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Dear Reader!

Considering first positive responses to the new graphical form of our journal, we believe it’s been well accepted by the readers. However we still welcome any comments and letters regarding constructive changes and proposals which could improve the quarterly.

In this issue, we present a wide spectrum of research undertakings and results, from genetic explorations through analyses of psychopathology to different aspects of depression and its therapy. This time the research results captured here are all from Poland.

Taking into consideration the fact that recently we have been receiving relatively few papers on psychotherapy, we’d like to strongly encourage authors to send us such in the future.

We wish you a pleasant reading!
Antidepressant discontinuation syndrome – a problem for the clinician and the patient
Janusz Heitzman, Magdalena Solak

Lipid peroxidation and Copper-Zinc Superoxide Dismutase activity in patients treated with fluoxetine
during the first episode of depression
Piotr Galecki, Józef Kędziora, Antoni Florkowski, Elżbieta Galecka

Can short-term exposure to extremely low temperatures be used as an adjuvant therapy in the treatment of
affective and anxiety disorders?
Joanna Rymaszewska, David Ramsey, Sylwia Chładzińska-Kiejna, Andrzej Kiejna

Evaluation of the activity of selected elements of the immune system in depression
Paweł Wójciak, Małgorzata Sobieska, Artur Kostzewska, Janusz Rybakowski

Social networks of depressed patients
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Treatment program for dual-diagnosis substance abusers
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Association of functional genes polymorphisms of key enzymes in the metabolism of biogenic amines with paranoid schizophrenia susceptibility and the influence of these polymorphisms on PANSS results in antipsychotic treatment

Piotr Tybura, Anna Grzywacz, Anna Konopka, Jerzy Samochowiec

Summary
Introduction: The genetic components of schizophrenia susceptibility are calculated as being 50%.
Aim: We evaluated the frequency of alleles and genotypes of COMT and MAO-A genes polymorphisms in patients with schizophrenia and in the healthy population. We searched for associations between the genotypes and PANSS results among patients in a three month-long antipsychotic therapy.
Subjects and methods: The study comprised 72 unrelated patients who met ICD–10 criteria for schizophrenia, and 187 unrelated healthy controls. The analysis of COMT and MAO-A genes polymorphisms were performed using the polymerase chain reaction technique (RFLP-restriction fragments length polymorphism and VNTR-variable number tandem repeats). The severity of psychopathological symptoms was measured using the PANSS (Positive and Negative Schizophrenia Scale).
Results: We did not find any association between the genotype of COMT and MAO-A genes polymorphisms and schizophrenia. We found a statistically significant different allele distribution in MAO gene polymorphism: alleles with three tandem repeats in the promoter region were more frequent among females with schizophrenia. We did not find any association between the genotype of COMT and MAO-A genes polymorphisms and PANSS results in any time periods. Due to a small number of patients in this study the obtained results should be regarded as preliminary.

INTRODUCTION

Schizophrenia is a psychiatric disease which affects 1% of the world’s population. The chronic character of the illness and the damage it causes in patients’ cognitive skills, emotions and social functioning provide an impetus for research on the causes of the disease to predict its course and establish possibly effective treatment with few side effects.

Previous theories accounting for environmental, genetic, neurodevelopmental, biochemical and immunological or infectious factors seemed to explain, to some degree, the origins of schizophrenia. Despite the fact that the risk of developing schizophrenia in general population is similar, the disease was found to be diagnosed definitely more frequently within families (approx. 10% more often in the first degree relatives),
and the occurrence of the disease in monozygotic twins reaches 40 – 50% [1]. This data led to the conclusion that what plays an important part in schizophrenia morbidity is the genetic factor. However, the fact that schizophrenia morbidity among monozygotic twins was not found in 100% cases indicated that genetic predisposition was not the only background factor contributing to schizophrenia [2]. Further twin and adoption studies showed that a simple, Mendelian pattern of schizophrenia inheritance was invalid [3, 4, 5]. Some researchers believed that inheritance of susceptibility to schizophrenia was caused by epistatic activity of even tens of genes [6].

Nowadays, there are two widely accepted research strategies in psychiatric genetics: genetic linkage studies, where the whole genome is studied in search for sites responsible for schizophrenia, and association studies, which consist in comparing the distribution of alleles of the same locus in unrelated ill and healthy individuals from the general population [7]. Similar frequency of a particular allele in patients with schizophrenia may indicate that there are associations between the studied polymorphism and schizophrenia morbidity. Association studies are particularly useful in case of diseases of polygenic background, and therefore they are widely used in psychiatry [6].

So far, researchers have not determined any genome sites which could be related to schizophrenia morbidity. However, some results suggest that research is proceeding in the right direction [2, 8, 9]. Some studies have demonstrated differences in COMT activity resulting from the polymorphism of the gene which encodes this enzyme. The polymorphism consists in the G → A transition in exon 4 of the COMT gene. The functional effect of that transition is a 3 to 4-fold decrease in the activity of the COMT enzyme [10, 11]. The enzyme is most active in individuals with two valine alleles, and least active – in individuals with metionine homozygotes. Heterozygotes show an average level of the COMT enzyme activity.

There are two genes (MAO-A and MAO-B) located on chromosome X (Xp11.4–11.23) which are responsible for the MAO synthesis [12, 13]. In 1998, Sabol et al. [13] described the MAO gene polymorphism in the promotor region. This polymorphism consists in a different number of tandem repeats of 30 bp. The allelic forms contain 3, 3.5, 4 or 5 repeats. Alleles with 3.5 and 4 repeats feature a more productive transcription (2 – 10 times higher). It results in a lower activity of the form with 3 repeats as compared with the other alleles including those with 5 motives [13]. Approximately 97% of the general population has alleles with 3 or 4 repeats and only these were taken into consideration in our study. It was impossible to determine the genotype in terms of the VNTR polymorphism of the MAO-A gene in 6 men, which accounts for 8.33% of the studied population. Therefore, it is possible that the group also included individuals with other tandem repeats than 3 or 4.

AIM OF THE STUDY

1. Whether the polymorphisms of genes determining COMT and MAO-A synthesis affect paranoid schizophrenia morbidity rate.

2. How the above polymorphisms affect the PANSS results during antipsychotic treatment in the study periods.

SUBJECTS AND METHODS

Subjects

The study included 72 unrelated patients of Polish descent – 39 men and 33 women – diagnosed with paranoid schizophrenia. Their average age was as follows: men – 27.1 years (SD = 6.7), women – 31.4 years (SD = 9.4). The average age of onset of schizophrenia in the whole group under study was 24.1 years (SD = 6.64). The average age of onset in women was 26.45 years (SD = 7.58) whereas men developed the disease earlier, their average age of onset being 22.1 years (SD = 4.99). The average duration of the disease was 4.99 years in women and 5.0 years in men.

In order to make a diagnosis which would meet the ICD–10 criteria [14], the Polish version of CIDI (Composite International Diagnostic Interview) was used [15]. The assessment of mental condition was carried out by a psychiatrist or a physician specializing in psychiatry. Exclusion criteria included serious neurological disorders, major somatic disorders impairing cog-
nitive functions and diagnosed mental impairment.

The control group included 187 healthy individuals of Polish descent, unrelated to each other and to the individuals in the group under study. The control group consisted of 69 men and 118 women and their average age was 34.7 years (SD = 14.4).

All the participants were informed about the aim and course of the study and confidentiality guarantee. The examined individuals expressed their written consent to the examinations, including collection of blood necessary for genetic analysis. The intensity of psychopathological symptoms was examined using the PANSS scale [16], with which the positive, negative and general psychopathological symptoms present in schizophrenia can be evaluated. The examination was performed prior to starting the therapy and then after the 14th, 42nd and 84th day of treatment. Most of the patients were treated with the classic neuroleptic drug – pernazine and/or an atypical neuroleptic – olanzapine. The applied doses of the antipsychotic drugs complied with the standards for paranoid schizophrenia treatment and with the recommendations of the drug manufacturers. Due to the fact that the studied group was small, associations between the genotype on the efficacy of the applied drug dose were not analyzed.

The study protocol was accepted by the Commission of Ethics of the Pomeranian Medical University of Szczecin, Poland.

Methods

Genetic analysis

The blood used for genetic analysis was collected in the amount of 10 ml from the antecubital vein. The blood was collected from the patients after their informed consent, following the subsidence of psychotic symptoms of the disease. Genomic DNA was extracted from leucocytes using the salting method [17].

Val-158-met polymorphism of the COMT gene was analyzed using the PCR-RFLP technique [11]. Polymorphism in the promotor region gene of MAO-A was analyzed using the PCR-VNTR technique [13].

Statistical analysis

Statistical analysis was performed using the SPSS program, and specifically Pearson’s chi-square test. Associations between the treatment progress and the genotype were studied by analysis of variance (ANOVA) [8].

RESULTS

In the study, frequencies of particular val-158-met genotypes of the COMT gene were analyzed in patients with schizophrenia and in healthy individuals from the control group. The frequencies of metionine and valine alleles in the studied groups were also defined (Tab. 1). The control group was found to be in genetic equilibrium according to the Hardy-Weinberg law. Subsequently, the PANSS results were analyzed with regard to the functional aspect of the studied polymorphism. To evaluate associations between the genotype and the PANSS results, an improvement index was determined by multiplying the difference between the PANSS results at the beginning of the therapy and at the time of study by the PANSS results obtained at the beginning of the therapy.

Analogous analysis was applied to the MAO-A gene. It was studied whether there were any associations between a particular VNTR genotype and the occurrence of paranoid schizophrenia. The frequencies of particular alleles were determined in the studied groups of men and women (Tab. 2). The PANSS results were analyzed with respect to the genetic profile and the time of study.

No association was found between the genotypic distribution of the COMT and MAO-A genes and schizophrenia occurrence.

An analysis of the distribution of the VNTR alleles of the MAO-A gene showed that alleles with 3 tandem repeats within the promoter region were significantly more frequent in women suffering from paranoid schizophrenia than in a healthy population. No differences in the allelic distribution of the COMT gene polymorphism were found between the studied and the control groups.

No association was found between individual val-158-met genotypes of the COMT gene and
the influence of antipsychotic treatment on the PANSS results at any time of the study (Tab. 3).

A similar analysis was performed to determine the influence of VNTR polymorphism of the MAO-A gene on the PANSS results in the course of the applied treatment. No associations were found between the studied gene polymorphism and the PANSS score at different times of the study. In the analysis of the MAO-A gene polymorphism located on chromosome X, it was necessary to analyze the groups according to sex. Consequently, smaller groups were examined, which might have affected the results of the statistical analysis (due to the limited scope of this work, an analogous analysis of associations between the genotype and the improvement index was omitted). To obtain reliable results it is necessary to undertake further research in larger groups of patients.

Laboratory tests, particularly genetic analyses, are subject to the risk of a laboratory error (e.g. low quality of isolated DNA may result in problems with obtaining results for particular polymorphisms). The tables showing the study results contain the number of alleles and genotypes in the studied individuals (it was impossible to genotype 6 men for MAO-A gene polymorphism).

Due to the small number of studied individuals, the kind of applied neuroleptic drug was not taken into consideration.

DISCUSSION

Val-158-met polymorphism in the COMT gene became the focus of researchers’ attention in the 1990’s thanks to Carlsson’s theory, studies on the

| Table 1. Distribution of the val-158-met polymorphism of the COMT gene |
|-----------------------------|------------------------------|------------------|----------|
| Group       | N    | Distribution of genotypes | $\chi^2$ test (df=2) | Distribution of alleles | $\chi^2$ test (df=2) |
|            |      | val/val | met/val | met/met |                  | val | met | Val |                  |
| Patients   | 67   | 16      | 36      | 15      | 0.239 | 0.537 | 0.224 | 0.798 | 0.671 | 0.507 | 0.493 | 0.077 | 0.782 |
| Control    | 187  | 53      | 89      | 45      | 0.283 | 0.476 | 0.241 | 0.782 | 0.479 | 0.521 | 0.479 |

* 5 individuals were not genotyped for COMT gene polymorphism

| Table 2. Distribution of the VNTRA 30bp polymorphism of the MAO-A gene |
|-----------------------------|------------------------------|------------------|----------|
| Group       | N    | Distribution of genotypes | $\chi^2$ test (df=2) | Distribution of alleles | $\chi^2$ test (df=2) |
|            |      | 4VNTR | 3/4VNTR | 3VNTR |                  | 3VNTR | 4VNTR |                  |
| Female     | 33   | 13    | 15      | 5      | 0.394 | 0.454 | 0.152 | 5.046 | 0.080 | 0.379 | 0.621 | 5.439 | 0.020 |
| Control    | 117  | 70    | 39      | 8      | 0.598 | 0.333 | 0.069 | 25    | 41    | 0.330 | 0.765 |
| Male       | 33*  | 21    | _       | 12     | 0.636 | _     | 0.364 | 12    | 21    | _     | 0.636 |
| Control    | 67   | 49    | _       | 18     | 0.731 | _     | 0.269 | 18    | 49    | _     | 0.731 |

* It was impossible to genotype 6 men for MAO-A gene polymorphism
psychiatric disorders in the VCFS syndrome [8] and the linkage studies of chromosome 22q (at the COMT gene locus). The genetic studies conducted so far, as well as biochemical studies on the COMT activity level in erythrocytes, have not produced any unequivocal results, which might suggest that there are no associations between the studied polymorphism and susceptibility to schizophrenia. It should be noted, however, that the studies used different methodologies and diagnostic criteria, and the distribution of the studied alleles in healthy populations differed considerably depending on the geographical zone [19]. Some researchers found no association between the COMT gene polymorphism and schizophrenia [20, 21] but admitted that such association might exist as the studied groups were small in size or suspected that the effect of the studied polymorphism was minimal, which corresponded to the polygenic model for inheritance of susceptibility to schizophrenia. Other researchers proved, however, that the COMT gene locus might be linked to schizophrenia [22, 23, 24]. This association is not with any particular genotype but with the allelic distribution which is not so obvious and in some studies shows an association with the disease. In their family studies, Li et al. [22] and Kunugi et al. [23] observed transmission disequilibrium for the valine allele, which was found to be transmitted more frequently by parents to affected children. However, these results were not confirmed in a similar study by Wei and Hemmings [25]. On the other hand, Ohmori et al. [24] reported that the metionine allele was significantly more frequent in schizophrenic patients. It should also be noted that in a healthy Japanese population studied by them, the metionine allele was less frequent than in Caucasian population [19]. With such contradictory results it is essential to use meta-analysis results for comparison in large groups of patients. Jin et al. [26] analyzed the COMT gene polymorphism in a group of 862 patients. Meta-analysis showed that there were no differences in genotype and allele frequencies among the patients compared with an equally large control group. Similarly, a meta-analysis of study results obtained worldwide in 1996–2003 did not show statistically higher frequency of any particular genotype or allele in patients with schizophrenia [27].

Low COMT activity resulting from a lower expression of mRNA which is responsible for the production of this enzyme [28] may be of significance to the prognosis of the disease and the efficacy of antipsychotic treatment. Herken and Erdal [29] studied possible associations between the COMT gene polymorphism and severity of schizophrenia symptoms. They reported that homozygous met/met individuals scored higher in the BPRS scale and patients from this group were hospitalized more frequently than others. Kirchheiner et al. [30] reported that response to treatment was worse in patients with a lower COMT enzyme activity. Such association was not found in the present study while analyzing the improvement index based on the PANSS scale. The reports on associations be-

<table>
<thead>
<tr>
<th>Geno-types</th>
<th>Total squares</th>
<th>df</th>
<th>Average square</th>
<th>F</th>
<th>Significance</th>
</tr>
</thead>
<tbody>
<tr>
<td>Positive symptoms</td>
<td>v/v 14 0.022</td>
<td>2 0.011</td>
<td>0.242 0.786</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>v/m 42 0.021</td>
<td>2 0.010</td>
<td>0.300 0.743</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>m/m 84 0.146</td>
<td>2 0.073</td>
<td>20.378 0.109</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Negative symptoms</td>
<td>v/v 14 0.066</td>
<td>2 0.033</td>
<td>0.625 0.540</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>v/m 42 0.149</td>
<td>2 0.075</td>
<td>10.726 0.193</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>m/m 84 0.308</td>
<td>2 0.154</td>
<td>10.905 0.166</td>
<td></td>
<td></td>
</tr>
<tr>
<td>General symptoms</td>
<td>v/v 14 0.037</td>
<td>2 0.018</td>
<td>0.436 0.650</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>v/m 42 0.056</td>
<td>2 0.028</td>
<td>10.146 0.330</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>m/m 84 0.051</td>
<td>2 0.025</td>
<td>0.977 0.388</td>
<td></td>
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</tr>
</tbody>
</table>
between VNTR polymorphism in the promotor region of the monoaminooxydase gene and the risk of developing schizophrenia are more consistent. Researchers admit that some slight influence is possible due to gene epistasis; however, the studies referred to in this work show no statistically significant differences between patients with schizophrenia and a healthy population [31, 32, 33, 34, 35]. Similarly, in this study, no particular genotype was found to be more frequent in the affected individuals. The allelic distribution indicates that alleles with three tandem repeats are more frequent in affected women but no valid conclusion can be made before a larger group of patients is studied.

No associations were found between the VNTR polymorphism in the monoaminooxydase gene and the PANSS results at any stage of the treatment, which corresponded to the results of the COMT gene polymorphism analysis. Patients with low levels of COMT and MAO-A activity were not analyzed. If such an analysis had been carried out, the results might have been as interesting as those obtained by Kirchheiner et al. [30], who found that the risk of therapy failure was six times higher in individuals with a low level of activity of the analyzed enzymes. This confirms that there is an association between the synergetic effect of genes and therapy efficacy.

At this stage of research, it is necessary to collect more genetic material for further analysis. Considering the small size of the studied group the results obtained in this study should be regarded as preliminary.

CONCLUSIONS

1. No association was found between the genotype distribution in COMT and MAO-A gene polymorphisms and schizophrenia.

2. No differences were found in the allelic distribution in COMT gene polymorphism between the studied group and the control group.

3. An analysis of allele distribution in VNTR polymorphism of the MAO-A gene showed that an allele with three tandem repeats within the promotor region of this gene was significantly more frequent in women with paranoid schizophrenia compared with the healthy population.

4. No association was found between any particular genotype of the val–158-met polymorphism in the COMT gene nor the VNTR polymorphism in the MAO-A and the effect of antipsychotic treatment on the PANSS results in any of the study periods.

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**Influence of impulsiveness, suicidality, and serotonin genes on treatment outcomes in alcohol dependence – a preliminary report**

Marcin Wojnar, Kirk J. Brower, Andrzej Jakubczyk, Izabela Żmigrodzka, Margit Burmeister, Halina Matsumoto, Elżbieta Woźny, Elżbieta Śliwerska, Andrea M. Hegedus, Anna Klimkiewicz, Anna Ślufarska, Michał Lipiński, Robert A. Zucker

**Summary**

**Aim:** The aim of this study was to identify risk factors for relapse by investigating relationships among suicidality, impulsiveness, genetic markers of serotonin activity, and drinking outcomes in alcohol-dependent patients.

**Subjects and methods:** Ninety alcohol dependent patients were followed for 12 months after a baseline assessment was performed, which included an evaluation of suicidality and impulsiveness. DNA samples were collected to investigate polymorphisms of genes involved in synthesis and activity of the serotonin system. Genetic polymorphisms and baseline measures of suicidality and impulsiveness were analysed as predictors of relapse.

**Results:** Relapse rates were significantly higher among patients with a history of suicidal attempts recorded at the baseline assessment. Impulsiveness was not directly related to relapse. The genetic analysis showed that patients with the G/G genotype in the 5HTR1A gene polymorphism were more likely to relapse, whereas patients with the C/C genotype were more likely to abstain. Moreover, there was a strong trend for an association between the G/G genotype and a history of suicide attempts.

**Conclusions:** Preliminary analyses suggested that a history of suicidality predicted relapse in alcoholic patients while controlling for other variables. Polymorphisms of genes involved in serotonergic function also contributed to a higher risk of relapse in alcohol dependent patients. These preliminary analyses as well as other potential relationships between the variables of interest require continued investigation with a larger sample size.

**alcoholism / relapse / suicide**

**INTRODUCTION**

Alcohol dependence is a chronic disease with persistent susceptibility to relapse. Most treated alcoholics, regardless of therapy applied, achieve only short-term periods of abstinence and then return to drinking. Research studies show that 35% of treated alcohol-dependent patients fail to maintain abstinence for even 2 weeks after the completed treatment program, and 58% relapse during the first 3 months [1]. Polich et al. [2] reported that over 80% of treated alcohol-depend-
ent subjects experienced serious drinking problems during the 4 years following completion of addiction treatment. In the MATCH study, only 35% of inpatients remained abstinent at 1-year follow-up [3].

Identifying predictors of relapse, a key feature of alcohol dependence, is essential for understanding the complex pathogenesis of the disease and improving treatment. A number of patient-related factors that increase risk for relapse have been identified, among them: severity of alcohol dependence [8] and co-morbid psychopathology [4], including affective [5] & anxiety [6] disorders and antisocial personality [7]. Moreover, pathophysiological factors, such as central dopamine hypofunction [9], enhanced high frequency beta EEG activity [10], sleep disorders [11], decreased plasma beta-endorphin levels [12] and changes in ERP indicating reduced frontal lobe activity [13] seem to play a role in increasing susceptibility to relapse. Suicidality and impulsiveness may also be considered as important risk factors of relapse [14, 15], however, relationships among them are not well investigated.

Most studies confirm close relationships between impulsiveness, suicide, and alcohol use disorders [15, 16]. In at least one study, lifetime risk of suicide was even higher in individuals with alcohol dependence than in those with mood disorders [17]. There is strong evidence to suggest that suicidality, impulsiveness, and depression share a common genetic basis and biological substrate of 5-HT dysfunction [18, 19, 20]. A direct relationship between serotonin activity and relapse in alcohol-dependent patients has not been investigated yet.

**AIM OF THE STUDY**

The general objective of our research study was to analyse relationships among suicidality, impulsiveness, genetic markers of serotonin activity, and relapse in alcohol-dependent patients.

