis were statistically analysed with t-Student test for dependent groups (Fig. 1).

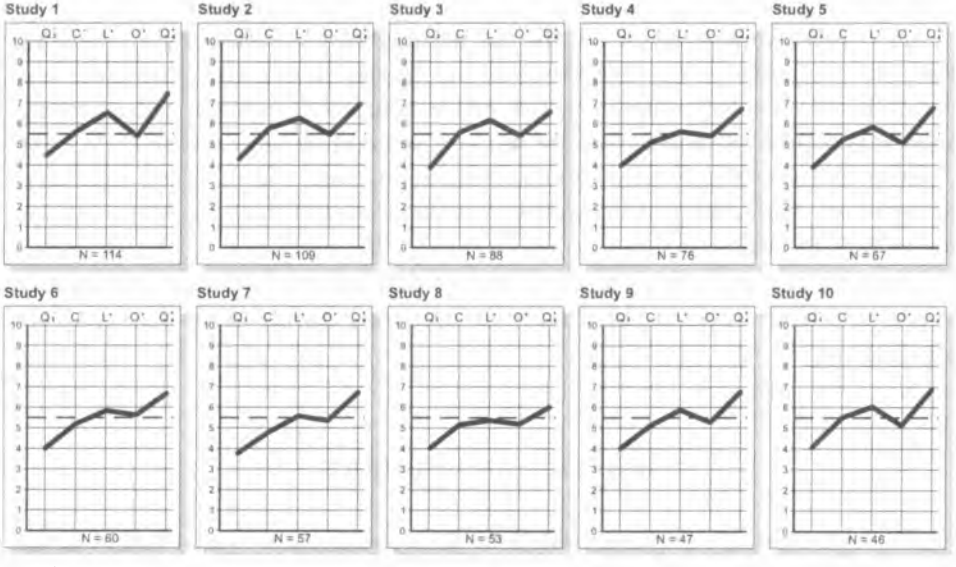


Fig. 1. Mean profiles of the study group of patients after myocardial infarction. Experiments 1–10

In successive ten tests obtained by the group of patients after myocardial infarction ($Q_4^+$) factor-mental tension prevails. In all examinations nearly 60% of patients show high scores in this factor. Similarly, 60% of patients in the first year of rehabilitation and in further years from 35% to 53% of subjects obtained high scores in ($L^+$) factor accounting for the sense of distrust and personal insecurity. For ten consecutive study periods about 30% of patients were characterised by considerable emotional instability ($C^-$) factor. It should be emphasised that the study subjects did not show lowered level of inner integration of personality ($Q_3^-$) factor during the five-year rehabilitation. Nearly 60% in individual groups obtained low scores in this factor, which indicates that there are here neither problems of lack of integration nor value crises. Problems of inner integration were only found in small percentage of subjects, which ranges from 17% to 9% in individual studies of five-year rehabilitation. In ten consecutive examinations general anxiety (EN) oscillated towards neurotic anxiety.

Five-year observation of the group of patients after myocardial infarction showed that the group was not homogenous as regards personality traits. Everybody has a specific personality, which makes them function differently and experience illness differently, getting adjusted in different ways to the illness and all its consequences.

The presented personality characteristics of patients under study gave a general picture of the personality of patients with heart infarct, but did not show personality differentiation. The use of cluster analysis let distinguish in the whole study group 7 groups of patients with the most similar personality characteristics.

Figure 2 shows mean profiles of tests with Cattell's IPAT Self-Analysis Inventory of patients after myocardial infarction in sets from 0 to 6.