**SUBJECTS AND METHODS**

The study was performed on a group of 90 patients, both males and females, with the diagnosis of alcohol dependence according to DSM-IV criteria [21], treated in residential addiction treatment centers (58 patients) and outpatient facilities (38 patients) in Warsaw. All study subjects participated in the usual treatment program at each center. Patients with acute withdrawal symptoms and those with less than 25 points on the Mini Mental State Examination were excluded from the study cohort. Both the Bioethics Committee at the Medical University of Warsaw and the Medical Institutional Review Board at the University of Michigan approved the research protocol. The patients received detailed information about the aim and course of research study and signed the consent form.

The research study had a prospective design and included 3 visits for all patients completing the study. The baseline assessment took place within 2 weeks of beginning treatment. The next visits occurred after one month and subsequently at 6 and 12 months. The baseline assessment included collection of a blood sample and evaluation using a variety of psychometrically valid scales selected to measure potential predictors of outcome. The scales included an evaluation of severity of psychiatric symptoms (Brief Symptom Inventory [22], SF–36 questionnaire [23]), domains of personality (NEO-FFI [24]), social support (MOS Social Support Scale [25]), suicidality (Beck Suicidal Ideation Scale [24] and a structured questionnaire constructed for the purpose of this study), severity of depression and hopelessness (Beck Hopelessness Scale, Beck Depression Inventory [27, 28]) and impulsiveness (Barratt Impulsiveness Scale BIS–11 [29]). In addition to the BIS, which is a self-administered, subjective measure, impulsiveness was assessed by means of a “Stopping Task” procedure, delivered by a computerised program and considered to be an objective neurophysiologic measure of impulsiveness [30]. Demographic information, history of childhood abuse, and a history of suicide attempts were obtained with a structured questionnaire constructed for the purpose of this study. Patients also completed the Alcohol Timeline Follow-Back Interview in order to evaluate baseline drinking and treatment outcomes [31].

DNA was isolated from blood samples using Gentra kits in the Laboratory of Psychopharmacology at the Medical University Warsaw Department of Psychiatry. DNA samples were then sent to and analyzed using Polymerase Chain Rea-
tion (PCR) methods in the Neurogenetic Laboratory at the University of Michigan in Ann Arbor. Genetic analyses included polymorphisms in genes involved in synthesis and activity of the 5-HT system: the tryptophan hydroxylase 2 gene (TPH2), the promoter region for the serotonin transporter gene (SLC6A4 – 5HTTLPR), and genes for serotonin receptor subtypes (5HTR1A [C1018G] and 5HTR2A [T102C]).

Relapse was defined as any drinking during the follow-up period after completing the treatment program. According to the data collected at the second and third follow-up visit, study subjects were divided into two groups: patients who relapsed and patients who remained abstinent. The groups were then compared using variables measured at the baseline assessment, especially genetic polymorphisms, impulsiveness and suicidality. The statistical analyses were performed using chi-square, Student t, and Mann-Whitney tests as well as a logistic regression analysis in order to determine the predictive value of analyzed variables. The SPSS statistical software was used.

RESULTS

Out of 90 patients who ultimately entered the study and filled out the baseline questionnaire, 59 subjects completed the study (3 visits), and of those, 29 patients relapsed and 30 remained abstinent. All 31 patients lost to follow-up were conventionally classified as having relapsed for the purpose of this analysis [32]. Information received later from collateral sources supported the probability of this hypothesis. Therefore, out of 90 patients included, 60 subjects were considered as relapsed (relapse rate 67%), and 30 as abstinent. The average period of observation (time from the baseline to the final follow-up visit) was 11.5 months.

Men comprised 73% of the study sample, and mean age was 42.5 ± 9.7 years, with a range from 20 to 64 years. At baseline, 37 subjects (41%) were unemployed, 35 (39%) were married, and 18 (20%) were divorced. The mean age at onset of alcohol problems was 22.4 ± 8.1 years, and mean duration of alcohol dependence of 21.0 ± 11.4 years. The patients reported an average daily alcohol consumption of 147.4g of pure ethanol (0–225g) for the 90 days prior to entering the treatment program. At the baseline assessment, 39 patients (43%) reported at least one suicide attempt in the past and 18 (20%) confirmed suicidal thoughts.

Patients who relapsed were significantly more likely to be younger, male, to have financial problems, and to experience physical abuse before 18 years of age. Patients who were abstenent during follow-up reported receiving more social support, had fewer financial problems, and scored significantly higher on the neuroticism domain in the NEO-FFI inventory. The BIS analysis revealed only a statistical trend for higher impulsiveness in relapsed patients (p = 0.059), whereas the objective measure (Stopping Task) did not show any meaningful differences. Patients reporting at least one suicide attempt in the past were significantly more likely to relapse than patients without history of suicidality (p = 0.008).

The logistic regression analysis showed that suicide attempts in the past reported at the baseline assessment were the strongest predictors of relapse compared to other variables, which were significant in univariate analyses (age, gender, financial problems, psychiatric severity, social support, daily amount of alcohol consumed, neuroticism score).

The polymorphism of the serotonin receptor gene 5HTR1A (C1018G) differentiated the two analyzed groups. Patients with the G/G genotype were more likely to relapse, whereas patients with the C/C genotype were more likely to abstain. Moreover, there was a strong trend for an association between the G/G genotype (associated with relapse) and a history of suicide attempts. Among patients with a history of suicide attempts reported at the baseline, 28% had the G/G genotype compared to 4% of patients without suicide attempts (chi^2 = 5.89; df = 2; p=0.052).

Polymorphism of 5HTR1A gene was not associated with the level of impulsiveness in alcohol-dependent patients. Polymorphisms of other genes included in analyses (TPH2, 5HTR2A, 5HTTLPR) did not differentiate the two groups. However, we found that the C/C genotype in polymorphism of the tryptophan hydroxylase 2 gene (TPH2) was associated with a high level of impulsiveness as measured by the Stopping Task test (p = 0.003).
Table 1. Baseline characteristics of patients who relapsed and abstained.

<table>
<thead>
<tr>
<th></th>
<th>Relapse</th>
<th>Abstinence</th>
<th>p</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>n=60</td>
<td>n=30</td>
<td></td>
</tr>
<tr>
<td>Age (years)</td>
<td>40.4 ± 10.2</td>
<td>45.7 ± 7.9</td>
<td>0.041</td>
</tr>
<tr>
<td>Women, n (%)</td>
<td>12 (20.0)</td>
<td>12 (40.0)</td>
<td>0.034</td>
</tr>
<tr>
<td>Education (years)</td>
<td>13.6 ± 3.8</td>
<td>12.2 ± 2.7</td>
<td>0.285</td>
</tr>
<tr>
<td>Employed, n (%)</td>
<td>20 (33.3)</td>
<td>16 (53.3)</td>
<td>0.065</td>
</tr>
<tr>
<td>Not enough money for needs, n (%)</td>
<td>43 (73.3)</td>
<td>15 (50.0)</td>
<td>0.037</td>
</tr>
<tr>
<td>Married, n (%)</td>
<td>17 (28.3)</td>
<td>17 (56.7)</td>
<td>0.193</td>
</tr>
<tr>
<td>Living alone, n (%)</td>
<td>12 (20.0)</td>
<td>2 (6.6)</td>
<td>0.159</td>
</tr>
<tr>
<td>Suicide attempts in the past, n (%)</td>
<td>32 (53.3)</td>
<td>7 (23.3)</td>
<td>0.008</td>
</tr>
<tr>
<td>Physical abuse before 18 years of age, n (%)</td>
<td>27 (45.0)</td>
<td>7 (23.3)</td>
<td>0.033</td>
</tr>
<tr>
<td>Baseline Psychiatric Severity (BSI)</td>
<td>69.7 ± 44.3</td>
<td>51.6 ± 34.3</td>
<td>0.051</td>
</tr>
<tr>
<td>Barratt Impulsiveness Scale</td>
<td>73.5 ± 10.6</td>
<td>69.0 ± 10.0</td>
<td>0.059</td>
</tr>
<tr>
<td>Social Support (MOSSSS)</td>
<td>60.2 ± 17.5</td>
<td>69.0 ± 17.5</td>
<td>0.046</td>
</tr>
<tr>
<td>NEO-FFI, Neuroticism subscale</td>
<td>66.9 ± 12.4</td>
<td>60.4 ± 8.2</td>
<td>0.028</td>
</tr>
<tr>
<td>Mean daily alcohol consumption (g)</td>
<td>181.3 ± 18.5</td>
<td>96.8 ± 9.0</td>
<td>0.053</td>
</tr>
<tr>
<td>Stopping task – stop reaction time (msec)</td>
<td>225.6 ± 69.2</td>
<td>193.0 ± 89.6</td>
<td>0.166</td>
</tr>
</tbody>
</table>

Chi-square, t-Student, and Mann-Whitney tests were used. Statistical significance: p<0.05

Table 2. Logistic regression analysis for predictors of relapse

<table>
<thead>
<tr>
<th></th>
<th>Odds Ratio (95% C.I.)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Suicide attempts*</td>
<td>6.85 (1.62–28.98)</td>
</tr>
<tr>
<td>Physical abuse before the age of 18</td>
<td>3.06 (0.71–13.28)</td>
</tr>
<tr>
<td>Gender</td>
<td>2.88 (0.71–11.65)</td>
</tr>
<tr>
<td>Not enough money for needs</td>
<td>1.94 (0.45–8.42)</td>
</tr>
<tr>
<td>Daily alcohol consumption</td>
<td>1.06 (0.99–1.13)</td>
</tr>
<tr>
<td>Baseline psychiatric severity</td>
<td>1.01 (0.99–1.03)</td>
</tr>
<tr>
<td>Age</td>
<td>0.96 (0.89–1.04)</td>
</tr>
</tbody>
</table>

*p < 0.01
95% C.I. – 95% Confidence Interval

Table 3. Polymorphism C1018G of 5HTR1A (rs6295) in relation to relapse rate in alcohol-dependent patients

<table>
<thead>
<tr>
<th>Genotype</th>
<th>Allele</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>CC</td>
</tr>
<tr>
<td>Patients relapsed</td>
<td>5 (8%)</td>
</tr>
<tr>
<td>(n=60)</td>
<td></td>
</tr>
<tr>
<td>Patients abstained</td>
<td>16 (53%)</td>
</tr>
<tr>
<td>(n=30)</td>
<td></td>
</tr>
</tbody>
</table>

Chi-square test: p = 0.041; p = 0.0029
**DISCUSSION**

Our research study showed that relapse is a frequent problem in the course of alcohol dependence. During one-year follow-up, only 1/3rd of patients remained abstinent, whereas 2/3rd relapsed despite involvement in an active alcohol abuse treatment program. Our findings are consistent with results in many previous studies [4, 5, 7, 8, 32, 33]. Similar to other research, this study showed that low social support, severity of psychopathology, and high level of neuroticism may be related to relapse. Data from this study also suggest that relapse should be considered as a complex phenomenon with both biological and psychosocial risk factors.

There were two novel findings, not previously reported in the literature. First, in our study sample, a past history of suicide attempts significantly predicted relapse. Patients who at the baseline assessment reported suicidal attempts in the past were more likely to relapse during follow-up. This relationship may possibly be explained by an association of suicidality with both depression and high level of impulsiveness.

A second new finding was the relationship among 5HTTR1A polymorphism, suicidality and relapse rates in alcohol dependent patients. Patients with the G/G genotypes may be considered to have worse prognosis in the treatment for alcohol dependence. The results of other research studies suggest that this genotype may also be linked to poor outcomes in the treatment of depression (higher severity of symptoms and worse response to SSRIs; M. Burmeister unpublished results).

The G/G genotype in C1018G 5HTR1A polymorphism seems to influence the activity of the serotonin receptor, resulting in an increase of risk for relapse, suicidal behaviour or depression. This particular data is consistent with the other findings of this research study which suggests that suicidality is a strong risk factor for relapse. The specific genotype (G/G) of the serotonin receptor 5-HT1A gene may be hypothetically responsible for coexisting suicidal tendencies and relapse susceptibility.

C and G alleles analysed in this study influence activity of the 5HT1A receptor (by affecting transcription factors NUDR/DEAF–1), which is a presynaptic autoreceptor that decreases the activity of the serotonin system. Allele G is responsible for high activity of the receptor and allele C for low activity [34]. This may mean that patients with G/G genotype will have decreased activity of 5-HT system, because the specific ligand of the autoreceptor, serotonin, is bound more easily and strongly. Thus, people with C/C genotypes will be characterised by high serotonin activity, and those with G/C genotype by intermediate activity.

The results of our study demonstrate that decreased serotonergic function may contribute to the higher risk of relapse in alcohol-dependent patients. The activity of the 5-HT1A receptor may be the clue to understanding the pathophysiological mechanism of coexisting depression and relapse.

It must be emphasized that this is only a preliminary report. This research study is continuing with a larger sample size and a longer follow-up period. This may allow for better verification of described relationships and further investigation of relapse in alcohol dependent patients.

**CONCLUSIONS**

1. A history of suicide attempts reported at the beginning of the addiction treatment program predicted relapse in alcohol dependent patients.
2. Lower serotonergic function may contribute to a higher risk of relapse and suicide in alcohol dependent patients.
3. Impulsiveness had no significant impact on the risk of relapse in alcohol dependence.

**REFERENCES**


**Potentially reversible dementias in a memory clinic population**

Tomasz Sobów, Marcin Wojtera, Iwona Kłoszewska

**Summary**

**Introduction:** Potentially reversible dementias are rarely detected in ambulatory care facilities. Actual reversibility is virtually not known and has been occasionally reported in the literature.

**Aim:** Our aim was to determine the prevalence of potentially reversible dementias among patients seen at the ambulatory care facility and to estimate their “real life” reversibility.

**Subjects and methods:** A retrospective analysis of medical records of 258 outpatients attending the Memory Clinic of Central University Hospital of Lodz in the years 2002–2003.

**Results:** Potentially reversible dementia has been diagnosed in 18 (5 women, mean age 60.9±4.9) subjects yielding 7% of all the subjects presented. These patients were significantly younger and the severity of their cognitive deficits was milder as compared to the “non-reversible” cases. Treatment was successful in only 3 cases, what translates into only 1.5% of the diagnosed as demented. Twenty seven cases with cognitive deficit but no dementia (depression or drugs side-effects) were claimed as potentially reversible and treated, in most cases (22 out of 27), successfully. However, within a 2 year period of follow-up, the development of dementia was observed in 13 of 22 cases.

**Conclusions:** Potentially reversible dementia is a rare phenomenon in ambulatory care facility. The majority of potentially reversible cases can be found among younger and less impaired patients. Even in cases treated successfully, the risk of developing dementia within 2 years is very high.

**dementia / prevalence / treatment / reversibility**

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**INTRODUCTION**

The term “reversible dementia”, that appeared in neuropsychiatric literature in the early seventies of the 20th century, was controversial from the very beginning. Its proponents suggested that the clinical use of the reversible dementia concept would diminish a detrimental diagnostic and therapeutic nihilism and, therefore, a long-term prognosis of many patients would improve as a result of diagnosing and curing treatable conditions. As a consequence of that way of thinking, several early dementia guidelines supported very comprehensive and expensive diagnostic workups aimed at detection of even quite rare conditions possibly influencing patients’ cognitive status [1, 2, 3, 4, 5]. However, already in the eighties, serious doubts emerged on the prevalence rate of reversible dementias [6, 7, 8] and first clinical studies of a prognostic value of the concept have been published [9]. Attention was paid to a “real-life” reversibility, understood as situations of a detection of potentially reversible condition that once cured (or corrected), in fact influenced the patients’ cognitive status. Such rate of “real-life reversibility” was significantly lower than reported in the earlier studies [6, 7, 10].
clusive” diagnostic evaluation of every subject was questioned and patients’ characteristics that should lead to a more aggressive workup were proposed for the first time [10]. Despite these uncertainties, the Quality Standards Subcommittee of the American Academy of Neurology in 1994 recommended a wide-range diagnostic workup, including neuroimaging for each subject evaluated [11].

Later studies supported a critical rather than enthusiastic attitude on the reversible dementia concept. Although, different abnormalities were detected relatively frequently in the cognitively impaired, an actual effectiveness of interventions was disappointingly low – approaching frequently only 1% of the studied cohorts [12, 13, 14, 15, 16].

With the advent of both ICD–10 and DSM IV systems, several diagnostic categories, previously classified as potentially reversible dementia, became the exclusion criteria for dementia. Therefore, depression (and its “cognitive dysfunction predominant” variants such as pseudodementia) and drug-induced cognitive impairment could not be classified as reversible dementias any longer. Some authors even proposed to suspend the use of the “reversible dementia” term or to change it to “potentially reversible cognitive impairment”. Advocates of such terminological shift argue that, firstly, dementia cannot be reversible because it is ex definitione an effect of an irreversible and progressive brain disorder and, secondly, reversible deficits are usually clinically mild and often not fulfilling functional criterion of a dementia syndrome [14, 15, 16, 17].

Only few Polish papers in the field have been published to date, the majority of them focused either on associations between depression and dementia [18] or a significance of the reversible dementia construct in the differential diagnosis of the dementias [19, 20]. None of the abovementioned papers was, in fact, a research study.

In the present study, we retrospectively analyzed data from patients’ medical files and attempted to answer two research questions:

1. What is the prevalence of stringently defined potentially reversible cognitive impairment (PRCI) in a population of a memory clinic? And,
2. What is the “real-life” reversibility, in other words, how many patients with a potentially reversible condition might actually benefit from a causative treatment in terms of cognition improvement?

SUBJECTS AND METHODS

The study was designed as a retrospective medical records analysis. A total number of 258 patients diagnosed and treated with memory complaints in a Memory Clinic of the Central University Hospital, Medical University of Lodz were included in the study. All patients were diagnosed with the use of standardized protocol that comprised structured interview (from both patient and a caregiver, if available), detailed psychiatric and neurological examinations and psychometric assessment aimed at cognitive impairment severity evaluation as well as its neuropsychological profile. Co-morbidities were screened with standard laboratory tests, including thyroid function (TSH) and vitamin B12 deficiency evaluations. The majority of patients (excluding those who were uncooperative or refused) also had at least one neuroimaging – usually computerized tomography. The clinical assessment protocol employed incorporates current recommendations of the American Academy of Neurology [21].

The dementia syndrome diagnosis was accepted once meeting requirements of the working criteria of the World Health Organization [22]. Specific disorders responsible for cognitive impairment and dementia were recognized according to the following criteria: ICD–10 – for dementia in Alzheimer’s disease, mixed dementia in Alzheimer’s disease, vascular dementia, dementia in Parkinson’s disease, dementia in Creutzfeldt-Jacob’s disease and dementia in Huntington’s disease; Consortium on Dementia with Lewy Bodies – for dementia with Lewy bodies [23] and the consensus criteria for frontotemporal dementia [24].

Due to the retrospective nature of our study we established a minimal set of information required for the subject’s record to be included in the study. Those included basic demographic characteristics, diagnosis according to predefined criteria, age at onset, severity of cognitive impairment evaluated with Clinical Dementia Rating Scale (CDR) [25] and, additionally the MMSE test score [26].

To be diagnosed as having PRCI, a patient, in addition to cognitive impairment needed to have a potentially reversible condition known to be associated with cognitive impairment or
dementia. PRCI diagnosis was always treated as provisional and longitudinally verified, including a response to causative treatment.

RESULTS

Among 258 initially recognized subjects, diagnosis of dementia was set in 195. Importantly, in agreement with ICD–10 criteria [22] patients with a depressive episode (N=15, 5.8% of the entire cohort) and those with drug-induced cognitive impairment (N=9; 3.5% of our cohort) were excluded from final analysis. Diagnosis of PRCI was stated in 18 subjects (5 women, mean age of 61±5 years) while dementia according to ICD–10 was diagnosed in 177 subjects (95 women, mean age of 74±9 years); a detailed analysis of diagnostic profiles and clinical-demographical correlates is reported elsewhere [27]. Thus PRCI comprised 9.2% of the group initially diagnosed as dementia and close to 7% of the entire cohort.

A comparison of demographic characteristics and dementia severity scores are shown in Tab. 1.

Patients with PRCI were significantly younger and less cognitively impaired (as documented by differences in MMSE and CDR) when compared with those with dementia. Moreover, in the PRCI group there were more men and these subjects were better educated, though the aforementioned differences did not reach statistical significance.

The most commonly recognized diagnosis in patients with PRCI were so-called neurosurgical (N=6; including 3 with normal pressure hydrocephalus, 2 with subdural haematoma and 1 with a tumour) and thyroid gland dysfunctions (N=5; 4 cases of hypothyroidism and 1 with hyperthyroidism); a whole range of diagnoses is presented in Tab. 2.

Cognitive status improvement was a relatively rare phenomenon. Only 2 (both with normal pressure hydrocephalus) of the 6 patients with neurosurgical diagnoses were qualified for surgery and only 1 improved clinically. Despite active hormonal therapy, no change in the cognitive status was observed in patients with thyroid dysfunctions. Notably, however, in 4 of 5 of them, an associated mood disorder was ameliorated. In both subjects with vitamin B12 deficiency (initial plasma levels of 19 and 34 pg/ml; levels above 200 were considered normal) the cognitive status partially improved. Unfortunately,

<table>
<thead>
<tr>
<th>Demographic variable or clinical characteristics</th>
<th>Subjects with dementia (N=177)</th>
<th>Subjects with potentially reversible cognitive deficit (N=18)</th>
<th>Statistical difference between the groups</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age (years)</td>
<td>73.9±9.2</td>
<td>60.9±4.9</td>
<td>t = 5.901 DF = 193 P &lt; 0.0001</td>
</tr>
<tr>
<td>Gender (fraction of women)</td>
<td>0.537</td>
<td>0.278</td>
<td>χ² = 2.512 DF = 1 P = 0.1130</td>
</tr>
<tr>
<td>Years of formal education</td>
<td>7.5±6.7</td>
<td>9.9±7.0</td>
<td>t = 1.442 DF = 193 P = 0.1509</td>
</tr>
<tr>
<td>MMSE</td>
<td>17.6±5.8</td>
<td>21.0±3.9</td>
<td>t = 2.429 DF = 193 P = 0.0161</td>
</tr>
<tr>
<td>Dementia severity CDR (N)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>CDR=0.5</td>
<td>3</td>
<td>3</td>
<td>χ² (trend) = 18.594 DF = 1 P &lt; 0.0001</td>
</tr>
<tr>
<td>CDR=1</td>
<td>59</td>
<td>12</td>
<td></td>
</tr>
<tr>
<td>CDR=2</td>
<td>80</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>CDR=3</td>
<td>35</td>
<td>0</td>
<td></td>
</tr>
</tbody>
</table>

Table 1. A comparison of demographic characteristics of subjects with dementia (N=177) versus those with potentially reversible cognitive deficits (N=17)
the observed improvement was only temporary (about 6 months) and afterwards further dementia worsening was evident. In both cases diagnosis was verified longitudinally as atypical dementia of Alzheimer’s type and cholinesterase inhibitors were used with partial success.

To summarize, out of 18 subjects recognized as having PRCI, partial and usually temporary improvement was seen only in 3 and the resulting “real-life” reversibility in the entire cohort was as low as 1.5%.

Subjects with depression and memory complaints (N=15) were evaluated separately. Interestingly, a clinical improvement (usually after SSRI’s treatment) was seen in 12, most commonly in those whose previous medication were discontinued (typically low-potency neuroleptics like promazin or chloprotixen) or altered (usually from tricyclics). It must be, however, underlined that despite a relatively good short-term prognosis of such “pseudodemented” patients, after two years of observation, in 6 of 13 subjects being still taken care in our clinic the diagnosis was longitudinally verified as dementia (AD=4 and VaD=2).

Treatment effects of patients with drug-induced memory impairments varied significantly and were dependent on the type of drugs discontinued and time of taking them. Relative

<table>
<thead>
<tr>
<th>Diagnosis</th>
<th>Number of subjects</th>
<th>A rate per cent in the whole cohort studied (N=195)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Potentially reversible dementias – total</td>
<td>18</td>
<td>9.2</td>
</tr>
<tr>
<td>Thyroid gland dysfunctions</td>
<td>5</td>
<td>2.5</td>
</tr>
<tr>
<td>Idiopathic normal pressure hydrocephalus</td>
<td>3</td>
<td>1.5</td>
</tr>
<tr>
<td>Chronic heart failure</td>
<td>2</td>
<td>1</td>
</tr>
<tr>
<td>Chronic obstructive lung disease</td>
<td>2</td>
<td>1</td>
</tr>
<tr>
<td>Vitamin B12 deficiency</td>
<td>2</td>
<td>1</td>
</tr>
<tr>
<td>Subdural hematoma</td>
<td>2</td>
<td>1</td>
</tr>
<tr>
<td>Scleroderma</td>
<td>1</td>
<td>0.5</td>
</tr>
<tr>
<td>Metastatic brain tumor</td>
<td>1</td>
<td>0.5</td>
</tr>
</tbody>
</table>

vegetative neurosis or atherosclerosis), particularly those who took drugs shortly, improved significantly. However, in those taking benzodiazepines, opioid-like analgesics (tramadol) or using polypragmasia, no noteworthy improvements were seen.

Importantly, both the separately analyzed groups (depressed and drug-induced) were younger and less severely impaired as compared to those with dementia that alone might have been important in prognosis.

DISCUSSION

In the studied cohort of 258 subjects initially seen with memory complaints, potentially reversible conditions were seen in 42 (including depression and drug-induced disorders) which comprised 16.3%. This percentage is close to the result of a meta-analysis of studies published before 1988 (13.2%, depression included [6]) and to the results of later studies evaluating similar populations, where the reported rate of potentially reversible conditions varied between 16.5 and 26% [12, 13, 14, 28]. Also, the observation that only a subset of patients who have potentially reversible conditions are impaired to the extent that allows dementia syndrome diagnosis is in agreement with our results (in our cohort, it was 18 subjects, 7% of the entire group studied and 9.2% among those with dementia). The abovementioned percentages are similar to those reported in a meta-analysis of all the
data published between 1987 and 2002 [15]. Interestingly, depression and drug-induced disorders were predominantly seen in subjects with memory complaints but not dementia. This is in agreement with previous reports [14, 17, 28, 29, 30] and a meta-analysis [15].

Among the group of 42 subjects with memory complaints who were diagnosed as having a potentially reversible condition (with or without dementia) clinical improvement was evidenced in 20, of those 12 with depression, 5 with drug-induced disorders and only 3 in a clinically overt dementia syndrome. This result supports the importance of diagnosing and proper treatment of depression in patients with memory complaints. It also points at clinical implications of the unwise use of drugs in the elderly, particularly those having strong anticholinergic properties [14, 15, 17, 29]. At the same time, one must sadly affirm that the rate of improvement in subjects with a more severe cognitive impairment is very low, and, what makes the conclusion even worse, it usually is a temporary improvement [13, 15, 30, 31]. It clearly indicates the importance of early interventions in cases of cognitive impairment due to potentially reversible conditions [6, 15, 20]; otherwise, when intervention is late, the success rate might be close to zero [15, 29, 31].

Finally, one should note that there are several features helping at distinguishing subjects with potentially reversible memory impairment who would respond to treatment from non-responders. Among these features, apart from a mild level of cognitive impairment (and preferably no overt dementia), depression and detrimental effects of drugs, is also the short duration of impairment [13, 14, 17]. Prognosis gets poorer with the longer duration and in more severely impaired subjects, despite proper treatment measures [12, 14, 15, 29, 30, 31].

A comprehensive workup aimed at diagnosing potentially reversible conditions should then be proposed much more to patients with mild cognitive impairment and with a short history of impairment than to those with longer duration and higher severity of symptoms allowing a diagnosis of dementia. This conclusion is in sharp contrast, with a common practice of paying no attention to memory complaints (no dementia) of the elderly patients (by both family doctors and, sadly, specialists), an a priori understanding them as associated with the ageing process and prescribing ineffective drugs (so-called pro-cognitive) [32] without precise diagnostic tests done.

CONCLUSIONS

Although potentially reversible conditions occur relatively commonly among patients with cognitive impairment, the actual reversibility rate of cognitive impairment after causal treatment is quite rare. The more severe impairment and the longer its duration, the smaller are the chances of reversal. Patients with milder forms of cognitive impairment (and preferably no overt dementia), those with depression or those whose cognitive deficit is due to undesirable drug-related effects (particularly anticholinergic) are the best targets for both aggressive diagnostic workups and possible specific treatments. In the light of our study as well as the critical literature review, any lags in diagnostic procedures and disregarding memory complaints (usually understood as part of inevitable ageing processes) need to be evaluated as both scientifically and ethically unjustified malpractices.

REFERENCES

Hypnosis and analgesic suggestions in fMRI

Jerzy W. Aleksandrowicz, Marek Binder, Andrzej Urbanik

Summary

Aim: To verify data concerning the influence of verbal analgesic suggestions on the signal of pain and the hypothesis of hypnotic state neurophysiological specificity.

Material and method: Brain activity of 14 volunteers under various conditions was measured using fMRI: 1. (basic experiment) – pain stimulation only; 2. pain stimulation after analgesic suggestion; 3. pain stimulation during hypnosis; 4. pain stimulation during hypnosis after analgesic suggestion. Activity of the whole brain and in particular regions of interest (ROI) was analysed.

Results: The verbal suggestion of analgesia, with or without hypnosis, decreased the pain signals in most ROI analyzed, especially the L-thalamus. Reception of analgesic suggestion seems to be connected with an increase of activity in the Anterior Cingulate Gyrus (ACG), especially in the right hemisphere. Hypnosis seems to be connected mainly with increasing activity of orbitofrontal regions, especially in the left hemisphere.

Conclusions: The reaction to analgesic suggestion is independent of hypnosis. In neuroimaging procedures, hypnosis presents mainly an activity in orbitofrontal regions.

INTRODUCTION

The modern explanations for the phenomenon named “hypnosis” oscillate between the search for specificity of the neurophysiological processes (connected with the idea that hypnosis is a unique, ‘third state of consciousness’, different from wakefulness and sleep) and specificity of interaction between the persons engaged. It still remains uncertain what decides on the appearance of ‘hypnotic’ behaviour, nor what is their link to the phenomenon of ‘suggestion’.

Suggesting, the action leading to the induction of hypnosis as well as to the appearance of various spectacular phenomena (within or independently of hypnosis), is an interactive process in its nature. It pertains to the subjectivity of the person, the psychic functions connected with the imaginative processes. The possibility of reducing hypnosis to suggestion alone has been discussed since the time of Bernheim [1, 2, 3].

Similarities and differences between the phenomena of suggestion and hypnosis are still amongst the crucial research problems. Even though the induction of hypnosis, connected with suggestions that concentrate one’s attention on only one source of stimuli, causes an increased susceptibility to suggestion (suggestibility), suggestion and hypnosis appear to be phenomena of a different quality. Differences between individual suggestibility and susceptibility to hypnosis seem to confirm this opinion [1, 2, 3, 4].

Many hypotheses aimed at explaining the phenomenon of hypnosis were found to be false and resulted from taking the effects of open or indirect (hidden) suggestion as phenomena specific for the hypnotic state. Amongst them are a feel-
ing of sleepiness and relaxation, a sense of losing control, experiencing one’s own reactions as automatic and independent from one’s own will, as well as losing sense of time and place orientation. This undermines the possibility of evaluating the “depth” (intensity) of hypnosis, measured mainly by the strength and type of reaction towards such suggestions.

Noticing the significance of the interactive processes changed the view of the hypnotised person as a passive subject of the hypnotist’s action, underlining the role of his own activity in the “hypnotic situation”. This supports a hypothesis that hypnosis is a special form of inter-human relationship which arises between the hypnotised and the hypnotist. The key issue of this specificity appears to be the concentration of attention and concentrating the hypnotised person’s perception towards a single narrow field, limiting the possibility of receptivity (or at least minimizing conscious perception) of the signals appearing outside this area [1, 4].

Theories advocating the model of a hierarchical structure of the central nervous system and its function looked for signs of a disruption in this structure in hypnotic phenomena (dissociation), placing hypnosis in an area of pathology, analogous especially to “hysteria” and “multiple personality disorder”. Independently of the meaningfulness of the roots of this model, its’ application to hypnosis does not appear to be justified. Also, theories of hypnosis as specific states of brain neurophysiological processes were not confirmed in any research performed in the second half of the last century. Those studies, however, enabled the separation of hypnosis from sleep and relaxation [1, 2, 4, 5].

In spite of these results, a conviction of the existence of a ‘specific psychic process’ persisted. Recently, by applying the PET and fMRI methods, attempts have been made to verify this hypothesis. These studies considered that the presence of the hypnotic state would be shown by the intensiveness of local changes in blood flow, this being a sign of activity of certain areas of the brain. The research of Rainville [6, 7]; Crawford, De Pascalis, Wiloch [7]; and Derbyshire [8], was mainly concerned with the modification of a specific activity, e.g. pain perception, auditory stimuli perception [7] and visual stimuli [8] in hypnosis. At the same time, to a large extent these scientists relied on the presence of objective changes registered e.g. by functional Magnetic Resonance Imaging, along with the subjective evaluation of the degree of discomfort when experiencing pain, degree of being “absorbed” and relaxed, sense of being in control, experiencing oneself and one’s sense of identity, etc., hence phenomena which seem to be secondary towards the very phenomenon of hypnosis itself [6, 7, 8, 9, 10].

This causes significant difficulties in the interpretation of results, mainly due to the problem of differentiating changes in brain function imaging connected with the type of stimuli (task) & the changes which are the result of suggestions, from the functions of the brain connected with the very state of hypnosis. Therefore, the results of these studies did not bring about any really convincing answers.

**AIM OF THE STUDY**

Taking into account those methodological difficulties and defining hypnosis as intense concentration of attention, [2, 11, 12], we had undertaken research aimed at verification of the hypothesis of hypnotic state neurophysiological specificity using the fMRI method. Our studies were also aimed at confirming the observation that the subjective reduction of pain perception, by consecutive analgesic suggestions, is accompanied by functional changes on the neurophysiologic level.

**MATERIAL AND METHOD**

Functional imaging of the brain is based on the measurement of relative differences between brain activity observed during the resting state and the active state (i.e. when an experimental task is being applied). This would mean that

---

1 The idea of “depth” of the hypnotic state pertains to the degree of difficulty of reacting towards suggestions given during hypnosis – declared subjectively by the experimenters. Henceforth it is at least imprecise (if not misleading) to determine as intensiveness of this specific experience in this manner.
functional imaging of the phenomenon of hypnosis would require induction and disappearance of intense hypnosis in very short time intervals (30 seconds) in an alternating fashion. This is practically infeasible during a standard fMRI scanning session. Therefore, an approach was chosen which involved pain stimulation (pricking of the palm) as an experimental manipulation.

For every subject, each session consisted of five phases. Two of them were active conditions, which were preceded by, intertwined with, and followed by resting conditions. Each condition lasted for 30 seconds. During four sessions, the active condition involved pricking the right palm with a sharpened piece of wood and the resting condition involved withholding the palm stimulation for 30 seconds. During the fifth session, the active condition was focusing of attention and the resting condition was deviating attention (e.g. free associations).

Every subject underwent five experimental sessions in a fixed order:

Session 1. Pain stimulation (palm pricking);
Session 2. Pain stimulation (palm pricking) preceded by a verbal suggestion of analgesia;
Session 3. Pain stimuli (palm pricking) preceded by hypnosis induction;
Session 4. Pain stimuli (palm pricking) preceded by a verbal suggestion of analgesia during a state of hypnosis;
Session 5. Focusing and de-focusing of attention, in an alternate fashion.

Functional images were acquired using a gradient-echo echoplanar sequence sensitive to blood oxygenation level dependent (BOLD) contrast, with the following parameters: TR = 3000 ms, TE = 60 ms, FOV = 28 x 21 cm, matrix 96 x 96, 1 NEX. During each functional scanning session, 50 sets of 10 contiguous, 9-mm-thick axial images were acquired parallel to the anterior-posterior commissure plane. High-resolution anatomical images were acquired in the same locations as the functional images.

Region of interest analysis (ROI) was performed in the regions where changes evoked by pain stimulation could be expected. Statistical analysis of the data was done using SPM2 and MarsBaR software. Results of whole-brain activity and in particular regions of interest (ROI) were analysed. The ROIs were comprised of brain regions known to participate in pain processing, namely: anterior cingulate gyrus (ACG), insula, thalamus, primary somatosensory cortex (post-central gyrus), secondary somatosensory cortex (S2). ROI analysis used a 2-way ANOVA design with the independent factors of hypnotic state & verbal analgesic suggestion and the percent BOLD signal change as the dependent variable.

The differences between the level of activity in the first session and that of the second were considered as indicative of the influence of the suggestion of analgesia, whereas the differences between the first and third session were indicative of the reaction of hypnotic induction. The difference between the level of activity in the first and fourth session was regarded as additional information on the effect of suggestion (which, due to a higher susceptibility to suggestion in hypnosis, is stronger than during the second session) and on the effect of hypnosis itself. Differences between the second and fourth session were expected to reveal the effects of the hypnotic state.

There were 14 participants in the study – 7 females and 7 males, 13 persons aged 21–26 years old and 1 person (male) 68 years old. The majority of them were students of the 4th and 5th year of medicine, who were broadening their knowledge in a scientific study group organized by the Department of Psychotherapy. All participants had experienced hypnosis many times and themselves had induced the hypnotic state on others.

The susceptibility to hypnosis induced by the experimenter was evaluated preceding the studies. In all these trials, the reaction of inducing hypnosis was assessed by the participants as being similar to their previous experiences (“deep” state of hypnosis).

Placing the participant in the MRI apparatus gantry commenced the experiment. The headphones and microphone were tested. The first session included application of pain stimuli (pricking the right palm). The second session involved the same conditions, however the stimulus was preceded by a verbal suggestion that the subject was not going to feel any pain. Induction of hypnosis began after dimming the lights in the scanner room, followed by having the subject focus on a point of light, as well
as on the voice of the person conducting the procedure, which was heard in participants’ head-phones, and on the suggestion of the change in shape, colour and placement of the light-point. Following the information that there was a change of perceptiveness, it was recommend-
ed that the participant close her/his eyes and breathe deeply, in a rhythm directed by the person conducting the procedure. At this moment the lights in the room were turned on.

The subject was commanded to imagine that all other stimuli except the hypnotist’s voice had disappeared, or at least to ignore these stimuli. Following this, heaviness and loosening of the left, and then the right arm, was suggested. In all the experiments, a non-verbal confirmation of these suggestions was obtained.

After another suggestion: “And now you will remain for a few minutes in silence, loosening, resting, gathering strength. You will remain in a state of hypnosis, intense focusing of attention, although you will not hear my voice”, another registration of the reaction to pain was made. Then contact was regenerated, suggesting the participant remain further in a state of hypnosis and that he/she will not feel pain during the next phase of the experiment (the text of the suggestion of analgesia was identical in all the cases where it was used: “And now the right palm will stop perceiving the pricking, as though it is placed in a thick glove, through which the needle cannot penetrate. It is so thick, that the needle’s pressure or touch will not be felt.”)

After ending the hypnotic procedure (by counting from 1 to 6, along with suggestions of the heaviness dissipating and returning to the “normal” state) the participants were directed to close their eyes once again, and then when they heard the signal aired through the microphone by the experimenter, alternately to disperse their attention (e.g. free association) and to concentrate their attention on an earlier chosen task (experimental condition).

Immediately after the experiment, the participants gave an account of their subjective expe-
riences, describing them in detail (especially the pain receptiveness). These accounts were recorded on audio-tape, and then the level of pain receptiveness, reactions towards the suggestions of analgesia introduced before hypnotic induction & during hypnosis, hypnosis intensiveness, concentration of attention, type of task on which they concentrated their attention etc., were all determined.

Owing to its significant variation, when evaluating the pain perception in the first phase of the experiment, a seven-degree scale was considered to be necessary to evaluate it. A five-de-

RESULTS

Brain activity correlated with the hypnotic state

The analysis of contrast in the selected ROIs comparing pain stimulation during hypnotic state and pain stimulation in the beginning of the experiment (difference between session 1 and session 3) revealed a significant decrease of pain-related activation in the beginning of the experiment within the following areas: insula (bilaterally), secondary somatosensory cortex (S2), left hemisphere, and within the left post-central gyrus (primary somatosensory cortex, S1). We did not observe any differences in the intensity of activation when we compared results of subjects who rated the intensity of their hypnotic state as high and those who rated it as relatively low neither between female or male subgroups.

The whole-brain analyses for this contrast revealed activation within the orbitofrontal cortex
both in the right and the left hemisphere, as well as the middle occipital gyrus, and deactivation was observed in the left hemispheric superior temporal gyrus and the precentral gyrus.

In almost all subjects (11 in the left and 9 in the right hemisphere) applying pain stimulation (i.e. session 1) was correlated with a decrease of activity within the bilateral orbitofrontal cortex when compared to other sessions. For example, the comparison of activity observed during session 1 and during session 3 (pain stimulation during hypnotic state) revealed an increase in activity during session 3 in this region in both hemispheres for most subjects, irrespective of the subjective ratings of the intensity of the hypnotic state. Bilateral increase was observed in 9 out of 15 subjects.

The whole-brain comparison of activity acquired during session 4 (pain stimulation after analgesic suggestion in hypnotic state, likely associated with the intensity of hypnosis) with that acquired during session 2 (pain stimulation after analgesic suggestion, before hypnotic induction) revealed several significant differences. The changes were observed in the left orbitofrontal cortex and middle frontal gyrus and were manifested as an increase in activity between session 2 and session 4. The reverse direction, i.e. a significant decrease between session 2 and session 4, was observed within the left precentral gyrus. The change of activity in the left orbitofrontal region was more significant than in the previous comparison of session 1 and session 3. This increase was observed in 11 out of 14 subjects.

Individual effect sizes within the left orbitofrontal region in the aforementioned comparisons are depicted in the Tab. 1.

The whole-brain comparison of activity during session 1 (pain stimulation) with session 3 (pain stimulation in hypnotic state) revealed an increase of activity in bilateral orbitofrontal regions and a decrease within left postcentral region (S1) and the left S2 cortex (Fig. 1).

Comparison of the whole-brain activity associated with pain stimulation after analgesic suggestion during hypnotic state (session 4) with the effects of pain stimulation after analgesic suggestion only (session 2) revealed an increase of activity within the left orbitofrontal region and a decrease within the left precentral gyrus (Fig. 2).

<table>
<thead>
<tr>
<th>ss</th>
<th>left orbitofrontal region (spm)</th>
<th>intensity of hypnosis</th>
<th>right orbitofrontal region (spm)</th>
</tr>
</thead>
<tbody>
<tr>
<td>nr</td>
<td>(3–1)</td>
<td>(4–2)</td>
<td>(3–1)</td>
</tr>
<tr>
<td>1</td>
<td>1.654129</td>
<td>5.10513*</td>
<td>3</td>
</tr>
<tr>
<td>2</td>
<td>1.248554</td>
<td>1.022064</td>
<td>3</td>
</tr>
<tr>
<td>3</td>
<td>0.243321</td>
<td>0.773539</td>
<td>3</td>
</tr>
<tr>
<td>4</td>
<td>0.222239</td>
<td>0.289936</td>
<td>2</td>
</tr>
<tr>
<td>5</td>
<td>−0.22435</td>
<td>−0.21583</td>
<td>4</td>
</tr>
<tr>
<td>6</td>
<td>2.36484*</td>
<td>1.43917*</td>
<td>4*</td>
</tr>
<tr>
<td>7</td>
<td>3.86509*</td>
<td>−0.01490</td>
<td>5</td>
</tr>
<tr>
<td>8</td>
<td>−0.53412</td>
<td>0.391949</td>
<td>5</td>
</tr>
<tr>
<td>9</td>
<td>5.35728*</td>
<td>2.81366*</td>
<td>3*</td>
</tr>
<tr>
<td>10</td>
<td>0.690351</td>
<td>0.021576</td>
<td>2</td>
</tr>
<tr>
<td>11</td>
<td>0.248023</td>
<td>−0.27999</td>
<td>4*</td>
</tr>
<tr>
<td>12</td>
<td>−0.49576</td>
<td>0.161356</td>
<td>5</td>
</tr>
<tr>
<td>13</td>
<td>−0.04681</td>
<td>0.53037*</td>
<td>3</td>
</tr>
<tr>
<td>14</td>
<td>−0.59752</td>
<td>0.184539</td>
<td>4</td>
</tr>
</tbody>
</table>

* Statistically significant p<0.05
The voxels that survived the inclusive masking procedure performed on the results of both comparisons (i.e. session 3 – session 1 and session 4 – session 2) were located only in the left orbitofrontal region (Fig. 3). We consider this effect as specifically correlated with the hypnotic state.
Brain activity correlated with the reception of analgesic suggestion

The ROI analysis revealed a trend toward a decreased thalamic activation observed specifically after analgesic suggestion both before and after hypnotic induction (i.e. session 2 and session 4). In the remaining ROIs, decreases of activity were observed (some of them were insignificant) after analgesic suggestion during the hypnotic state only (i.e. session 4).