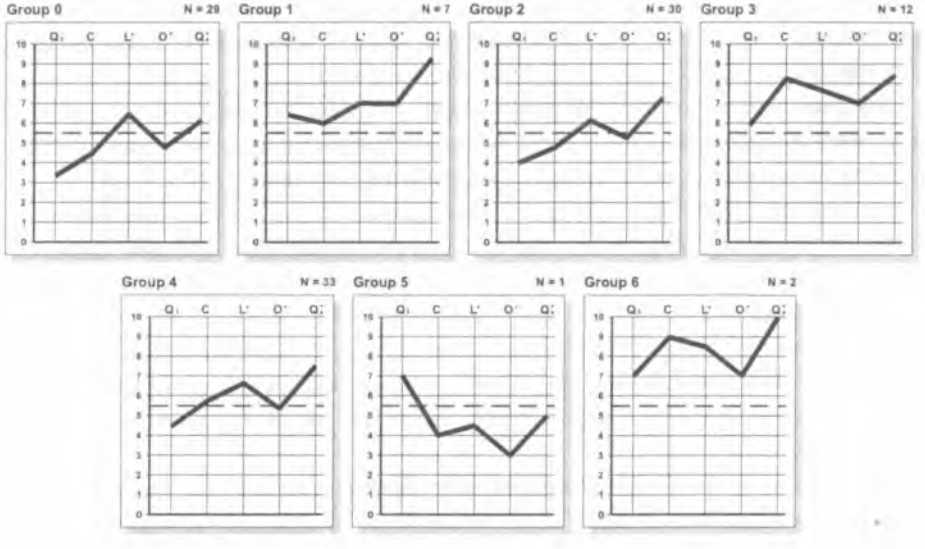


Fig. 2. Mean profiles in the study group of patients after myocardial infarction in individual groups 0–6. Experiment 1

Individual groups of patients considerably differed as regards anxiety and fear level.

Group 0 comprises 29 patients who have used defence mechanism of denial. This mechanism is reflected by the scores of tests with Cattell's Inventory and hence falsification goes towards increased integration of own personality ($Q_3^-$) and suppression of features of emotional instability (imbalance) ($C^-$). In patients from this group the sense of personal insecurity ($L^+$) is distinctly marked as well as the conflict between the impulsive sphere and superego – high mental tension ($Q_4^+$). General anxiety assumed mean values EN = 5.3.

Group 1 is made up of 7 patients and is the least numerous. General anxiety in these patients is within the limits of neurotic fear EN = 7.8. All patients from this group show increased mental tension ($Q_4^+$), high autoaggression ($O^+$) and aggression towards environment. High scores in ($Q_3^-$) factor point to value crisis associated with uncontrolled emotional reactions ($C^-$).

Group 2 comprises 30 subjects. Study results indicate that in these patients no crises of values occur ($Q_3^-$), the scores in the scale of emotional immaturity ($C^-$) is also average. However, the sense of danger ($L^+$) is considerable with moderate autoaggressive attitude ($O^+$) and increased neurotic tension ($Q_4^+$).

Group 3 comprises 12 persons. The profile obtained from tests with Cattell's Inventory is neurotic as well as the level of general fear EN = 8.2. Very high is also mental tension ($Q_4^+$) and distinctly marked features of emotional imbalance ($C^-$). In patients from this group autoaggression is considerable ($O^+$) as well as aggression towards the environment ($L^+$).

Group 4 is the most numerous and comprises 33 subjects. Scores on Cattell's Inventory are actually within normal limits. There are no personality crises ($Q_3^-$) in these patients. They show, however, a moderate sense of insecurity ($L^+$) and moderate self-criticism ($O^+$). Inner tension ($Q_4^+$) is also increased.

Only one patient qualified to group 5. He was characterised by decreased inner integration ($Q_3^-$) accounting for crisis of values and disorderly choice of values as well as increasing insecurity (uncertainty) and distrust for the environment ($L^+$).

Two patients qualified to group 6. They showed strong defence mechanisms of aggravation. They took part in only the first year of rehabilitation and gave up further examinations without giving any reason. All the factors in Cattell's IPAT Self-Analysis Inventory are high and point to intensified anxiety and fear and are above normal limits.

The dynamics of changes taking place in the structure of anxiety and fear in patients after myocardial infarction during their five-year rehabilitation was investigated using statistical analyses adequate for the problems of randomly time dependent variables, called Markov's chains.

Because of very vast statistical analysis of stochastic processes only some exemplary factors were selected from Cattell's IPAT Self-Analysis Inventory in individual groups of patients.