The whole-brain analysis contrast between session 2 (pain stimulation after analgesic suggestion) and session 1 (pain stimulation only) revealed an increase of activity within the middle frontal gyrus in the left hemisphere.

Lastly, the ROI analyses also revealed an increase in activity level within the anterior cingulate gyrus in the right hemisphere (R-ACG) between session 1 and session 2 (Fig. 4).

**Table 2. Individual effect sizes**

<table>
<thead>
<tr>
<th>ss. no</th>
<th>L-ACG (2–1)</th>
<th>R-ACG (2–1)</th>
<th>effect of the first analgesic suggestion</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>−0.39517</td>
<td>−0.20661</td>
<td>0</td>
</tr>
<tr>
<td>2</td>
<td>0.11152</td>
<td>1.03883</td>
<td>2</td>
</tr>
<tr>
<td>3</td>
<td>0.07629</td>
<td>0.08322</td>
<td>1</td>
</tr>
<tr>
<td>4</td>
<td>0.12053</td>
<td>0.09095</td>
<td>0</td>
</tr>
</tbody>
</table>

The figures below illustrate the effects of pain stimulation after analgesic suggestion (before hypnotic induction) in subject 7 (Fig. 5) who responded to analgesic suggestion and another subject 1, who did not (Fig. 6). Note differences in the right anterior cingulate activation.

This level did not change substantially during the remaining sessions.

In the majority of subjects this increase corresponded to reduced pain sensation (Tab. 2).
Differences between focusing and de-focusing of attention

The effects of alternate focusing and de-focusing of attention were observed principally in the inferior parietal lobule and within the regions of angular, middle and superior occipital gyri (bilateral). In the anterior parts of the brain some activity was observed within the orbitofrontal gyri and Rolandic operculum in the left hemisphere. Despite considerable inter-subject variability, most of the subjects also displayed activity within the right insula and the left S2.

DISCUSSION

Former research of hypnotic state neurophysiological specificity used a similar methodology. In 2002, Pierre Rainville compared the results of PET before and after inducing hypnosis. The left palm of the participants was exposed to pain (hot water). Derbyshire used the fMRI technique during pain perceptions suggested during hypnosis (with no actual pain stimuli).

In the Rainville study, the most evident changes were observed in the anterior cingulate gyrus (ACG) and in the thalamus. The results of the experiments were correlated mainly with the level of relaxation and absorption during the course of hypnosis [7]. The Derbyshire study revealed significant changes in the insula, the ACG, the thalamus as well as the prefrontal and parietal cortex [8].

Results of such studies present changes in brain function at the time of perceiving pain and their localisation as a relationship between the subjective perception of pain reduction due to the suggestion of analgesia and further changes in certain regions of the brain.

Heightened activity connected with a reaction towards suggestion noted in these areas (but not with the hypnosis itself) is also seen in our observations. This contradicts the Rainville and Derbyshire interpretations of the activity of certain areas (e.g. ACG) as correlated with the very state of hypnosis itself.

Results of our study cannot give a definite answer to questions of whether a specific activity of the anterior cingulate gyrus, especially in the right hemisphere, is related to the phenomenon of suggestion itself, or to the analgesia – meaning the content of suggestion. However, the probability seems to be high that the suggested analgesia provokes changes in pain reception responses (mainly their weakening) and that the observed activity in ACG is associated with the reception of these suggestions.

The changes of activity in those regions where one would expect reactions connected with pain perception confirms that neurophysiological phenomena evoked by pain stimulation are modified by the suggestion of analgesia [13, 14, 15, 16]. The effect of the suggestions during a state hypnosis was stronger than the suggestions alone (preceding hypnosis), which can be seen in the fMRI results.

The suggestions of analgesia not only reduce the activity caused by pain stimuli, but are correlated with increased activity in other areas, e.g. R-ACG. This could mean that the reception of verbal suggestion is an active process and not only a passive reaction of the subject. This, however, requires further research, especially regarding the question of whether the described phenomena are present along with every suggestion or only with the suggestion of analgesia.

Analysis of the activity changes during the remaining sessions (pain stimulation alone, pain stimulation following analgesia suggestion, pain stimulation following induction of hypnosis and analgesia suggestion in the hypnotic state) also showed the inhibitory effect of hypnosis on activity caused by the pain stimuli. Perhaps this is caused by hypnotic induction, but it seems rather more probable that these activity changes (as well as the subjective experience of analgesia after hypnotic induction itself) are the effect of adaptation to pain or a “hidden” suggestion of analgesia related to the participants’ expectation that being hypnotised will reduce perception of pain caused during the experiment.

The most important observation seems to be higher activity in the orbitofrontal gyrus (bilaterally, but more significant in the left hemisphere) correlated with the state of hypnosis. Activity in this area cannot be explained solely by pain stimulation (the effect of which was rather lowered basic activity in the left hemisphere in almost all of those studied) nor by effect of suggestion.

This allows us to formulate a hypothesis that in the functional state of the brain during hypnotic
induction, besides a modification of the signal of pain, a specific type of activity appears. It seems interesting that activity in a similar area (however lower) was also noted during any voluntary concentration of attention. This could confirm the conviction that hypnosis is a state of specifically intense concentration of attention (definition of the British Royal Society, 1955 [2]).

It seems reasonable to consider such a state of attention as a specific “functional state” of the central nervous system. This concept was not fully confirmed in our study, however. The discrepancy of the measurement effects of focusing versus de-focusing of attention may result from the variety of tasks (imagined picture, mathematical operations, etc.), as well as distortions brought about by stimuli that attract attention (especially auditory stimuli). This should be a subject of further research attempting to answer the question of whether the state of hypnosis is identical to the state of intense attention concentration or whether it is an independent phenomenon.

The problem of interpretation of fMRI brain activity changes is also related to methodological difficulties. They are caused, amongst others, by technological conditions. For example, the noises of the machinery, especially their variability as well as awaiting for the pain stimuli, can distract the subject’s attention from the suggested task. The probability of experiencing tension in the experimental situation and possible defense mechanisms used also complicate interpretation of the relationship between variables such as hypnosis, suggestion, analgesia, etc. and the observed functional state of the brain.

CONCLUSIONS

1. Changes of activity in areas correlated with pain reception are the effect of suggestion of analgesia and are based on lowering of the activity evoked by the pain stimuli (especially in the thalamus, on the left side).
2. The influence of suggestion (and precisely – the reception of its contents) could be connected with the heightened activity of certain areas of the brain, especially the right hemisphere anterior cingulate gyrus (R-ACG).
3. The induction of hypnosis is correlated with higher activity in the orbitofrontal areas, especially in the left hemisphere.

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**Introduction**

As Colom and Lam notice [1], there has been a noticeable paradigm shift in the treatment of bipolar disorder (BD), switching from an exclusively pharmacological approach, to a combined yet hierarchical model in which pharmacotherapy plays a central role, and psychological interventions help cover the gap that exists between theoretical efficacy and “real world” effectiveness. Several multimodal psychotherapeutic interventions have been developed for BD, such as family-focused therapy (FFT), interpersonal and social rhythm therapy (IPSRT), and cognitive-behavioral therapy (CBT). All these treatment approaches encompass patient psychoeducation (PE). More recent research has also begun to address the efficacy of PE as a stand-alone treatment for BD, and manual-based standardized PE interventions have now been developed [2, 3, 4].

Since its effectiveness in enhancing treatment adherence and improvement of long-term outcome in several medical conditions (cardiac illness, diabetes, asthma), psychoeducation can be viewed as a key element of a good medical practice. As Colom and Lam put in: “psychoeducation covers a fundamental right of our patients: the right to be informed about their illness” [1].

**Psychoeducation – the review of evidence**

**Psychoeducation for patients**

Harvey and Peet (1991) explored the effect of a brief educational program on lithium adherence. Sixty clinic attendees were allocated to the intervention group or to usual treatment. The intervention consisted of a simple 12-minute videotaped lecture with graphic illustrations of how lithium is used to treat affective disorder. This was complemented with an illustrated transcript. Patients also received a visit two weeks later to discuss any particular difficulties they were having with lithium. Six weeks after the intervention the education group, compared to usual treatment, showed a reduction in their self-report-
ed missed doses of lithium, which just failed to reach statistical significance, p=0.07). The significant between-group differences in plasma lithium levels were not observed [5].

Another early study by van Gent and Zwart (1991) compared 14 bipolar patients attending psychoeducation sessions with 12 controls. Following the sessions and 6 months later, the psychoeducated patients showed more knowledge of the disease, medication and social strategies [6].

In another later study van Gent (2000) showed a significant decrease of non-compliant behaviour and hospitalizations amongst psychoeducated patients [7].

In 1980 Seltzer, Roncari, and Garfinkel conducted an elaborate inpatient education study. 44 patients with schizophrenia, 16 patients with bipolar disorder, and 7 with major depression were placed in either education groups or no-education control group. The patients were provided with nine lectures on their diagnosis, course of treatment, medication, side effects, relapse, and importance of social support. Five months later, the non-compliance rate for educational group members was 9%, while the non-compliance rate for the control group was 66%. Compliance was measured through pill counts or medication blood levels [8].

Altamura and Mauri (1985) and Youssel (1983) also tested the effectiveness of patient education in improving treatment compliance in depressed outpatients. Both studies indicated that patients who received information about their illness were more likely to follow the prescribed treatment regimen [8].

Bauer [9] investigated a mixed psychoeducational and behaviour-oriented form of group psychotherapy, which was divided in two phase group treatment. Each group consisted of 5 or 6 patients and the sessions were highly structured. Phase I was mostly psychoeducational and consisted of five weekly sessions. The sessions contained information about BP, early detection of symptoms, and adaptive and maladaptive coping strategies. Phase II was unstructured and the treatment was more flexible and adapted to individual needs. Moreover, there was a behavioural plan directed at improving social adaptation during which cognitive, behavioural or interpersonal psychotherapy may have been used. The study measured only adherence to psychotherapy with good results after treatment. The increase in knowledge of BD was also observed.

In 1999, Perry et al conducted the randomized controlled trial of efficacy of teaching patients with BP to identify early symptoms of relapse and obtain treatment. 69 bipolar patients received 7 to 12 individual treatment sessions from a research psychologist plus routine care or routine care alone. Teaching patients to recognize early symptoms of manic relapse and seek early treatment was associated with longer time to first manic relapse and improvements in social functioning and employment [10].

Colom (2003) conducted the first large-scale randomized controlled trial of psychoeducation in bipolar disorder. They allocated 120 euthymic bipolar subjects receiving standard treatments to either 21 sessions of a structured group psychoeducation program, or to equivalent number of sessions of an unstructured support group attended by the same therapist who delivered the psychotherapy intervention. At two-year follow-up, the psychoeducation intervention compared with the control treatment was associated with a significant reduction in total number of relapses and 36% of patients in the control group were hospitalized compared with 8% in the psychoeducation group. The treatment tested in this study combined 3 interventions that have shown some efficacy individually: early detection of prodromal symptoms, enhancement of treatment compliance, and induction of lifestyle regularity and was carried out in the Bipolar Disorders Program of the Hospital Clinic of Barcelona. The authors did not conduct separate comparisons for each block of intervention, thus they could not conclude whether there is only one useful part or determine the major or minor efficacy of each block [11].

Interestingly, a recent subanalysis of the study shows that psychoeducation may even be useful in those ”difficult” patients fulfilling criteria for a comorbid personality disorder. It may be particularly important if we consider worse clinical characteristics and poor outcome of comorbid bipolar patients [12].

Colom [13] have undertaken an additional study to demonstrate that benefits of psychoeducation are not mediated solely through enhanced adherence. They conducted a randomized clini-
cal trial using the same 21-session program, but included only 50 bipolar I patients who fulfilled criteria for being considered as treatment compliant. Positive results were seen and the effect size was similar to the Archives’ study as were the results. At the end of the 2-year follow-up 60% of the psychoeducated patients versus 92% of subjects in the control group fulfilled criteria for recurrence. Also time to relapse was longer for psychoducated patients and they had a significantly lower number of total recurrences and number of depressive episodes.

Group psychoeducation may also act as the “mood-stabilizer stabilizer” by enhancing the levels and stability of serum lithium levels [14]. Preliminary data also suggest that group psychoeducation may be associated with an increase in the reported quality of life (QoL), both in terms of general satisfaction and in relation to levels of physical functioning [2].

The summary of the studies on psychoeducation is presented in Tab. 1.

### Psychoeducation for patients’ families

Most patients’ families will have questions about the symptoms, the treatment, and the prognosis for the future. Educating family members about bipolar disorder serves two functions. First, it helps the family members cope with their own pain and suffering and prepares them for difficult times to come. Second, it enlists them as active participants in the treatment process. As always, it is necessary to tailor the involvement of significant others to the special needs of each individual and to seek patients’ permission before communicating any clinical information to their family members [8].

Miklowitz carried out a randomized study among 101 bipolar patients who were stabilized on maintenance drug therapy and were randomized to receive either 21 sessions of family-focused psychoeducational treatment or two family education sessions and follow-up crisis management. After a 2-year follow-up, patients who received the longer psychoeducational treatment had fewer relapses, longer times to relapse, significantly lower non-adherence rate than patients assigned to the shorter intervention group [15, 16].

<table>
<thead>
<tr>
<th>Authors / year</th>
<th>Study design</th>
<th>Mode/Intervention</th>
<th>Subjects/control</th>
<th>Sessions</th>
<th>Follow-up</th>
<th>Results</th>
</tr>
</thead>
<tbody>
<tr>
<td>Harvey and Peet (1991) [5]</td>
<td>Controlled</td>
<td>Group/Videotaped lecture and illustrated transcript on lithium usage</td>
<td>30/30</td>
<td>1 (12min video)</td>
<td>6, 12 and 24 weeks</td>
<td>↑ Knowledge and attitude to lithium</td>
</tr>
<tr>
<td>Van Gent (1991) [6]</td>
<td>Controlled</td>
<td>Group</td>
<td>14/12</td>
<td>5</td>
<td>6 and 12 months</td>
<td>↑ ↑ Knowledge and attitude to treatment</td>
</tr>
<tr>
<td>Bauer et al. (1998) [in:9]</td>
<td>Open trial</td>
<td>Group</td>
<td>29/10</td>
<td>8 months</td>
<td>Post-trial</td>
<td>↑ Knowledge of BD</td>
</tr>
<tr>
<td>Perry et al. (1999) [10]</td>
<td>Controlled</td>
<td>Individual/Teaching to recognize early symptoms of mania</td>
<td>34/35</td>
<td>7–12</td>
<td>6, 12, 18 months</td>
<td>↑ Time to first manic relapse, social functioning, employment</td>
</tr>
<tr>
<td>Miklowitz et al. (2003) [16]</td>
<td>Randomized</td>
<td>Family</td>
<td>31/70</td>
<td>21</td>
<td>2 years</td>
<td>↓ Relapses and non-adherence, ↑ Time to relapse</td>
</tr>
</tbody>
</table>

Table 1. Summary of psychoeducation studies (modified [9])

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The development of family psychoeducation for children with bipolar disorder (multifamily psychoeducation groups; MFPG and individual family psychoeducation; IFP) is also underway [17].

**Topics to be addressed in a psychoeducational program**

Current psychological therapies in bipolar disorder (e.g. PE and CBT) appear all to include four key components: 1. information about the disorder (psychoeducation in a narrow sense), 2. inducing lifestyle regularity (including reduction in substance use), 3. enhancing medication adherence, 4. early recognition and management of symptoms of relapse

Psychoeducation of bipolar patients should include information about high recurrence rates associated with the illness, drugs and their potential side-effects, early detection of prodromal symptoms and their management, the importance of avoiding illicit substances and alcohol, the importance of maintaining routines, stress management and some concrete information about issues such as pregnancy and bipolar disorder, suicide risk, stigma, and social problems related to the illness.

One of the main targets of psychoeducation concerns the enhancement of treatment adherence, which is usually very poor in bipolar patients, even when euthymic [1, 18].

The results of the BEAM survey by Paolo Morselli [19] have shown that issues traditionally considered as the main source of non-adherence and addressed by psychiatrist, i.e. side-effects concerned as few as 3% of the patients, whilst patients view ‘feeling dependant’ as the most frequent (22.7%) reason for non-compliance. Thus, as Colom and Vieta concluded “information is never enough to improve treatment compliance” and other psychoeducational interventions for compliance enhancement, such as the Concordance model by Scott [20], should be developed and promoted. The table 2 summarizes the results of the BEAM survey.

A cornerstone of the philosophy of concordance is that each individual is a rational consumer who makes choices that ‘makes sense to them’. This philosophy also assumes that the clinician and client collaborate together to reach a shared understanding of the most appropriate way to help that individual, and differences of opinion should be acknowledged and respected.

Scott and Tacchi proposed an abbreviated model of cognitive therapy, called “concordance therapy (CCT)” based on the principles of “concordance”, which was designed specifically to overcome barriers to adherence with lithium prophylaxis.

CCT uses the ‘Cognitive Representation of Illness’ model, which describes how an individual constructs an internal representation of what is happening to them when he or she experiences any physical or psychological symptoms.

It suggests that, no matter what the nature of the symptoms, most people organize their thinking around five key themes. These are: 1. What is it? (identity), 2. Why has it happened? (cause), 3. How long will it last; will it recur? (timeline), 4. What effects will it have? (consequences), 5. What can I do to make it go away? (cure/control).

They will then make some attempt to cope with symptoms and after assessing the coping strategy they will then continue to use or modify it accordingly.

The model suggests that individuals who perceive coherence between their concrete experiences of symptoms, the meaning they have attached to them, and the explanation given to them by significant other (including health professionals) are more probably to engage with health services or adhere with the treatments offered.

The CCT reported by Scott and Tacchi comprised seven 30-minute sessions with a psychiatrist who was also an expert in cognitive therapy. The goal of the sessions was to agree to a treatment regime that was acceptable, understandable and manageable to an individual with BP and coherent with the individual’s cognitive representation of the illness (individual’s perceptions of the identity, cause, course, consequences and possibilities for cure or control).

Laboratory results demonstrated statistically significant increases in serum plasma lithium levels although only four of the 10 subjects completed all seven half-hour therapy sessions and homework tasks. The small sample size and the open character of the study require much fur-
other research, but suggest the need to individually tailor psychoeducative interventions to individual needs of every patient [20].

Tables 3 and 4 show psychoeducational formats that have been delivered in the Barcelona Bipolar Disorders Program [11] and in a mood disorders program in the University of British Columbia Hospital in Vancouver [2]. The Barcelona group proposed twenty one 90-min sessions under the direction of two trained psychologists. The group consisted of 8–12 patients. The content followed a medical model with a directive style, encouraged participation and focused on the illness rather than on psychodynamic issues. The experts from the British Columbia Hospital proposed a PE program delivered in eight 90-min sessions, on a weekly basis, with group sizes varying between 6 and 20 participants. The sessions were led by a nurse, a social worker, and a psychiatrist.

Psychoeducation has become the standard part of the complex treatment of affective disorders in the depression treatment unit of Department of Adult Psychiatry in Cracow. It is conducted in a group mode, in-patients, out-patients and their family members are encouraged to participate. The main topics include: information about causal and triggering factors of mood disorders, their symptomatology, course and outcome, basic principles of treatment, early recognition of symptoms and coping strategies to be implemented in case of recurrence, lifestyle regularity and risks associated with alcohol and street drugs abuse are also addressed. Active participation and sharing experiences are also encouraged.

How does psychoeducation work?

Vieta [21] suggests that psychoeducation can be fitted into the mood-stabilization paradigm developed by Ketter and Calabrese [22] – comprising stabilization from above (class “A”) or below (class “B”) – by creating the “C” class mood-stabilizer, i.e. those that stabilize from the centre. This would be because psychoeducation seems...
to work best when patient is euthymic, and provides little or no benefit over ‘A’ and ‘B’ mood stabilizers during an acute episode of mania or depression.

The mechanism of action of the psychoeducation is unknown. Colom et al. [11] hypothesize that teaching life regularity would play a main role in the prevention of depression, while the early detection of prodromal symptoms would be crucial to prevent mania. The above mentioned replication of the Archives’ study conducted by the Barcelona Bipolar Disorders Program included only 50 BD I patients considered as treatment compliant, which enabled to demonstrate, that the influence of psychoeducation goes beyond the simple-but indispensable- enhancement of treatment adherence [13].

### Adverse effects of psychotherapy and psychoeducation

An old humorous clinical saying claims that “if you cannot get killed by something, you will not possibly get cured by it either”. To put it in other words, as with the other active treatments (e.g. pharmacotherapy), the psychoeducational approach must be attentive to the development of adverse events and consider both the risks and benefits of the planned interventions. In the review article on psychoeducation and cognitive-behavioural therapy in bipolar disorder Gonzalez-Pinto et al. [9] revealed two adverse events that must be taken into account and measured when using psychotherapies in bipolar disorder: increased use of antidepressants and increase in anxiety. Vieta stresses that psychoeducation may not be useful for all patients with bipolar disorder. Specifically he points out, that for instance, some patients with obsessive-compulsive personality features may become exceedingly concerned about detecting early prodromal symptoms, unnecessarily increasing the number of extra visits to their psychiatrists and receiving unjustified extra medication. Other patients may become too rigid about sleeping habits, missing social events or travel because they feel they must adhere inflexibly to their regular sleep schedule [23]. Vieta also cites a recent controlled trial on the efficacy of CBT in bipolar disorder, which suggests that patients who are still symptomatic and have a higher number of previous episodes may become distressed by this kind of intervention and may actually worsen [23]. Moreover depressed patients may tend to absorb only the negative aspects of psychoeducational information, and manic patients can be disruptive and may not absorb the information at all [24].

### CONCLUSIONS

One limitation of some of the studies examined is the lack of separate comparisons for each block of the intervention (early detection of prodromal symptoms, enhancement treatment compliance and inducing lifestyle regularity). Another limitation of some studies on psychoeducation is insufficient information on how BD patients are “usually” treated. Also there is still lack of more other large-scale randomized controlled trials on psychoeducation.

Despite these limitations, psychological interventions have proved their efficacy in bipolar disorder. Almost every intervention tested contains important psychoeducative elements concerning both compliance enhancement and early identification of prodromal signs, stresses the importance of lifestyle stability, and explores pa-
The role of psychoeducation in the complex treatment of bipolar disorder

patients' beliefs about health and illness awareness. Current treatment guidelines are already suggesting the use of psychotherapy in bipolar disorder [25, 26]. The noticeable shift in approach to bipolar disorders in which specialized and validated psychological interventions (like psychoeducation) become a requirement rather than just an option is underway.

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A prospective study on the dynamics of depression in late adolescence

Jacek Bomba, Renata Modrzejewska

Summary

Aim: To assess changes in the occurrence of depressive disorders during late adolescence a prospective epidemiological study was carried out.

Subjects and method: A representative sample of 17-year-old school adolescents (N=2094) was screened for depression with the Krakow Depression Inventory (KID) in 2001, 2002 and 2003.

Results: Point prevalence of depression was as follows: 27.27 % for 17-year-olds, 27.43 % for 18-year-olds, and 26.69 % for 19-year-olds, and was relatively stable in the sample studied.

Conclusions: It was found that depression is more frequent in late-adolescent girls than in boys of the same age. The dynamics of depression across the years suggests a differentiated nature of the disturbance.

INTRODUCTION

The paper presents the results of the study conducted in accordance with the principle of the developmental nature of depressive disorders during adolescence, as it was formulated in Poland by Antoni Kępiński [1]. Kępiński’s assumption was verified in clinical studies [2], as well as in cross-sectional studies of the untreated population [3, 4]. In literature, a more popular approach is the one based on theoretical principles of the integrity of all affective disorders [5], with a clear distinction between a disorder perceived as pathology on the one hand and sadness seen as the child’s or adolescent’s adequate response to unpleasant current experience on the other [6]. The classifications of mental disorders which are nowadays in use (ICD–10, DSM-IV) are fundamentally provisional. In these classifications, disorders with a depressive picture which occur during adolescence are categorised as affective disorders, behavioural and emotional disorders, somatogenic disorders or posttraumatic disorders – depending on the context. This justifies an anosologic approach in the studies and the perception of depression (for which the term depressiveness is used interchangeably) as a complex of symptom.

The results of the Cracow epidemiological studies on depression among adolescents make it possible to conclude that in late adolescence depression is less frequent, providing the conditions of entering adulthood are favourable [7]. These findings, achieved as a result of the comparison of incidence of disorders among the students of Cracow and Helsinki secondary schools, proved similar to those achieved earlier by Italian psychiatrists [8]. Moreover, the Cracow studies showed that the occurrence of depression in late adolescents is related to the earlier occur-
rence of unspecific factors affecting the development. [9]. A catamnestic study involving the same population sample, conducted 15 years later [10] revealed certain relationships between depression, also in late adolescence, and unfavourable further course of life, especially among women. Such a relationship has already been indicated beforehand, although on the basis of studies with a considerably shorter catamnestic period [11, 12, 13, 14, 15, 16]. The following aspects of adult life of subjects suffering from depression during adolescence have been pointed out: worse general health state [17], requiring health care and assistance more often, more frequent drug taking [18, 19], abuse of and addiction to nicotine [20] and other psychoactive substances [21], giving up school education [18, 22], women’s earlier entering into marriages [20, 23], lack of satisfaction from sexual life [23] and delinquency [18].

AIM OF THE STUDY

The aim of this work was to search for data which would enable an answer to the questions about the variability of depression during late adolescence. The assumption was that, in accordance with earlier observations [3, 4], the rate of depression prevalence can be relatively stable in this phase of adolescence, although it depends on the type of education, and, furthermore, that it would be higher among girls than among boys.

SUBJECTS AND METHOD

A prospective study including a representative population sample of students of big-city secondary schools was planned. In 2001, with the use of the two-stage draw method, a group of 2094 second-form students of grammar secondary schools, technical secondary colleges and vocational secondary schools (17-year-olds) was selected. They were examined three times, in 2001, 2002 and 2003, with the use of the Krakow Depression Inventory (Krakowski Inwentarz Depresyjny, KID). KID is a questionnaire which includes the combination of depression symptoms (the combination of mood disturbance, anxiety, cognitive disturbance, activity disturbance, self-destruction, somatic symptoms) characteristic of preadolescents and adolescents in the early, middle and late phase of adolescence. It was prepared in three versions, namely: AO “B1” for the parents of children aged about 10, IO “B1” for young people aged 13–15 and IO “C1” for young people aged over 16. In order to retain the descriptive value of the tool, questions of a low discriminative value were kept in the questionnaire. The diagnostic accuracy of KID in screening studies corresponds to the accuracy of Beck’s questionnaire for the youth. KID IO “C1” consists of 119 statements, 104 of which describe depression symptoms, taking into account the specificity related to the developmental stage. In the introductory instructions the subjects were asked to take into account in their answers the month preceding the examination. Some questions (such as those about self-aggression, especially suicidal thoughts) by their very nature require a reflection covering a longer period of time than that specified in the test instructions. KID results are assessed according to the sten scale. Cronbach’s alpha reliability coefficient of KID IO “C1” = 0.9425. The diagnostic validity assessed by means of the point-biserial correlation coefficient \( r = 0.6917 \).

The subjects were asked to sign their questionnaires, so that it was possible to identify them in the sample during the subsequent stages of the study. Depression prevalence in the same population sample was analysed three times (2001, 2002, 2003). Moreover, the dynamics of the intensity of depression symptoms in individual subjects was analysed.

Subjects

In 2001 among the students selected, 2094 copies of KID IO “C1” were distributed, and 1949 completed questionnaires were received back. In subsequent years, 2002 and 2003, 1505 and 1175 questionnaires were received, respectively. In the study, only those returned questionnaires which were completed in full could be taken into consideration, while in the analysis of dynamics it was possible to consider only those which were signed thus enabling the identification during further stages of the study. Due to a shorter pe-
A prospective study on the dynamics of depression in late adolescence

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...period of education in vocational schools and because members of a given school class change, some students could not participate in all three stages of the study. The proportions of the analysed group to the whole selected population sample are presented in Tab.1.

The proportions of male and female students of grammar secondary schools to those of other secondary schools are presented in Fig.1. Secondary schools other than grammar secondary schools were integrated due to the fact that the percentage of vocational school students was very small (6%).

It was possible to assess the point prevalence of depression on the basis of the results achieved from 56–93% of the selected population sample of late-adolescent students. The dynamics could be investigated in the group constituting 14.76% of the population sample (N = 309, with the initial sample N = 2094). The proportions between the groups analysed in subsequent years as compared to the whole population sample, are presented in Fig.2.

The rates of point prevalence of depression in the first stage of the study in 2001 in the whole studied population (27.27%; girls 34.0%, boys 18.9%) and in the group of subjects studied in

<table>
<thead>
<tr>
<th>Year</th>
<th>Initial sample size</th>
<th>Number of filled-in KID questionnaires returned</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>I – 2001</td>
<td>2094</td>
<td>1949</td>
<td>93.08</td>
</tr>
<tr>
<td>II – 2002</td>
<td>2094</td>
<td>1505</td>
<td>71.87</td>
</tr>
<tr>
<td>III – 2003</td>
<td>2094</td>
<td>1175</td>
<td>56.11</td>
</tr>
</tbody>
</table>

Fig. 1. Population sample of second-form students

Fig. 2. Completeness of data received from the studied sample of late adolescents

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subsequent years and included in the analysis of dynamics (26.21%; girls 30.54%, boys 17.92%), are presented in Fig.3.

Point prevalence of depression in the population of late adolescents

The rate of point prevalence of depression was assessed on the basis of a screening diagnosis of depression, made, in turn, on the basis of the KID result ≥7. The assessment was conducted in the same representative sample of secondary school students in 2001 (II-formers), 2002 (III-formers) and 2003 (IV-formers). The results are presented in Tab.2 and Fig.4.

The rate of point prevalence of depression in the population sample studied successively in age 17, 18 and 19 is similar, namely: 27.27% in 2001, 27.43% in 2002, and 26.69% in 2003.

Depression vs. sex

The results of earlier studies [3, 4] suggested that depression is more prevalent among girls during late adolescence than among boys of the same age. In order to verify this regularity the relationship between depression occurrence and sex was compared in the same population sample in subsequent years. The results are presented in Tab.2 and in Fig. 5.

The rates of point prevalence of depression in girls in subsequent years are higher than in boys, and the changes in values in subsequent years are small and statistically insignificant.

Table 2. Depression prevalence in the 17, 18 and 19 y.o. population

<table>
<thead>
<tr>
<th>Year of study</th>
<th>2001</th>
<th>2002</th>
<th>2003</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age</td>
<td>17</td>
<td>18</td>
<td>19</td>
</tr>
<tr>
<td></td>
<td>depressive</td>
<td>nondepressive</td>
<td>depressive</td>
</tr>
<tr>
<td></td>
<td>N</td>
<td>%</td>
<td>N</td>
</tr>
<tr>
<td>Boys</td>
<td>142</td>
<td>18.9</td>
<td>610</td>
</tr>
<tr>
<td>Girls</td>
<td>320</td>
<td>34.0</td>
<td>622</td>
</tr>
<tr>
<td>Together</td>
<td>462</td>
<td>27.27</td>
<td>1232</td>
</tr>
</tbody>
</table>

Differences in depression prevalence amongst boys and girls in the years 2001, 2002 and 2003:

In 2001: Pearson’s $\chi^2 = 47.990$; df = 1, asymptotic significance < 0.0005

In 2002: Pearson’s $\chi^2 = 35.589$; df = 1, asymptotic significance < 0.0005

In 2001: Pearson’s $\chi^2 = 26.806$; df = 1, asymptotic significance < 0.0005

Differences in depression prevalence amongst boys in the years 2001, 2002 and 2003:

Pearson’s $\chi^2 = 0.415$; df = 2, asymptotic significance = 0.813

Differences in depression prevalence amongst girls in the years 2001, 2002 and 2003:

Pearson’s $\chi^2 = 0.448$; df = 2, asymptotic significance = 0.799
The dynamics of depression between age 17 and 18 as well as 19.

Changes in the level of depressive symptoms intensity between the subsequent stages of the study in the group of 309 students were investigated: in 2001, when the subjects were 17 on average; in 2002, when they were 18, and in 2003, when they were 19. The results of KID IO "C1" in the years 2001 and 2002 as well as 2001 and 2003 were compared. On the basis of the identified questionnaires, four subgroups of the study...
ied students were distinguished; the subgroups differed in the compatibility of results in the two stages of the study:

A. a subgroup of students whose KID result $\geq 7$, which indicated depression in both stages of the study;

B. a subgroup of students who developed depression in subsequent years, i.e. 2002 or 2003;

C. a subgroup of students in the case of whom depression subsided in subsequent years, i.e. 2002 or 2003;

D. a subgroup of students, both boys and girls, whose KID result < 7 at each stage (2001/2002 and 2001/2003).

Fig. 6 and Tab. 3 show the proportions of subgroups distinguished in that way in the group whose results could be individually identified and compared.

Taking into account the occurrence, subsidence or temporary presence of depression it was possible to distinguish 5 groups, including two groups characterised by the occurrence or absence of depression during three subsequent years. The most numerous group, that of non-depressive students, during three subsequent years involved 182 students out of the general number of 309, which constituted 58.9%, including 74 boys (69.8% out of 106) and 108 girls (53.2% out of 203). The group of depressive students during three years involved altogether 39 students (12.6%), including 7 boys (6.6%) and 32 girls (15.8%). The remaining groups included students in the case of whom depression subsided or appeared during subsequent years. The group of students whose depression appeared in 2002 and lasted in 2003 or appeared only in 2003, involved 31 students (10.0%), including 7 (6.6%) boys and 24 (11.8%) girls. Depression subsided in 2002 or 2003 in 33 (10.7%) students, including 12 (11.3%) boys and 21 (10.3%) girls. The remaining groups – those in which depression was present temporarily – included 24 (7.8%) students, including 6 (5.7%) boys and 18 (18.8%) girls.

Depression occurred in 2001 and 2002 (but it was not diagnosed in 2003) in 17 students (5.5%), including 8 (7.5%) boys and 9 (4.4%) girls; whereas it occurred in 2002 and 2003 (but it was not diagnosed in 2001) in 18 students (5.8%), including 2 (1.9%) boys and 16 (7.9%) girls. The least numerous group (2.9%) was constituted by the students in the case of whom depression occurred in 2001 and 2003 but did not occur in 2002; it included 9 girls only (4.4%). Depression occurred during two years out of three covered by the study altogether in 44 students (14.2%), including 10 boys (9.4%) and 34 girls (16.7%).

In 2001 only, depression was diagnosed in 16 students (5.2%), including 4 boys (3.8%) and 12 girls (5.9%); in 2002 only, it was diagnosed in 15 students (4.9%), including 6 boys (5.7%) and 9 girls (4.4%); finally, in 2003 only, it was diagnosed in 13 students...
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Fig. 7. Change in depressiveness between 17, 18 and 19 y.o.

Table 3. Dynamics of depression in late adolescence amongst boys

<table>
<thead>
<tr>
<th>Depression prevalence in the year</th>
<th>2003 nondepressive</th>
<th>2003 depressive</th>
</tr>
</thead>
<tbody>
<tr>
<td>2001 nondepressive 2002 nondepressive</td>
<td>74 (69.8%)</td>
<td>5 (4.7%)</td>
</tr>
<tr>
<td>2001 nondepressive 2002 depressive</td>
<td>6 (5.7%)</td>
<td>2 (1.9%)</td>
</tr>
<tr>
<td>2001 depressive 2002 nondepressive</td>
<td>4 (3.8%)</td>
<td>0 (0.0%)</td>
</tr>
<tr>
<td>2001 depressive 2002 depressive</td>
<td>8 (7.5%)</td>
<td>7 (6.6%)</td>
</tr>
<tr>
<td>Generally</td>
<td>92 (86.8%)</td>
<td>14 (13.2%)</td>
</tr>
</tbody>
</table>

Amongst girls

<table>
<thead>
<tr>
<th>Depression prevalence in the year</th>
<th>2003 nondepressive</th>
<th>2003 depressive</th>
</tr>
</thead>
<tbody>
<tr>
<td>2001 nondepressive 2002 nondepressive</td>
<td>108 (53.2%)</td>
<td>8 (3.9%)</td>
</tr>
<tr>
<td>2001 nondepressive 2002 depressive</td>
<td>9 (4.4%)</td>
<td>16 (7.9%)</td>
</tr>
<tr>
<td>2001 depressive 2002 nondepressive</td>
<td>12 (5.9%)</td>
<td>9 (4.4%)</td>
</tr>
<tr>
<td>2001 depressive 2002 depressive</td>
<td>9 (4.4%)</td>
<td>32 (15.8%)</td>
</tr>
<tr>
<td>Generally</td>
<td>138 (68.0%)</td>
<td>65 (32.0%)</td>
</tr>
</tbody>
</table>

In both sexes

<table>
<thead>
<tr>
<th>Depression prevalence in the year</th>
<th>2003 nondepressive</th>
<th>2003 depressive</th>
<th>Generally</th>
</tr>
</thead>
<tbody>
<tr>
<td>2001 nondepressive 2002 nondepressive</td>
<td>182 (58.9%)</td>
<td>13 (4.2%)</td>
<td>195 (63.1%)</td>
</tr>
<tr>
<td>2001 nondepressive 2002 depressive</td>
<td>15 (4.9%)</td>
<td>18 (5.8%)</td>
<td>33 (10.7%)</td>
</tr>
<tr>
<td>2001 depressive 2002 nondepressive</td>
<td>16 (5.2%)</td>
<td>9 (2.9%)</td>
<td>25 (8.1%)</td>
</tr>
<tr>
<td>2001 depressive 2002 depressive</td>
<td>17 (5.5%)</td>
<td>39 (12.6%)</td>
<td>56 (18.1%)</td>
</tr>
<tr>
<td>Generally</td>
<td>230 (74.4%)</td>
<td>79 (25.6%)</td>
<td>309 (100.0%)</td>
</tr>
</tbody>
</table>

(4.2%), including 8 girls (3.9%) and 5 boys (4.7%).

Depression was diagnosed in only one year out of three altogether in 44 students (14.2%), including 15 boys (14.2%) and 29 girls (14.3%).
Girls were more numerous (by nearly 10%), which was statistically significant, in groups where depression remained for 3 years (Chi2 = 5.298, df = 1, p = 0.021) or where depression recurred or occurred in 2002 and remained in 2003 (Chi2 = 9.497, df = 1, p = 0.002); boys, on the other hand, were more numerous (by nearly 16%) in the group where depression was absent for 3 years (Chi2 = 7.936, df = 1, p = 0.005). In the remaining groups (with depression subsiding in 2002 or 2003 or diagnosed only in 2002 or 2003) the differences between sexes were small and statistically insignificant (Chi2 < 0.5, p > 0.5).

**DISCUSSION**

The fact that there are no distinct changes in the rate of point prevalence of depression during the subsequent years in which the population sample was observed, can suggest that the incidence of the studied disorders among late adolescents is relatively stable. Such a result is against the claim put forward beforehand, suggesting that depression incidence decreases in late adolescence [7]. In earlier studies the same tool for a screening diagnosis was used but in later studies the sample was more numerous.

Differences in depression prevalence among boys and girls, namely higher rates for girls, manifested themselves in the period between the subjects' age 17 and 19. Therefore, they revealed a tendency similar to that described in adults.

Moreover, more often in girls than in boys depression remained throughout the three years of the study. Another situation which involved girls more often than boys, was the occurrence of depression during the subsequent years of the study in those subjects who had not been diagnosed as depressive during the first examination.

Depression, diagnosed by means of screening on the basis of the KID result, is a phenomenon of considerable prevalence during late adolescence. On the other hand, though, a longitudinal study makes it possible to conclude that depression does not occur in over 60% of secondary school students, especially in boys. In subjects who develop depression its course is different.

The nature of depression cannot be determined on the basis of the dynamics of depressive symptoms intensity. However, one can carefully suppose that depressive disorders in late adolescence do not constitute a homogeneous group.

The question of the predictive value of the screening diagnosis of depression in late adolescence still remains unanswered, although numerous studies referred to above, including Polish studies, indicate some relationships between a depressive course of adolescence and the quality of adult life.

**CONCLUSIONS**

Depression occurring in late adolescence is a syndrome of a heterogeneous nature, which manifests itself mainly in the differences in the course of disorders.

Point prevalence of depression, measured with depression course taken into consideration, in late adolescence is higher among girls.

The predictive value of the early screening diagnosis of depression requires further studies.

**Appendix**

The group of subjects constituted 12.6% throughout the period of the study. In slightly more than 15% of the subjects depression was diagnosed in individual examinations. These observations suggest a different course of mood disorders in late adolescents, which can be an argument for the heterogeneity of these disorders.

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Some aspects of sexual identity of girls suffering from anorexia nervosa

Katarzyna Januszek

Summary

Introduction: The article presents the results of an empirical research on sexual identity of girls suffering from anorexia nervosa. The author introduces the theoretical concept of sexual identity. In the structure of sexual identity three aspects have been isolated, namely, a phenomenological aspect of sexual identity, conceptual aspect of sexual identity and the behavioural aspect of sexual identity. The second one, which includes self-esteem in the area of features related with sex, was the main object of interest in the study. Subjects and methods: 30 girls suffering from anorexia nervosa and 30 girls without eating problems were examined. The method used in the study was the Q technique. Results: A significantly lower level of self-esteem in the area of features related with sex was observed in anorectic patients in comparison with girls without eating problems. Moreover, some incoherence in the content of the conceptual aspect of sexual identity in anorectic girls was revealed. Conclusions: Therapy for anorectic girls should certainly include work on their concept of femininity.

anorexia nervosa / sexual identity / self-esteem

INTRODUCTION

Sexual identity

Sexual identity stands out as one of the most important kinds of social identity, related to the individual’s knowledge of her or his belonging to one of the two sexes. Authors who deal with the analysis of sexual identity very often reduce the problem to the phenomenological experience or self-knowledge. For example Woods [1] defines sexual identity through the “experience of being a man or a woman” or the “awareness of being of male or female sex” [1]. However, quite often a broader view of the problem of sexual identity is discussed in the literature, as if it were a certain whole complex structure, comprising experiences, knowledge and also elements of behaviour, remaining in certain defined relationships [2]. Miluska [3] is one of the authors who favour the broad understanding of sexual identity. She identifies three aspects in the overall structure of sexual identity: the phenomenological aspect of sexual identity, the conceptual aspect of sexual identity and the behavioural aspect of sexual identity.

Miluska [3] identifies the phenomenological aspect of sexual identity (the feeling of sexual identity) as a “fundamental, existential feeling of being male or female, related to the acceptance of one’s own sex on the psychological level”. Sexual identity becomes a “conscious and accepted belonging to a given sex group, based on the criterion of biological sex”. The feeling of sexual identity defined this way is a kind of pre-knowledge, untranslatable into the language of concepts.

The conceptual aspect of sexual identity is the area of self-image, organized around the category of sex, which reflects the level of identifi-
cation with the social model of femininity and / or masculinity.

The concepts of femininity and masculinity are usually used colloquially in a purely descriptive and theoretical sense, as a label for those attributes which within the stereotypes inherent in a given culture are ascribed to a larger degree to one sex than another. Creating models of femininity or masculinity on scientific grounds is an expression of various attempts to give these concepts a theoretical dimension. A one-factor model was commonly accepted until the mid 1970s, which assumed that there was a univocal relationship between biological sex and the psychological characteristics of a person. All attributes, which were considered more characteristic for men than women were treated, within this model, as an indicator of masculinity, and the lack of them as an indicator of femininity, and vice versa. The one-factor model did not presume the synthesis of features understood as male, with the features treated as female, within the characteristics of the same person.