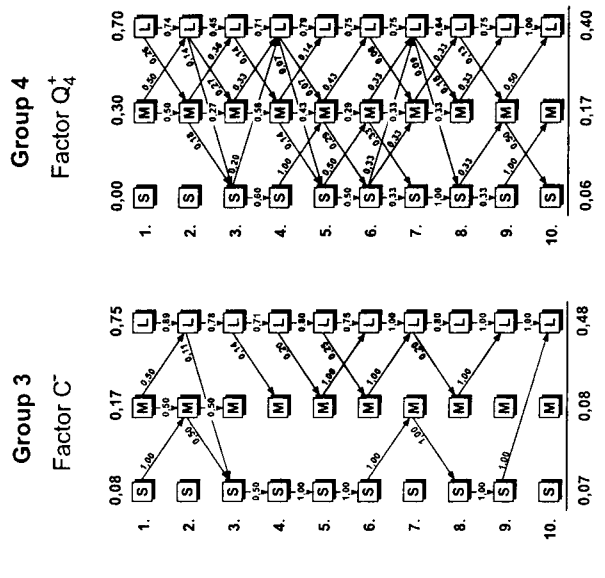


Fig. 2. An analysis of Markov's chains concerning the structure of anxiety and fear in patients after recent myocardial infarction during five-year rehabilitation (in selected anxiety factors)

Figure 3 analyses Markov's chains concerning the structure of anxiety and fear in patients after fresh myocardial infarction during their five-year rehabilitation (in selected anxiety factors).

In $L^+$ factor (the sense of danger and distrust) (Fig. 3) patients of group 0 achieved high scores in test 1 with the probability ($p_1 = 0.62$). In successive 10 tests great changeability occurs in transitions from the level of high scores to the level of mean and low scores. Despite great changeability, after five years of rehabilitation most patients obtained the level of high scores ($p = 0.22$). Hence, it can be assumed that the sense of danger and insecurity will also persist at a further stage of investigations.

In inner tension ($Q_4$ = factor) (Fig. 3) in test 1 all patients from group 1 obtained the level of high scores with the probability ($p_1 = 1$), which indicates that patients from this group are characterised by high inner tension. In successive examinations of their five-year rehabilitation only a few transitions from the level of high scores to mean scores were found. After these five years probability ($p = 0.47$) of obtaining the level of high scores indicates that inner tension will persist in the next examinations.

Patients from group 2 (Fig. 3) in inner tension ($Q_4^+$ factor) obtained the level of high scores in test 1 with the probability ($p_1 = 0.73$), which indicates the neurotic conflict of superego. In consecutive ten investigations numerous changes occurred in the obtained score levels. After completion of the five-year rehabilitation probability ($p = 0.42$) lets conclude that neurotic tension will also persist at further stages of the study.

Patients from group 3 obtained high level of scores in emotional imbalance ($C^-$ factor) with the probability ($p_1 = 0.75$), which indicates considerable imbalance of these patients. During five-year rehabilitation changes in transitions from the level of high to the level of mean scores were observed. After five years of rehabilitation there is a significant probability ($p = 0.48$) that high level of emotional imbalance in patients from this group will persist and will not get improved in further years of rehabilitation, either.

Patients from group 4 (Fig. 3) in examination 1 obtained the level of high scores with the probability ($p_1 = 0.70$), which indicates that patients from group 4 are characterised by high neurotic tension. In successive ten examinations numerous changes occurred in transitions from the level of high, mean and low scores. After five years of rehabilitation a probability of obtaining the level of high scores ($p = 0.40$) lets conclude that neurotic tension will also persist at further stages of rehabilitation.

## DISCUSSION

The importance of anxiety and fear in cardiac ischaemic disease has been emphasised by many authors (1–10, 12, 14). By analysing anxiety and fear level they obtained similar neurotic profiles to the ones found in my study. Płużek, Łazowski, Tylka emphasise that in patients with heart ischaemic disease anxiety is much more intense than in healthy people. The dominant factor in the structure of anxiety and fear was

inner tension. Also Tylka in his prospective studies found that patients after heart infarct, in which high level of anxiety persisted, had bad results after seven years of rehabilitation too. The patients exhibited unfavourable lifestyle, were characterised by low self-esteem and increased search for care and support. Jones, West, Jenkins, Rogers emphasised that high anxiety level considerably complicated clinical treatment of fresh myocardial infarction. My results indicate that the differentiated structure of anxiety and fear has an unquestionable influence on treatment, rehabilitation and prevention of ischaemic heart disease.