Criticism of the one-factor model has fostered an emergence of a new two-factor model of femininity and masculinity. It proposes that each person can be described simultaneously in the same scales: masculinity and femininity. The configuration of results in these scales, allows for the distinction of four types, identified by the relation between their biological sex and psychological features. These are: 1) Persons sexually defined, whose psychological characteristics correspond to their biological sex; 2) Androgynous persons, characterized by a strong presence of male and female characteristics; 3) Sexually unidentified persons, with a weak presence of male or female characteristics; and 4) Persons with cross sex identification, with a prevailing presence of psychological characteristics corresponding to the opposite sex rather than their own biological sex. This typology, using the two-factor model of femininity and masculinity, is quoted after Bem [4] within her Sex Role Inventory Theory.

To summarize: the conceptual aspect of sexual identity is a self concept of a person’s own characteristics, which reflects the degree to which she or he identifies with a social model of femininity and (or) masculinity. Self-esteem, which expresses the value a person attributes to her or his characteristics relating to sex, and a degree to which they are happy with it, is an immanent component of the conceptual aspect of sexual identity.

The third aspect of sexual identity isolated by Miluska is a behavioural aspect, understood as “a projection of phenomenological and conceptual dimension of self-identity into the world of action” [3]. This aspect is revealed in different types of behaviour and ways of psychological and social functioning of men and women, particularly distinctly in undertaking their sexual roles.

It is a useful simplification to speak about the issue of determinants of sexual identity, that the biologically defined differentiation of both sexes is amplified by social and cultural factors, such as gender stereotypes and sexual roles.

A stereotype is defined in the literature as a set of ideas held about the personal attributes of a certain group of people (in the case of sexual stereotypes, men and women), which is largely simplified and inflexible [3]. The notion of “attribute” is understood here as a personality trait which gives basis for the behaviour differentiating the two sexes.

Sexual stereotypes provide ideological justification for sexual roles, which, using the definition of social role as understood by Mika [5], may be described as a set of regulations for the type of behaviour acceptable for persons identified as women and men.

If the definitions of sexual stereotypes and sexual roles given above are related to J. Miluska’s concept of sexual identity, one might say that stereotypes condition the conceptual aspect of sexual identity, while sexual roles are related to its behavioural aspect.

In our cultural tradition, feminine and masculine roles have been strictly defined and distinct. Traditionally, the male role has been associated with earning a living, pursuing a professional career and social climbing. It involved such characteristics as: being active, confident, having a low level of fear, being egocentric and in control of one’s emotions. The traditional female role was reduced to bearing children and nurturing home and family. Femininity was identified with the passive, submissive and immature side, low ability to control emotions and low aspirations [6, 7]. This differentiation between female and male attributes was explained in terms of hereditary fea-
tures and other traits of a purely biological nature (biological essentialism), which led to more general convictions about its universal and permanent character.

Changes in the perspective and approach to the issue of sexual differentiation arrived with the publications of K. Horney [8] on the cultural conditioning of woman’s personality, and also with intercultural research conducted by M. Mead [9]. Their work inspired a gradual departure from biological essentialism, and gave more significance to social mechanisms and their role in forming sexual roles and related sexual stereotypes. These changes in science were accompanied by a civilisational transformation and the growing emancipation of women. In the last fifty years, in Western Europe, these factors gave grounds to the transformation of the traditional sex roles and gender stereotypes. New thinking about the nature of femininity and masculinity was reflected in the conviction that, in fact, the difference between the sexes is much weaker than previously thought. The female role began to shift much closer towards the male, which is enhanced by the trend of emphasizing the similarities between the sexes [10].

However, the old stereotypes are deeply grounded and so the transformation process has been long and complex. Traditional stereotypes are still widespread and exist next to the contemporary pattern of sexual roles, which results in a conflict between tradition and modernity, hindering the undertaking of sexual roles and reaching sexual identity in its conceptual and behavioural aspects [3, 10, 11]. Due to the fact that these transformations and formulaic changes are mostly happening within the stereotype of femininity, it seems that women are more exposed to difficulties.

The conceptual aspect of sexual identity

The conceptual aspect of sexual identity, as one of the areas of self-image, may be described with the same characteristics as those that refer to one’s self-image as a whole.

Kulas [12] defines self-esteem as “the whole knowledge, impressions and ideas a person holds about herself or himself, which creates relatively constant system of views, and provides basis for emotional attitude towards oneself, closely related to self-esteem”. Understood this way, self-image is not a uniform structure. Three basic components are usually distinguished within self-image, and these are the “real I”, the “ideal I” and self-esteem.

The “real I” includes information about what the subject is like at present, what are his or her characteristics, potential, achievements etc.

The “ideal I” is also called an ideal of one’s person and includes all the qualities that one would want to have and those that one thinks one ought to have, in the light of one’s ideals, desires, perceptions and moral standards”. According to this definition, Kulas [12] distinguishes two elements comprising the “ideal I”: the desire elements (desiring “ideal I”), which is a set of information about what one would like to be, and the postulative element (postulative “ideal I”), containing information about what one ought to be like for all sorts of different reasons.

The “ideal I” contains these two elements in various proportions for different kinds of people.

The degree of coherence and order of one’s ideal of oneself is very important for the proper functioning and development of a person. Brzezińska [13] says that the contradictory content of the “ideal I” is very often behind the individual’s fearfulness, weak control of behaviour, poor rational problem solving abilities and the hindering of personal development.

The third ingredient of self-image is self-esteem, usually defined in the literature as a set of self-referred judgments, opinions and evaluations [12, 14, 15]. One always evaluates oneself in reference to a certain standard or role model. Two criteria for self-evaluation have been identified in the literature. The first of them is an external criterion, where it is the other people who provide the basis for self-evaluation. In this case, self-esteem is formed on the one hand on the basis of comparing one’s own qualities, behaviour and achievements with the achievements of others; and on the other hand it is the comments and opinions expressed about oneself by other people which provide the basis for self-evaluation. The second criterion is an internal criterion, where the individual passes judgment on the basis of the comparison of the “real I” with
the “ideal I.” The degree of discrepancy between the two structures is an indicator of how high the individual’s self-esteem is. It is worth pointing out that the discrepancy between the “real I” and “ideal I” fulfils an important role in the process of managing individual development. It provides motivational pressure, which stimulates actions aimed at reducing the gap, by attempts to achieve the ideal of one’s own person. Too small a gap between the “real I” and “ideal I” is often associated with an excess of self-esteem and may lead to entirely criticism free self-satisfaction which, in turn, may hinder self-development. Too wide a gap between the two elements of self-image is usually related to low self-esteem, which leads to withdrawing from life, reducing ones activities, until a point of total loss of interest is reached [12, 14]. Research shows considerable individual differences in the degree of discrepancies between the “real I” and “ideal I”. Brzeziński [16] observes that people whose social functions are unimpaired have a correlation co-efficient between the “real I” and “ideal I” between 0, 50 and 0, 60, which is much higher than in the case of emotionally disturbed people.

Issues of sexual identity in anorexia nervosa

Difficulties with attaining a sexual identity are considered to be vital in the process of falling ill and the development of anorexia nervosa, both in the psycho-dynamic and cognitive behavioural approach, but also within the family, social and cultural understanding of the disorder. The significance of these issues is related to a series of observations made on the nature of anorexia and how the patients actually function. It is remarkable that anorexia nervosa most often occurs in puberty, which is a key period for the development of identity, including sexual identity. Rapid physical growth, at the centre of the process, brings questions of sex and gender sharply into focus of young people. It is at this time, that they are confronted with their sexuality, forced to enter new social roles and test their prowess as a woman or a man.

Authors who appreciate the significance of issues relating to sexual identity in anorexia nervosa often highlight the fact that the patients’ menstruating cycles frequently become irregular or disappear altogether, while they remain indifferent. [17, 18]. This is often interpreted as the lack of acceptance of the individual’s own sexuality and a way to defer adulthood. Similarly, the disappearance of a feminine shape as a result of rapid weight loss, typical in anorexia, is often interpreted as the expression of a need to freeze one’s own psychological and sexual development.

There are also numerous reports providing evidence for distortions in the adoption of sexual roles by girls with anorexia nervosa [18, 19], who rarely form permanent relationships or marry. Often they reject having children, show no interest in sexual matters, and the situations in which they may be involved sexually give grounds for the beginning of decompensation. They find it difficult to enter partnership roles based on emotional ties, intimacy or a physical bond with another person. Hence they function well in hierarchical roles, such as the role of a pupil or a professional position.

These considerations, in line with the previous analysis of sexual identity, allow us to state that the authors who convey a view of the lack of acceptance of their own femininity by girls with anorexia refer to the phenomenological aspect of their sexual identity. Research on entering sexual roles and involvement in sex-related behaviour would concern the behavioural aspect of the sexual identity of the patients.

As mentioned before, the contemporary transformations within sex/gender stereotypes take place mainly within the stereotype of femininity. It seems that the existence of contradictory expectations within the female role model might be especially perplexing to girls ill with anorexia. Low self-esteem, typical for these girls [20, 21], in conjunction with the characteristics of high aspirations and perfectionism may, in fact, cause the perspective of personal freedom and great opportunities offered to women in today’s world to appear daunting, and stimulate a considerable degree of fear. Difficulties with integration of the conceptual aspect of sexual identity may be additionally deepened because of the often noted, strong emotional dependency on their mothers, a strong need for their approval and, overall, a dependency prone personality profile. These girls show a strong inclination to fulfill the needs of others [22, 23], and so the contradictory expec-
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Research problems, hypotheses and research questions

The subject of this research has been defined as a conceptual aspect of the sexual identity of girls with anorexia nervosa. Three components of this aspect of sexual identity have been investigated: the “real I”, desiring “ideal I” and postulative “ideal I”. Correlations between the “ideal I” and other structures have been treated as indicators for the girls’ self-evaluation as women. The degree, to which the characteristics inherent in all three components of the conceptual aspects of sexual identity of girls with anorexia nervosa are compliant with the social stereotypes of femininity and masculinity have been also under investigation.

Having accepted the two-factor model of femininity and masculinity, it has been assumed that girls with anorexia can include both “masculine” and “feminine” characteristics in their conceptualization of sexual identity. The following research hypotheses have been formed:

1. Girls with anorexia have lower self-esteem, within the attributes comprising the conceptual aspect of their sexual identity, than healthy girls, which means that:
   a) The discrepancies between the “real I” and the desiring “ideal I”, within the attributes constituting the social models of masculinity and femininity (sexual stereotypes) are larger in anorexic girls than in healthy girls.
   b) The discrepancies between “real I” and postulative “ideal I” within the attributes constituting the social sexual stereotypes are larger in anorexic girls than in healthy girls.

Apart from these hypotheses, research questions have been raised with regards to the content of the conceptual aspect of sexual identity of girls with anorexia nervosa, and the level of its compliance with social gender stereotypes. Does the degree of compliance of the attributes contained in the conceptual aspect of sexual identity with socially defined masculine and feminine stereotypes considerably differentiate the anorectic girls from girls without this eating disorder in respect of:
   a) the actual state of affairs; the way these girls describe themselves (“real I”)
   b) the desires of these girls; what do they want to be like (desiring “ideal I”)
   c) the expectations directed at them; what obligations do they feel (postulative “ideal I”)

SUBJECTS AND METHODS

Subjects

Research group: 30 girls with anorexia nervosa, diagnosed according to the criteria specified in DSM-IV [22].

Control group: 30 girls without eating problems; target group to be as similar as possible to the research group; controlled age variable, type of school; number, sex and age of siblings, growing up in two parent or divorced family.

The age of girls in both groups: 13–20, with average 16, 6.

Methods

The method used in the study was the Q technique, described in detail by Brzeziński [16].

In principle, this method uses a sorting procedure (i.e. ordering/rating) of a set of cards with statements or adjectives written on them (so-called Q-sort) into a few separate categories, spread along a k-point continuum. The borders of the continuum signify as follow: a) left border: total lack of agreement of a given statement with a sorting criterion, which gets the lowest score i.e. “0” and b) right border: total agreement of a given statement with a sorting criterion, which gets the highest score i.e. k – 1 point. The research focused on a 9 point continuum, whereas the Q-sort positions have been chosen to reflect such attributes (personality traits) as, define masculinity and femininity in the Western culture. The attributes have been chosen from two sources: the Inventory for the Evaluation of Psychological Sex (IPP) and Questionnaire of Personal Characteristics.
The Inventory for the Evaluation of Psychological Sex (IPP) was conceived in Poland by A. Kuczyńska [4], based on the Bem Sex – Role Inventory invented by S.L. Bem. In the inventory, 20 characteristics have been isolated, pertaining to the female stereotype and 32 characteristics, which can be considered to belong to the male stereotype. Most of the characteristics were included on the list of positions comprising the Q-sort. The list was amended with the attributes from the Questionnaire of Personal Characteristics by Spence and Janet, which includes the Scale of Female and Masculine attributes. The questionnaire has been used in Poland in the research of the conceptual aspect of sexual identity of men and women carried out by J. Miluska [3].

The list constructed this way includes 60 attributes, half of which are personal characteristics belonging to the female stereotype, and the second half are the characteristics belonging to the male stereotype. The list in its final shape is included in the Appendix.

Results

The level of compliance between the “real I” and desiring “ideal I” of the girls has been evaluated by comparing the results received in the first and second sorting of the characteristics. Pearson’s correlation coefficient has been used as a measure of similarity between the two sets. The coefficient has been calculated separately for each researched person, and then a separate average correlation coefficient has been defined for the group of ill girls and for the girls from the control group. The significance level for the obtained differences has been tested with the t test, with the significance criterion p < 0.05.

As expected, the research has shown that in the group of anorexic girls, the compliance between the “real I” and desiring “ideal I” in the area of their characteristics relating to sex was considerably lower than in the group of healthy girls. These results are presented in Tab. 1.

The degree of compliance between the “real I” and the postulative “ideal I”, which has been calculated based on the comparison of the results of the first and third sorting of characteristics, has also proven lower in the group of anorexic girls than the group of healthy girls. However, the differences between the groups have proven insignificant. The results are presented in Tab. 2.

In order to find out the level of concentration of “masculine” and “feminine” characteristics in the conceptual aspect of sexual identity of the researched girls, the values ascribed by them to each characteristic from both groups (“masculine” and “feminine”) in each of the three sorting rounds have been summarized, with the following conclusions:

Table 1. Degree of compliance of the “real I” with the desiring “ideal I” in the group of girls with anorexia nervosa and in the control group.

<table>
<thead>
<tr>
<th>Research Group</th>
<th>Control Group</th>
<th>Difference (test t)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Average correlation coefficient</td>
<td>0.38</td>
<td>0.29</td>
</tr>
<tr>
<td>Average correlation coefficient</td>
<td>0.53</td>
<td>0.53</td>
</tr>
<tr>
<td>Difference</td>
<td>0.18</td>
<td>0.18</td>
</tr>
<tr>
<td>t</td>
<td>−2.28</td>
<td>−2.28</td>
</tr>
<tr>
<td>p</td>
<td>0.03023*</td>
<td>0.03023*</td>
</tr>
</tbody>
</table>

* – statistically significant difference at a level p < 0.05
1. In the “real I” of the girls from both research and control group, the characteristics which in the traditional gender stereotypes are considered female are dominant; however the comparison of the girls from both groups has shown that the girls ill with anorexia consider themselves to be much more “feminine” than their healthy counterparts.

2. In the desiring “ideal I” of the girls from both groups, it is the features socially accepted as “masculine” that dominate, and there are no significant differences as far as the level of their concentration is concerned.

3. In the postulative “ideal I” of the girls with anorexia, the concentration of “feminine characteristics is higher than of the “masculine” features, which means that they think that their mothers would expect them to develop the characteristics belonging to the female stereotype to a larger degree than those traditionally thought of as male. However, the reverse was revealed to be true in the control group, showing a higher concentration of “masculine” characteristics. The discussed difference between the groups has not been confirmed at the accepted level of significance p<0.05 but it remained at the level of clear tendency (p<0.08).

These results of the content analysis of the conceptual aspect of sexual identity are presented in the Tab. 3 below.

### Table 2. Degree of compliance of the “real I” with the postulative “ideal I” in the group of girls with anorexia nervosa and in the control group.

<table>
<thead>
<tr>
<th>Research Group</th>
<th>Control Group</th>
<th>Difference (test t)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Average correlation coefficient</td>
<td>Average correlation coefficient</td>
<td>t = -1.24</td>
</tr>
<tr>
<td>0.28</td>
<td>0.30</td>
<td>0.38</td>
</tr>
</tbody>
</table>

* – difference statistically insignificant at the accepted level of significance (p < 0.05)

### Table 3. Concentration of “masculine” and “feminine” characteristics in the “real I”, desiring “ideal I” and postulative “ideal I” in the girls from both researched groups

#### “real I”

<table>
<thead>
<tr>
<th>Variable</th>
<th>Research Group</th>
<th>Control Group</th>
<th>Difference between the groups</th>
</tr>
</thead>
<tbody>
<tr>
<td>Values ascribed to “masculine” characteristics</td>
<td>3285</td>
<td>109.5</td>
<td>10.92</td>
</tr>
<tr>
<td>Values ascribed to “feminine” characteristics</td>
<td>3915</td>
<td>130.5</td>
<td>10.92</td>
</tr>
</tbody>
</table>

#### desiring “ideal I”

<table>
<thead>
<tr>
<th>Variable</th>
<th>Research Group</th>
<th>Control Group</th>
<th>Difference between the groups</th>
</tr>
</thead>
<tbody>
<tr>
<td>Values ascribed to “masculine” characteristics</td>
<td>3628</td>
<td>120.9</td>
<td>11.04</td>
</tr>
<tr>
<td>Values ascribed to “feminine” characteristics</td>
<td>3572</td>
<td>119.1</td>
<td>11.04</td>
</tr>
</tbody>
</table>

#### postulative “ideal I”

<table>
<thead>
<tr>
<th>Variable</th>
<th>Research Group</th>
<th>Control Group</th>
<th>Difference between the groups</th>
</tr>
</thead>
<tbody>
<tr>
<td>Values ascribed to “masculine” characteristics</td>
<td>3533</td>
<td>117.8</td>
<td>10.97</td>
</tr>
<tr>
<td>Values ascribed to “feminine” characteristics</td>
<td>3667</td>
<td>122.2</td>
<td>10.97</td>
</tr>
</tbody>
</table>

* – statistically significant difference at the level of p < 0.05; ** – statistically insignificant difference at the level of p < 0.05

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RESULTS AND DISCUSSION

The first hypothesis, claiming that in the case of the girls ill with anorexia nervosa, the discrepancies between a) “real I” and desiring “ideal I” and b) “real I” and postulative “ideal I” within their characteristics relating to gender are higher than in case of the healthy girls, has been confirmed only partially in the research. In the case of the girls ill with anorexia nervosa, the discrepancy between the “real I” and the desiring “ideal I” is considerably higher than in the case of the girls without this eating disorder. However, no significant differences between the groups have been identified in reference to the discrepancy between the “real I” and postulative “ideal I”. It has been initially accepted that the level of discrepancy between the “real I” and the “ideal I”, both in the desiring and postulative aspects, is one of the main indicators of a person’s self-esteem, but as no significant differences have been observed between the girls ill with anorexia and the healthy girls, as far as the level of discrepancy between the “real I” and postulative “ideal I” is concerned, it is the discrepancy between the “real I” and the desiring “ideal I” which has been considered to be the main factor differentiating self-esteem. As this discrepancy is considerably higher in the group of patients with anorexia, it allows for the conclusion that the self-esteem of these girls within their characteristics related to gender is considerably lower that the self-esteem of healthy girls.

Interesting results have been obtained in the analysis of contents comprising the conceptual aspect of sexual identity of girls in both groups. As far as the “real I” is concerned, the characteristics involved in its structure correspond to a larger degree to a traditional stereotype of femininity than masculinity, equally for anorexic and healthy girls alike. The difference between the concentration of “feminine” and “masculine” characteristics in the “real I” of anorexic girls is, however, considerably higher than in the case of healthy girls. The “masculine” characteristics in the “real I” of anorexic girls have very low concentration: these girls consider themselves less sociable, confident, tough, having a lesser sense of humour and less of a tendency to experiment sexually; they think they are less brave, cheerful, cunning or forceful than their healthy counterparts. The anorexic girls have also ascribed to themselves more stereotypically feminine characteristics: they think of themselves as more tearful, weak and in need of caring, shy, yielding, whimsical, submissive, and sensitive, as good housewives and better at taking care of cleanliness than healthy girls. Only within two “feminine” features i.e. “flirtatious” and “warm towards others” did the anorexic girls rank themselves higher than the healthy girls.

As far as the desiring “ideal I” is concerned, the characteristics involved in the structure do not differentiate the ill girls from their healthy counterparts. The girls in both groups declared the desire to have more characteristics belonging to the masculine stereotype than the characteristics regarded as feminine. Hence the anorexic girls have in reality more “feminine” than “masculine” characteristics in their “real I” and the concentration of “masculine” characteristics is in their “real I” considerably lower than in the case of the healthy girls; it seems that anorexic girls would find it more difficult to achieve their ideal based on the “masculine” stereotype.

An interesting observation has been made as a result of content analysis of the postulative “ideal I” of the studied girls, i.e. the postulative “ideal I” of the healthy girls is in content compliant with their desiring “ideal I”, but there are certain discrepancies in this area among the anorexic girls. In the postulative “ideal I” of the healthy girls, similarly to their desiring “ideal I”, the concentration of “masculine” stereotypical characteristics was higher, whereas in the case of girls ill with anorexia nervosa their desiring “ideal I” was permeated with “masculine” features while their “ideal I” shows more of a concentration of “feminine” characteristics. In spite of the fact that this tendency seems to differentiate both groups, even though it hasn’t been statistically confirmed at the accepted level of significance, it seems to be worth noting and perhaps of reviewing further. If confirmed, it would cast an important light on the issue of the difficulty with attaining sexual identity for the anorexic girls. The existence of these difficulties could then be related to the existence of discrepancy of content in the “ideal I” of sick girls. Their desire to develop “masculine” characteristics would then remain in contrast to the expectations of their mothers. The dilemma arising in this situation would be
Some aspects of sexual identity of girls suffering from anorexia nervosa

difficult to solve, because mothers are generally considered very important to the girls with anorexia nervosa, and the need for their approval is very high [22, 23].

CONCLUSIONS

The research has captured a few interesting regularities in the conceptual aspect of sexual identity of the girls ill with anorexia nervosa, which might cast a certain light on the issue of difficulties with attaining sexual identity. Low self-esteem in the area of sex related characteristics, confirmed discrepancies in content between the "real I" and desiring “ideal I” and postulative “ideal I” observed in the case of these girls, might make it difficult for them to work out a coherent concept of themselves as women, which, in turn, make it difficult for them to undertake sexual roles and achieve a mature sexual identity. In this situation, one of the possible ways of coping with the difficulties would be to concentrate on the external gender attributes only, such as appearance, and also to accept the role of a sick person which, to a certain degree, relieves the necessity to undertake sexual roles.

These considerations show that therapy for anorexic girls should certainly include work on their concept of femininity. Making the issue more conscious and coherent for them, together with the work on raising their self-esteem as females, may prove to be important factors in the healing process. It would also appear important to relieve the sick girls of the pressure of other people’s expectations and to encourage their confidence in trying to become the kind of women they want to be. Within family therapy it may prove useful to negotiate the issue of femininity and the expectations relating to this area.

REFERENCES

### APPENDIX

A list of sex related characteristics used in the research

<table>
<thead>
<tr>
<th>Masculine characteristics:</th>
<th>Feminine characteristics:</th>
</tr>
</thead>
<tbody>
<tr>
<td>1) Self-contained</td>
<td>1) getting involved in other people’s business</td>
</tr>
<tr>
<td>2) convincing</td>
<td>2) trusting</td>
</tr>
<tr>
<td>3) consistent</td>
<td>3) tearful</td>
</tr>
<tr>
<td>4) easily addicted</td>
<td>4) flirtatious</td>
</tr>
<tr>
<td>5) confident</td>
<td>5) having good sense of aesthetics</td>
</tr>
<tr>
<td>6) tough</td>
<td>6) whimsical</td>
</tr>
<tr>
<td>7) arogant</td>
<td>7) capable of making sacrifices</td>
</tr>
<tr>
<td>8) composed</td>
<td>8) agreeable, affable</td>
</tr>
<tr>
<td>9) cunning</td>
<td>9) focused on home and family</td>
</tr>
<tr>
<td>10) competitive</td>
<td>10) yielding</td>
</tr>
<tr>
<td>11) experimenting sexually</td>
<td>12) emotional</td>
</tr>
<tr>
<td>12) in good physical health</td>
<td>13) sensitive to the needs of others</td>
</tr>
<tr>
<td>13) secretive, hiding feelings</td>
<td>14) reflexive</td>
</tr>
<tr>
<td>14) sociable</td>
<td>15) gentle</td>
</tr>
<tr>
<td>15) open to the external world</td>
<td>16) naive</td>
</tr>
<tr>
<td>16) domineering</td>
<td>17) affectionate</td>
</tr>
<tr>
<td>17) forceful</td>
<td>18) kind</td>
</tr>
<tr>
<td>18) having good sense of humour</td>
<td>19) good housewife</td>
</tr>
<tr>
<td>19) rough in contacts with people</td>
<td>20) submissive</td>
</tr>
<tr>
<td>20) egoistic</td>
<td>21) taking care of her appearance</td>
</tr>
<tr>
<td>21) brave</td>
<td>22) likes intrigues</td>
</tr>
<tr>
<td>22) demanding</td>
<td>23) fragile</td>
</tr>
<tr>
<td>23) independent</td>
<td>24) caring, protective</td>
</tr>
<tr>
<td>24) active</td>
<td>25) expert in fashion</td>
</tr>
<tr>
<td>25) success oriented</td>
<td>26) weak, in need of care</td>
</tr>
<tr>
<td>26) full of ideas</td>
<td>27) taking care of cleanliness</td>
</tr>
<tr>
<td>27) likes comfort</td>
<td>28) shy</td>
</tr>
<tr>
<td>28) gets involved in public matters</td>
<td>29) warm towards the others</td>
</tr>
<tr>
<td>29) cheerful</td>
<td>30) sensitive</td>
</tr>
</tbody>
</table>
Depressive symptoms in patients with coronary artery disease after percutaneous coronary interventions (PCIs)

Dominika Dudek, Dariusz Dudek, Marcin Siwek, Wojciech Datka, Łukasz Rzeszutko, Andrzej Silczuk, Andrzej Zięba

Summary
Introduction: Studies confirm a strong relationship between depression and coronary artery disease (CAD). Despite this, depressive disorders in CAD patients are often misdiagnosed and under-treated.

Aim: 1) to investigate whether CAD patients qualified for percutaneous coronary interventions (PCI) develop any specific type of depressive disorders; 2) to assess the depressive symptoms in CAD patients after the successful PCI.

Subject and methods: of 227 CAD patients, qualified for PCI, 156 with optimal PCI result were included. Patients were assessed with the Hamilton Depression Rating Scale (HDRS), Beck Depression Inventory (BDI), Rosenberg Self-Esteem Scale (RS), Hopelessness Scale (HS), Automatic Thoughts Questionnaire (ATQ) one day before and 1 month after PCI.

Results: The results were compared to the group of 49 depressed patients without CAD, treated in psychiatric setting (group III). Depressive symptoms, observed at the baseline in 75 patients (48.1% – group I) were of mild or moderate severity with the prevalence of somatic complains. A comparison between group I and group III revealed different characteristics of depressive symptomatology, while the severity of depression was comparable. One month after the PCI, depressive symptoms persisted in 33 subjects, in whom at the baseline BDI, ATQ and HS scores were significantly higher as compared to 42 patients in whom depressive symptoms resolved.

Conclusions: Successful PCI is not a sufficient determinant for the improvement of depressive symptoms. Diagnosis of depression in CAD patients needs a special attention, because of a specific clinical picture and tendency to persistence.

coronary angioplasty / coronary artery disease / depression

INTRODUCTION

Depression contributing to cardiovascular disease is a major clinical problem both due to its frequent occurrence and serious health effects. A wide variety of studies have confirmed a strong relationship between depressive disorders and the risk of development and unfavourable course of coronary artery disease (CAD) and myocardial infarction [1, 2]. The risk of CAD and
cardiac death seems to be correlated to the severity of depression [3, 4, 5, 6]. Depressive disorders occur more frequently in CAD patients than in the general population. Transient and short-term depressive symptoms are observed in more than half of the patients during the first few days after the myocardial infarction. Moreover, in 16–22% of cases DSM major depression criteria are fulfilled [7, 8, 9].

The association between depression and CAD is not merely coincidental, but proved psychological (isolation, lack of social support), behavioural (lifestyle, compliance) and pathophysiological (stress axis hyperactivity, adrenergic activation, altered autonomic activity, platelet dysfunction, immunological changes) mechanisms underlie this comorbidity.

The comorbidity of depressive disorders and CAD increases the risk of major cardiac episodes, illness’ severity, longer-term disability, worse physical capacity and about 50% greater risk of cardiac mortality [, 10, 11, 12, 13, 14, 15]. Subjective quality of life is also diminished.

Despite these important clinical implications, depressive disorders in CAD patients are rarely well-diagnosed or adequately treated. It is estimated that only 25% of depressive disorders comorbid with CAD are recognized [1]. Usually, mild or moderate levels of depression with nonspecific clinical symptomatology and a predominance of physical complaints may be the reason for misinterpretation of depressive psychopathology as signs of a poor physical state or drug induced side-effects.

The aims of our study were: 1) to investigate whether CAD patients qualified for PCI develop any specific type of depressive symptomatology; 2) to assess the depressive symptoms after the successful PCI in CAD patients.

SUBJECTS AND METHODS

Subjects

227 patients diagnosed with stable CAD (CCS II-III), with no previous history of PCI or coronary artery by-pass grafting (CABG), qualified for an elective PCI (balloon angioplasty, angioplasty with stent implantation, rotational atherectomy) were enrolled in the study. Angiographic and clinical successful outcome of intervention, as well as lack of recurrent symptoms of ischemia during the four weeks following the intervention, made the patient eligible for further analysis. PCIs were performed according to generally accepted standards of practice. The operator’s task was to achieve an optimal result for the procedure, which was defined as final diameter stenosis < 30% (estimated in quantitative coronary angiography) without a high grade of dissection with good coronary flow (TIMI 3). Stents were used for an abrupt or threatened vessel closure, as well as in the case of a suboptimal result of balloon angioplasty (final diameter stenosis < 20% was recognized as an optimal result of stent implantation). The operators were allowed to use intravascular ultrasonography for additional optimization of intervention. The clinically successful PCI was defined as an angiographically effective procedure without serious complications, in conjunction with a reduction of clinical symptoms. Patients with one vessel disease, as well as those with multivessel disease were included in the study. PCIs were performed either as non-staged or staged procedures, during one hospital stay.

Symptoms of angina were assessed before PCI and four weeks after the intervention using the Canadian Cardiovascular Society classification (CCS) [17]. In the instances of atypical chest pain after PCI, evaluation of myocardial ischaemia was based on the results of the exercise test. Only patients with complete functional revascularization were included.

Methods

The psychopathological status of the patients was assessed: one day before, one month, 6 months, 12 months after the PCI intervention. In this paper, the subanalysis of results obtained at the first and second examinations is presented. The following instruments were administered: structured medical history, 21-item Hamilton Depression Rating Scale (HDRS21), Beck Depression Inventory (BDI), Rosenberg Self-Esteem Scale (RS), Beck Hopelessness Scale (HS), and Automatic Thoughts Questionnaire (ATQ) [18, 19, 20, 21, 22]. A patient was classified as being depressed according to the results of the clinical
Depressive symptoms in coronary artery disease

examination and BDI, HDRS scores. Since the validity of those scales (especially HDRS) may be problematic in patients with concurrent somatic illnesses, it has been suggested by many authors that the higher cut-off scoring should be chosen for better diagnostic accuracy [23, 24]. In this study it was accepted that a score > 11 points in BDI indicate the presence of depression.

Additionally, the mean BDI, BDI 13 (cognitive–affective subscale) and BDI 14–21 (somatic subscale of BDI) [25], scores of CAD patients were compared with a group of 49 patients with recurrent depressive disorder treated at the outpatient unit of the Department of Psychiatry, Collegium Medicum UJ, and fulfilling ICD–10 criteria for a mild or moderate depressive episode (Group III). The patients from group III were free of severe somatic disorders, including CAD.

The distribution of the age of patients was examined with descriptive statistics (median, mean, standard deviation) and boxplots. If the normality and equality of variance assumptions were present, the difference in the mean age in the two groups was tested using a t-test. If the assumptions were not met, a non-parametric test was used (Wilcoxon rank-sum test). Statistical analysis of psychological tests was based on a comparison of mean results. Before conducting statistical analysis, normal distribution was checked (Shapiro-Wilk test). Mean scores, results and standard deviations of BDI, BDI 13, BDI 14–24, HS, RS, ATQ, HDRS were compared (Mann Whitney U test, Wilcoxon test). Spearman’s rank correlation coefficients were calculated to permit examination of the association between cardiovascular function impairment (CCS criteria) and severity of depression. All statistical tests were two-sided. A p value of < 0.05 was considered statistically significant.

RESULTS

Of 227 patients enrolled, 71 were excluded because of: suboptimal result of PCI (n=31); hospitalizations due to non-cardiological reasons during the one-year follow-up (n=14), compliance failure (n=26). The final group consisted of 156 patients (39–71 year-old; mean age: 55.05±8.25) including: 135 males (86.5%) and 21 females (13.5%) who were followed up for one year. 115 subjects (73.3%) had a previous history of cardiac infarction. According to the CAD risk factors: 108 of patients (69%) had hyperlipidemia, 97 (62%) were diagnosed with hypertension and 19 (12%) with diabetes type II. 70 patients (45%) were smokers.

In the entire group of patients (n=156) there were no significant correlations between angina symptoms impairment (CCS criteria) and severity of depression, assessed with HDRS or BDI in; (Spearman rank correlation, HDRSvsCCS r=0.25; BDIvsCCS r=0.27, p-NS). The presence or absence of depressive symptomatology during the first examination was the defining criterion for group I (n=75, 48.1%) – patients depressed before PCI and II (n=81, 51.9%) – patients without the symptoms of depression prior to intervention.

The severity of depression assessed one day before PCI in group I was mild or moderate (20.2 ±5.7 points in BDI, 16.06 ± 5.2 points in HDRS), with a prevalence of somatic symptoms (BDI 13 = 9.77 ± 4.6; BDI 14–21 = 10.38 ± 3.0). The characteristic of thinking style, i.e. negative automatic thoughts, low self-esteem, and feelings of hopelessness, were significantly higher in group I than in group II (Tab.1).

Qualitative analysis of the severity of depressive symptoms, based on BDI items, per-

<table>
<thead>
<tr>
<th></th>
<th>Group I (n=75)</th>
<th>Group II (n=81)</th>
<th>Group I vs. II* (p value)</th>
</tr>
</thead>
<tbody>
<tr>
<td>HDRS</td>
<td>16.06 ± 5.2</td>
<td>4.46 ± 2.71</td>
<td>p&lt; 0.001</td>
</tr>
<tr>
<td>BDI</td>
<td>20.2 ± 5.7</td>
<td>7.0 ± 3.2</td>
<td>p&lt; 0.001</td>
</tr>
<tr>
<td>HS</td>
<td>9.8 ± 4.6</td>
<td>4.2 ± 2.8</td>
<td>p&lt; 0.001</td>
</tr>
<tr>
<td>RS</td>
<td>70.4 ± 14.6</td>
<td>85.0 ± 10.5</td>
<td>p&lt; 0.001</td>
</tr>
<tr>
<td>ATQ</td>
<td>64.1 ± 14.3</td>
<td>49.2 ± 12.5</td>
<td>p&lt; 0.001</td>
</tr>
</tbody>
</table>

*Mann-Whitney U test

Table1. Mean and standard deviation of BDI, HS, RS, ATQ scores in group I and II at first examination point

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formed on group I revealed the highest rating (mean score >1.0) in the following items: 2 (Pessimism), 12 (Social withdrawal), 13 (Indecisiveness), 15 (Retardation), 16 (Insomnia), 17 (Fatigability), 19 (Loss of Weight), 20 (Somatic preoccupation) and 21 (Low level of energy). The lowest rated (mean < 0.5) were: 5 (Guilt), 6 (Expectation of punishment), 7 (Dislike of self) and 9 (Suicidal ideation).

A comparison between group I and group III revealed different characteristics of depressive symptomatology, while the severity of depression, as measured by BDI, was comparable. There was a predominance of somatic complaints (BDI 14–21 subscale) in group I, while patients from group III presented more severe affective-cognitive symptoms, reflected by significantly higher BDI 1–13 subscale scoring (Tab.2).

One month after the PCI procedure (second examination), depressive symptoms were observed in 45 patients (28.9%). Depressive symptoms were still present in 33 subjects from group I, while in the rest of group I (n=42) spontaneous improvement was observed. Moreover, in group II (patients free of depressive symptoms a day before PCI) twelve patients developed depressive symptomatology during the 4 weeks after the procedure. Based on these findings, the following subgroups were identified for further analysis: Ia (n=33) – patients with depressive symptoms persisting one month, Ib (n=42) – patients in whom depressive symptoms abated, Ila (n=12) – patients without depression before PCI in whom depressive symptoms developed prior to the second examination, Ilb (n=69) – patients without depression both before and one month after PCI. The aim of further analysis was to investigate the presence of qualitative or quantitative features predicting a high risk of depression and its persistence after the PCI.

At the first examination (before PCI), more severe both affective-cognitive (BDI 13) and somatic symptoms (BDI 14–21) of the depressive syndrome were detected in subgroup Ia in comparison with subgroup Ib. Moreover, in subgroup Ia, a significantly higher frequency of negative automatic thoughts (ATQ) and more pronounced hopelessness (HS) were observed. A comparison of RS scores revealed no statistically significant difference between subgroups Ia and Ib (Tab.3).

The qualitative comparison of severity of depressive symptoms measured by BDI items showed that symptoms included in items: 2 (Pessimism), 7 (Dislike of self), 8 (Self Accusation), 9 (Suicidal ideation), 11 (Irritability), 15 (Retardation), 1 (Insomnia), and 19 (Loss of Weight),...
Depressive symptoms in coronary artery disease

were scored significantly more highly noted in subgroup Ia than in subgroup Ib (p < 0.05 Mann-Whitney U test), (Fig. 1).

The comparison of subgroups Ia and Ib showed that the tendency towards persistent depressive symptomatology at the further follow-up was associated with more severe affective-cognitive and somatic symptoms, more frequent negative automatic thoughts, and higher levels of hopelessness.

In subgroup IIa, the depressive symptoms before the intervention (first examination) were mild, although more severe than in subgroup IIb, and statistically significant differences between subgroups was observed in both BDI subscales (BDI 13; BDI 14–21). Moreover, the frequency of negative automatic thoughts measured with ATQ was significantly higher in subgroup IIa. There were no significant differences in RS scoring and HS scoring between subgroups IIa and IIb (Tab.4).

DISCUSSION

The present study confirms that non-specific depressive symptoms are very common in CAD

**Table 4.** Mean and standard deviation of BDI, HS, RS, ATQ scores in group IIa and IIb at first examination point

<table>
<thead>
<tr>
<th>scores at first examination point</th>
<th>Subgroup IIa (n=12)</th>
<th>Subgroup IIb (n=69)</th>
<th>Subgroup IIa vs. IIb (p value)</th>
</tr>
</thead>
<tbody>
<tr>
<td>HDRS</td>
<td>6.0±1.27</td>
<td>4.20±2.81</td>
<td>p&lt;0.05</td>
</tr>
<tr>
<td>BDI</td>
<td>10.0 ±0.8</td>
<td>6.5±3.2</td>
<td>p&lt;0.05</td>
</tr>
<tr>
<td>BDI 1–13</td>
<td>3.7±2.2</td>
<td>2.4±1.7</td>
<td>p&lt;0.05</td>
</tr>
<tr>
<td>BDI 14–21</td>
<td>6.3±2.8</td>
<td>4.1±2.8</td>
<td>p&lt;0.05</td>
</tr>
<tr>
<td>ATQ</td>
<td>60.7±12.6</td>
<td>47.2±11.4</td>
<td>p&lt;0.05</td>
</tr>
<tr>
<td>HS</td>
<td>5.5±3.8</td>
<td>4.0±2.6</td>
<td>NS</td>
</tr>
<tr>
<td>RS</td>
<td>82.5±11.9</td>
<td>85.5±10.3</td>
<td>NS</td>
</tr>
</tbody>
</table>

*Mann-Whitney U test

Figure 1. Mean BDI items rating in subgroups: Ia and Ib; comparison between subgroups (Mann-Whitney test; * – p<0.005)
patients requiring revascularization. Mild and moderate depressive disorders with the prevalence of somatic symptoms were observed one day before PCI in 48% of the enrolled patients. Similarly to a study by Freedland et al [7] apart from somatic complaints the most frequent depressive symptoms were: concern about the future, loss of interest in other people, difficulties with decision-making, sleep disorders, fatigue and diminished libido.

One month after successful PCI depressive symptoms were still present or newly developed in 28.9% of patients. The tendency towards persistent depressive symptomatology, observed one month after PCI, was associated with more severe affective-cognitive and somatic symptoms of the depressive syndrome; more frequent negative automatic thoughts, and stronger hopelessness. The depressive symptoms in the group of patients without depression before PCI in whom depressive disorders developed on second examination, before the intervention were mild, although stronger than in the subgroup of patients who were free of depression during the follow-up. These findings confirm the observation by Hance et al [8] concerning the CAD patients fulfilling DSM criteria for a major depression. In the study by Hance, patients with higher BDI rating were more likely to have persistent depressive symptoms.

These findings indicate that depressive disorders in patients with CAD – even after successful intervention – have a tendency to persist or develop, and because of clinical peculiarities, may be a source of major diagnostic difficulties. Such difficulties are the result of the overlapping of “pure” depressive symptoms with signs of acute emotional reaction and non-specific signs of somatic disease which may be similar one to another [26]. For example, symptoms such as: fatigue, sleep problems, anorexia, weight change – may reflect both mental and somatic pathology.

Several authors have pointed out some differences between depressed patients with affective disorders and patients suffering from somatic diseases comorbid with depression. The severity of depression in patients who have no family history of affective disorders and are hospitalized in non-psychiatric units is usually less, and the risk of its development is the same for both sexes [27, 28, 29]. However, although worrying about health and future, sleep disorders, and appetite loss are quite common in somatic diseases, they are more frequent and more severe in cases of concomitant depression [28, 29]. On the other hand, worrying associated with severe somatic disease and waiting for the operation or any procedure (e.g. PCI) may induce or exacerbate the depression-like symptoms, e.g.: problems with concentration, insomnia, isolation, fatigue, appetite loss and anhedonia [30].

The predominance of somatic symptoms in depressed CAD patients may be a result of specific features of the non-psychiatric medical interview. Patients who have become accustomed to being asked only about their somatic complaints may be convinced that doctors are not concerned about the patients’ emotions, and that only somatic signs are important and worth mentioning during the interview. This may result in the somatization of depressive symptoms.

Many authors [31, 32] have noticed that after myocardial infarction patients show low self-esteem, low tolerance of frustration, suppressed hostility, dependence, passivity, and inability to express anger adequately. These non-specific symptoms were named vital exhaustion syndrome by Appels, and found to be negative prognostic factors for CAD patients [33]. It is unclear whether vital exhaustion is a separate psychopathological syndrome induced by cardiovascular disease, or a type of depressive disorder. According to current diagnostic criteria for psychiatric disorders (DSM IV and ICD–10), diagnosis of depression is based on the presence of a required number of symptoms, but not on their chronology. This is why vital exhaustion is probably synonymous with depression. It seems that the replacement of synonyms with one universal term – depression – may contribute to an easier diagnostic process, better education, and better cooperation between psychiatrists and cardiologists.