## CONCLUSIONS

1. In the study group of patients after myocardial infarction the level of general anxiety always remained close to neurotic level during the whole five-year rehabilitation period.
2. During the whole five-year rehabilitation period the normal level of internal integration was observed.
3. The inner tension of neurotic character dominated in the structure of anxiety and fear.
4. The use of adequate statistical analyses lets distinguish patients after myocardial infarction with the most similar personality characteristics.
5. Personality differentiation in the structure of anxiety and fear in patients after myocardial infarction undoubtedly affects the course of disease and therefore, it should be considered in the process of treatment, rehabilitation and prevention.

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## SUMMARY

The aim of the study was to characterise the structure of anxiety and fear in patients after myocardial infarction observed during their five-year rehabilitation. The study group comprised 114 men aged 24–63 years treated at the Chair and Department of Cardiology, Medical University of Lublin with recent myocardial infarction diagnosed according to generally accepted clinical criteria. Besides basic clinical examinations the patients were performed echocardiography and psychological examination. After completion of the first clinical therapy a five-year post-infarct outpatient rehabilitation was organised for the patients. To assess the level of anxiety and fear Cattell's IPAT Self-Analysis was used. The method lets find out that: 1. In every study period the level of general anxiety was close to the neurotic level. 2. During the whole period of five-year rehabilitation in about 60% of patients the normal level of internal integration was observed. 3. In all study periods about 30% of patients showed emotional

instability. 4. In the structure of anxiety and fear about 60% of patients always showed high level of inner tension associated with a conflict between superego demands and impulsive sphere. 5. Observation of patients after myocardial infarction lasting many years has shown that the study group is not homogenous as for personality traits. The use of agglomerate analysis allowed distinguishing 7 groups of patients with the most similar personality characteristics. Individual groups of patients significantly differed from one another with regard to the structure of anxiety and fear.

## Poziom niepokoju i lęku u chorych po zawale serca w okresie pięcioletniej rehabilitacji

Celem pracy była charakterystyka struktury niepokoju i lęku u chorych po zawale serca, obserwowana w okresie pięcioletniej rehabilitacji. Grupę badaną stanowiło 114 mężczyzn w wieku od 24 do 63 lat, leczonych w Katedrze i Klinice Kardiologii AM w Lublinie z powodu pierwszego świeżego zawału serca rozpoznanego na podstawie ogólnie przyjętych kryteriów klinicznych. Oprócz podstawowych badań klinicznych pacjentom wykonano badanie echokardiograficzne i badanie psychologiczne. Po zakończeniu pierwszego leczenia klinicznego chorym zorganizowano pięcioletnią pozawałową rehabilitację ambulatoryjną. Do oceny poziomu niepokoju i lęku zastosowano Arkusz Samopoznania R.B. Cattella. Metoda ta pozwoliła na stwierdzenia: 1. W każdym okresie badawczym poziom niepokoju ogólnego był bliski poziomowi neurotycznemu. 2. Przez cały okres pięcioletniej rehabilitacji u około 60% chorych utrzymywał się prawidłowy poziom integracji wewnętrznej. 3. We wszystkich okresach badawczych około 30% osób charakteryzowało się niezrównoważeniem emocjonalnym. 4. W strukturze niepokoju i lęku u 60% chorych pozostawał zawsze wysoki poziom napięcia wewnętrznego związanego z konfliktem pomiędzy wymaganiami superego a sferą popędową. Wieloletnia obserwacja chorych po zawale serca wykazała, że badana grupa nie jest jednorodna pod względem cech osobowości. Zastosowanie analizy skupień pozwoliło na wyodrębnienie 7 grup chorych o najbardziej zbliżonych–podobnych cechach osobowości. Poszczególne grupy chorych znacząco różniły się strukturą niepokoju i lęku.