**CONCLUSIONS**

These facts, together with the results of the present study, strongly suggest that diagnosis of depression in patients suffering from serious somatic disorders such as CAD needs special attention, and should be based on a clini-
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...cal examination supported by instruments detecting the severity and predominance of some depressive symptoms (BDI and its subscales, HDRS), as well as describing dimensions of depressive thinking like hopelessness (HS) and low self-esteem (RS). The common psychological and pathophysiologial background, and overlapping of etiopathogenetic factors, are suggestive of the important role of the psychopathological symptoms in the treatment and rehabilitation of CAD patients. Successful intervention is not a sufficient determinant of improvement in the mental state. An optimized comprehensive approach to CAD patients with concomitant depressive symptoms may require inclusion of psychological intervention, and, in justified cases, even psychiatric treatment.

REFERENCES

Relationship between depressive symptoms and quality of life in patients with coronary artery disease before and after percutaneous coronary interventions

Dominika Dudek, Marcin Siwek, Wojciech Datka, Dariusz Dudek, Łukasz Rzeszutko

Summary
Introduction: Studies have shown that successful percutaneous coronary interventions (PCI) in coronary artery disease patients are associated with significant improvement in quality of life (QOL). However, this notion has been challenged by reports of some discrepancy between the cardiological outcome of PCI and QOL improvement.
Aim: to assess the relationship between depressive symptoms and the QOL in CAD patients after successful PCI.
Subjects and methods: Of 227 CAD patients, qualified for PCI, 156 with optimal PCI result were included. Patients were assessed one day prior, then 1 month, 6 months and 1 year after PCI, using the Polish version of the SF–36 questionnaire, the Beck Depression Inventory and the Hamilton Depression Rating Scale.
Results: In the entire study group QOL as measured 1 month after PTCA indicated significant improvement. This tendency persisted in subsequent examinations. The presence of depressive disorders recorded one day prior to PCI served as a basis to identify group I (n=75) – patients with depressive disorders before PCI and II (n=81) – patients without depressive symptoms. On each occasion QOL in group I was significantly poorer than in group II, both with respect to the total QOL and individual components measured by 8 subscales of the SF–36. There was a significant correlation between QOL and severity of depressive symptoms.
Conclusions: The present findings indicate that depressive disorders in patients with CAD – even after successful intervention – significantly affect the QOL. Successful intervention and restoration of coronary arteries are not the only determinants of satisfactory improvement in the QOL of cardiac patients.

coronary angioplasty / coronary artery disease / depression / quality of life

INTRODUCTION
In recent years there has been a growing tendency to include patients’ subjective assessment of treatment in medical results. This requires research concerning problems of quality of life (QOL), which reflects patients’ subjective expe-
rience and their reactions to health, mental state, physical and social functioning, as well as non-medical aspects of life [1, 2, 3, 4].

Studies concerning the effectiveness of percutaneous coronary interventions (PCI) in patients with coronary artery disease (CAD) have shown that revascularization is associated with significant improvement in QOL [5, 6, 7, 8]. Recently, however, this notion has been challenged by reports of some discrepancy between the cardiovascular outcome of PCI and QOL improvement [9]. Although the interventions proved to be effective, a number of patients found that their general sense of well-being and life activity was impaired. Earlier studies of QOL in CAD patients neglected to address the problem of comorbid depressive disorders. These disorders constitute a serious clinical problem due to both their high rate of occurrence and negative impact on prognosis [10, 11].

AIM OF THE STUDY

The aim of the present study was to assess the relationship between depressive symptoms and the QOL in CAD patients after successful PCI.

SUBJECTS AND METHODS

Two hundred and twenty seven patients diagnosed with CAD (CCS II-III), with no previous history of PCI or coronary artery bypass grafting (CABG), qualified for an elective PCI (balloon angioplasty, angioplasty with stent implantation, rotational atherectomy) were enrolled in the study. Successful outcome of intervention, as well as lack of recurrent symptoms of ischemia during the four weeks following the intervention, made the patient eligible for further analysis. PCIs were performed according to generally accepted standards of practice. The interventional cardiologist’s task was to achieve an optimal result for the procedure, which was defined as final diameter stenosis < 30% (estimated in quantitative coronary angiography) without a high grade of dissection with good coronary flow (TIMI 3). Stents were used for an abrupt or threatened vessel closure, as well as in the case of a suboptimal result of balloon angioplasty (final diameter stenosis < 20% was recognized as an optimal result of stent implantation). The interventional cardiologists were permitted to use intravascular ultrasonography for additional optimization of intervention. The clinically successful PCI was defined as an angiographically effective procedure without serious complications, in conjunction with a reduction of clinical symptoms. Patients with one menial vascular disease, as well as those who had multivessel deterioration were included in the study. PCIs were performed either as non-staged or staged procedures during a one-day inpatient stay.

Symptoms of angina were assessed prior to PCI and four weeks subsequent to the intervention using classification endorsed by the Canadian Cardiovascular Society (CCS) [12]. In the instances of atypical chest pain subsequent to PCI, an evaluation of myocardial ischemia was determined by the results of an exercise test. Only those patients with complete functional revascularization were included in the study sample.

All patients completed the Polish version of the SF–36 questionnaire and instrument, widely accepted for QOL assessment in somatic diseases1, the Beck Depression Inventory (BDI). Additionally, the Hamilton Depression Rating Scale (HDRS) was administered [13, 14, 15, 16, 17, 18]. A patient was classified as being depressed according to the results of the clinical examination and BDI, HDRS scores. Since the validity of depression rating scales and inventories may be problematic in patients with concurrent somatic illnesses, it has been suggested in the professional literature that the higher cutoff scores should be used to determine diagnostic accuracy [19, 20]. In this study, a score > 11 points on the BDI and a score > 10 on the HDRS was used to indicate the presence of depressive symptomatology.

All patients were evaluated on four occasions: one day prior to the procedure, and at 1, 6 and 12 month intervals subsequent to the intervention.

A statistical analysis was performed using the Wilcoxon test for paired variables and the Mann

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1 Permission by Quality Metric, Inc., was obtained.
Whitney “U” Test for unpaired variables. Spearman’s rank correlation coefficients were calculated to permit examination of the association between QOL and severity of depressive symptoms. All statistical tests were two-sided. A p value of < 0.05 was considered to be statistically significant.

RESULTS

Demographic data

Of 227 patients enrolled, 71 were excluded because of: suboptimal result of PCI (n=31); hospitalizations due to non-cardiological reasons during the one-year follow-up (n=13), compliance failure (n=26). The final group consisted of 156 patients (39–71 year-old; mean age: 55.05±8.25) including: 135 males (86.5%) and 21 females (13.5%), who were followed up for one year. 115 subjects (73.3%) had a previous history of cardiac infarction. According to the CAD risk factors: 108 of patients (69%) had hyperlipidemia, 97 (62%) were diagnosed with hypertension and 19 (12%) with diabetes, type II. 70 patients (45%) were smokers. In 12 patients (81%) angioplasty was performed as a one-stage procedure, in 27 (17%) it was two-stage. 3 patients (2%) had a three-stage procedure. One-vessel PTCA was performed in 78 subjects (50%), two-vessel in 72 patients (46%), and three-vessel in 6 (4%).

After the PCI, patients were treated with: acetylsalicic acid (95%), ticlopidine or clopidogrel (90%), statines (62%). Patients with hypertension, or lowered ejection fractions of the left ventricle received β-blockers (65%), ACE (spell out) inhibitors (68%) or nitrates (24%).

Quality of life and severity of depressive symptoms

In the entire group of patients studied (n=156), there were no significant correlations between cardiovascular function impairment (CCS criteria) and severity of depressive symptoms, assessed with HDR5 or BDI (Spearman rank correlation, HDR5 vs. CCS r=0.25 ; BDI vs. CCS r=0.27). In the entire study group (n = 156), SF scoring one day before the PCI (SF1) was 45.43±14.75 and there was a significant correlation between the QOL and severity of depressive symptoms assessed with BDI (Spearman rank correlation, r = –0.72, p<0.001). The QOL one month after the PCI (SF2) was significantly improved: (SF1 = 45.43±14.75 vs. SF2 = 59.24±14.47, p<0.001, Wilcoxon test for paired variables). This tendency persisted at the third (SF3 = 55.15±16.70, SF1 vs. SF3 p < 0.05, Wilcoxon test) and fourth examinations (SF4 = 55.82±15.75, SF1 vs. SF4 p<0.05, Wilcoxon test); however QOL at six months subsequent to the PCI was significantly worse than at the second examination period (SF3 vs. SF2, p< 0.05, Wilcoxon).

The presence or absence of depressive symptomatology during the first examination was the defining criterion for group I (n=75, 48.1%) – patients who experienced depressive symptoms before PCI and II (n=81, 51.9%) – patients without the symptoms of depression prior to intervention. One month after the PCI (second examination), depressive symptoms were observed in 45 patients (28.9%). Depressive symptoms were still present in 33 subjects from group I, while in the remainder of group I (n=42) spontaneous improvement was observed. Moreover, in group II (patients free of depressive symptoms one day before PCI) twelve patients developed depressive symptomatology during the 4 weeks after the procedure. Based on those findings, the following subgroups were identified for further analysis: Ia (n=33) – patients with depressive symptoms persisting for one month, Ib (n=42) – patients in whom depressive symptoms abated, IIa (n=12) – patients without depressive symptoms before PCI in whom depressive symptoms developed prior to the second examination, IIb (n=42) – patients without depressive symptoms both before and one month after PCI.

During each examination the QOL in group I was significantly poorer than in group II. (Fig.1, Tab 1).

The QOL in group I one month after PCI (SF2) was significantly improved (SF1 vs. SF2, p<0.001). This trend persisted at the third examination (SF2 vs. SF3 p < 0.001). One year after PCI, QOL was not significantly better than it was by the third examination (SF4 vs. SF3, p=NS). In group II, by the second examination the QOL had significantly improved (SF1 vs. SF2, p<...
Fig. 1. The results of SF–36 obtained by patients with depressive symptoms (group I) and patients without depressive symptoms (group II) one day prior to the PCI procedure (1), and at one (2), six (3) and twelve month (4) intervals subsequent to the intervention.

Table 1. The results of SF–36 obtained by patients with depressive symptoms (group I) and patients without depressive symptoms (group II) one day prior to the PCI procedure (SF1), and at one (SF2), six (SF3) and twelve (SF4) month intervals subsequent to the intervention. Mean value + SD.

<table>
<thead>
<tr>
<th></th>
<th>Group I</th>
<th>Group II</th>
<th>p*</th>
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<tbody>
<tr>
<td>SF1</td>
<td>35.4 ± 8.50</td>
<td>54.7 ± 13.2</td>
<td>p&lt; 0.001</td>
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<tr>
<td>SF2</td>
<td>54.2 ± 15.9</td>
<td>63.9 ± 11.3</td>
<td>p&lt; 0.001</td>
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<tr>
<td>SF3</td>
<td>47.2 ± 16.1</td>
<td>62.5 ± 13.7</td>
<td>p&lt; 0.001</td>
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<tr>
<td>SF4</td>
<td>47.6 ± 12.9</td>
<td>63.4 ± 14.3</td>
<td>p&lt; 0.001</td>
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*Mann-Whitney U test

0.001) and remained at the same level until the end of the follow-up (SF2 vs. SF3, p=NS; SF3 vs. SF4, p=NS), (Wilcoxon test for paired variables).

In subgroup Ia the QOL significantly improved after PCI, but the degree of this improvement was much smaller than in subgroup Ib. The total quality of life in subgroup Ia was stable during all examinations and was poorer than in sub-

Table 2. The differences between results of SF–36 obtained one day prior to the PCI procedure (SF1), and at one (SF2), six (SF3) and twelve (SF4) month intervals subsequent to the intervention by patients with depressive symptoms persisting one month after PCI (subgroup Ia) and patients in whom depressive symptoms abated one month after PCI (subgroup Ia). Mean value + SD

<table>
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<th>Subgroup</th>
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<tbody>
<tr>
<td>SF1</td>
<td>Ia</td>
<td>p&lt; 0.001</td>
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<tr>
<td>SF2</td>
<td>Ia</td>
<td>NS</td>
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<td>SF3</td>
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<td>SF4</td>
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*Wilcoxon test for paired variables
Fig. 2. Results of SF–36 obtained by patients with depressive symptoms persisting one month after PCI (subgroup Ia) and patients in whom depressive symptoms abated one month after PCI (subgroup Ib) one day prior to the PCI procedure (1), and at one (2), six (3) and twelve (4) month intervals subsequent to the intervention.

In subgroup Ib, whereas in subgroup Ia the QOL deteriorated at 6 and 12 months (Fig.2). Results of the Wilcoxon test for paired variables in subgroups Ia and Ib are presented in Tab. 2.

Table 3. The differences between results of SF–36 obtained one day prior to the PCI procedure (SF1), and at one (SF2), six (SF3) and twelve (SF4) month intervals subsequent to the intervention by patients without depressive symptoms before PCI in whom depressive symptoms developed prior to the second examination (subgroup Ila) and patients without depressive symptomatology both before and one month after PCI (subgroup IIb). Mean value + SD

<table>
<thead>
<tr>
<th>Subgroup</th>
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<tbody>
<tr>
<td>SF1 vs. SF2</td>
<td>Ila</td>
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<tr>
<td>SF2 vs. SF3</td>
<td>Ila</td>
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<tr>
<td>SF3 vs. SF4</td>
<td>Ila</td>
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<tr>
<td>SF1 vs. SF2</td>
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<td>SF2 vs. SF3</td>
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<td>SF3 vs. SF4</td>
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*Wilcoxon test for paired variables

In subgroup IIa the QOL at one day prior to the PCI was significantly worse than in subgroup IIb. The quality of life in both subgroups had significantly improved by the second examination, but the degree of this improvement was much bigger in subgroup IIb, in which QOL remained unchanged for the remainder of the follow-up. Six months after PCI, despite a high rate of BDI, QOL in subgroup IIa improved when compared to the second examination and was not significantly different from subgroup IIb. However, after one year there was a worsening of the QOL in subgroup IIa, which was not observed in subgroup IIb. (Tab.3, Fig.3).

DISCUSSION AND CONCLUSIONS

Cardiac revascularisation procedures in patients with CAD proved to be highly effective in terms of immediate relief of angina symptoms, significant improvement of the patients’ QOL and their return to work activities [6, 7, 8]. In this study we also report a significant improvement...
in the QOL: one, six and twelve months after the successful PCI with the entire study group.

However, in some reports the patients immediately after the cardiac intervention as well as at six or twelve months follow-up – complained about their general sense of well-being and life situation, despite the positive result of the treatment [21, 22, 23]. In the group of patients qualified for coronary artery bypass grafting, it appeared that the individuals prone to react with high intensity of stress and psychopathological symptoms (anxiety, depression, psychosis) before the operation, held negative evaluation of their general sense of well-being and health condition both before CABG and in the long-term follow-up [21].

In our study, mood assessment made one day prior to the PCI revealed the presence of depressive symptoms in 48.1% of patients (group I). Their QOL was significantly worse one day before the intervention and one, six and twelve months after when compared to non-depressive subjects (group II). Obviously, depressive symptoms occurring just prior to the angioplasty may be treated as an emotional reaction to the expected invasive intervention. These symptoms can be short-lasting, of mild intensity and may disappear spontaneously, as in the 42 patients (subgroup Ib) in our study. Consequently, the disappearance of depressive symptoms resulted in a stable improvement in the QOL observed at all examinations during the one year follow-up. However, in the 33 patients (subgroup Ia) whose depressive symptoms were initially more intense, and persisted for four weeks after the PCI, improvement of the QOL was present, but it was significantly poorer than in subgroup Ib, in spite of a similarly optimal result of the coronary angioplasty I both subgroups. Moreover, in subgroup Ib the QOL had deteriorated by 6 and 12 months.

According to the illusion theory and depressive realism theory, the sudden and great improvement in the QOL and depressive symptomatology in subgroup Ib may be accounted for by a transient euphoric and over-optimistic perception of the world and personal capabilities immediately after successful PCI in those patients who later become more aware of the situation. In contrast, depressive patients (subgroup
Recently, depressive disorders have become a major object of interest for the psychosomatic aspects of heart disease. Numerous studies have shown that widely defined depressogenic factors are a significant risk for CAD and occur in a large group of CAD patients. Depressive symptoms occur in 65% of patients subsequent to myocardial infarction and their duration and intensity meet the DSM-IV criteria for major depression in 16–22% of cases [26, 27, 28]. This result confirms the necessity of a holistic approach to CAD treatment, also giving attention to the mental state of patients frequently subjected to contemporary revascularization procedures. Although comorbidity of depression and CAD is an important clinical problem, depressive disorders are rarely diagnosed and treated in cardiac patients [11, 29].

The results derived from the present study suggest that the pre-existing of depressive symptoms may contribute to the lack of significant improvement of QOL after a successful PCI. A patient, who presents with a higher level of bigger severity of depression, anxiety or distress prior to the intervention, requires special attention. Depressive symptomatology may persist even one year subsequent to the intervention and no improvement of QOL could be observed despite the patient’s optimal cardiac profile.

Limitations of the study

The study was focused on depressive symptoms but not on the detection of depressive episode and its relationships with QOL. Assessment of depressive symptoms one day before PCI without information about symptoms duration didn’t give the possibility for diagnosing of depression. It may be hypothesized that part of the so called depressive symptoms may be related with anxiety before PCI.

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The Auschwitz reflections

Antoni Kępiński

The memories of the biggest crimes of the last war – Auschwitz, Hiroshima, and Japanese bacteriological weapons – did not lose their horrifying features with time, as many people could have hoped. The burden of the people responsible, and to some extent that of the whole civilised world, has not become less heavy.

The questions of “how” and “why”, instead of becoming less important, have been returning again and again to the minds of a growing number of people and still remain unanswered. How could such crimes happen at all? How could people be so cruel towards innocent victims, and how was it possible for some victims to survive those cruelties? To what extent did the crimes of the last war influence their immediate victims, and those who were touched only indirectly? In other words, have they influenced the ongoing history of individuals and humanity? If so, what impact have they made? One does not know if these questions will be answered satisfactorily. Each attempt to answer them touches the deepest and the most important problems of human life. These problems usually are never fully explained.

In a sense, the duty of a psychiatrist whose area of specialisation is the holistic approach to human life is to try, even awkwardly, to answer some of those questions. The questions bring a new light upon human nature, and in this way extend the perspective a psychiatrist uses.

Erich Fromm [1, 2], an American sociologist and psychiatrist and one of the founders of the so called “cultural school” in psychiatry, believes that contemporary civilisation is characterised by a contradiction between actuality and abstraction. The influence of technology makes the environment emotionally distant for human beings, rendering it detached and unfamiliar. The change in battle style that has accompanied advances in technology serves as an example. While in the past enemies were fighting in direct contact with each other, contemporary war technology makes the contact impersonal and unemotional. A pilot, who may without emotion push a button to kill thousands of people, may grieve the death of his pet. To the pilot, the thousands of people are an abstraction, however, the beloved dog is an actuality.

The human being perceives the surrounding world from the perspective of his or her influence on it. The nervous system construction itself inseparably ties perception with activity. A neuron receives information (impulses) from its environment through many dendrites and, using one channel (axon), sends a command to act. The basic physiological unit, a reflex pathway, is composed of an afferent part and efferent part. In such a way, the nervous system structure limits a living organism’s cognitive abilities within the frames of its action.

Homo faber forms his or her view of the world congruently with a tool he or she uses to conquer this world. The world had been perceived differently when man had a stone or a club than when he/she is using complicated technological equipment.

Probably one of the greatest risks of the development of technology, besides unquestionable
profits, is the technical approach to the whole world. In other words, the world is being conquered with the scope of machinery. Machinery becomes more important than human beings and becomes a criterion of human achievements. The surrounding world turns into something dead, emotionally unmoving, if not hostile. One can do anything with the world, according to actual needs. The human world is above all a social environment, so one approaches it in the same manner as one approaches other people and the community. A human being is a piece of machinery, more or less effective in his/her works, and needing a rest or repair from time to time. At times, chemical compounds must be administered or an operation performed, but then the human, or machine, may resume work. A community is a complicated piece of machinery, composed of millions of cog-wheels and gears (human beings), which can be steered or eliminated. Needless to say, this picture of the human world, and actually the whole living world, is not true.

A human being does not want to be regarded as a cog-wheel; his/her sense of freedom (Pavlovian liberty reflex) rebels against it, as well as his/her need for emotional response. A human being can not be emotionally dull, as a part of machinery is; he or she must love and hate, and be loved and hated. By accepting the technical approach to the world one becomes not only alone and abandoned, but endangered as well. The world seems to be dangerous and hostile. The feeling of emotional isolation arouses a longing for strong attachment, leading to the formation of artificial groups which serve any paranoiac system. An individual in such a group is tied with “eternal” bonds, and sacrifices everything for the grand “ideas”. A sense of being a robot is compensated with the grandiosity of an “idea” and the emotional group bonds; without “comrades” one would stay a lonely cog-wheel, nothing. For that reason, the decomposition of the monolithic unanimity of the group leads immediately to group dispersion. The complicated social machinery disarranges into useless gears and cogwheels – being artificial is temporary.

In the “machinery community”, any sense of responsibility disappears. This responsibility is obviously essential for normal human development. In that type of community, one subordinates to orders only, becoming a robot, and his/her development is arrested at a dwarfed human being. Guilt, a normal consequence of crimes committed, decreases to null. It is difficult to feel guilty towards a subject (a gear cannot be offended), and it is difficult to feel guilty while being an automaton blindly fulfilling orders. Nevertheless, the absence of guilt does not eliminate responsibility; one remains responsible for his/her actions and for becoming a robot.

The problem is not in disavowing guilt of war criminals (however it is worth noting that they usually notoriously deny any guilt), nor in understanding the mechanism of war crimes (this is a very complicated and still unclear process). My aim is to turn attention to the risk of criminal behaviour, which is often inconsiderate, hidden within the technical approach to human beings and community. The technical approach to the world should not, of course, be confused with technological progress. The first may be dangerous, the latter – profitable.

In his book, Adolf Gawalewicz [3] says that only a few succeeded in escaping from “the waiting room to the gas chamber” (Auschwitz Block VII). The prisoners believed in “impossible, incredible things”, meaning “they would get out, against all obstacles”. It is obvious the belief itself was not enough, one had to mobilize oneself to act within the real limits of possibility – as minimal and hopeless as they were – to influence one’s behaviour. One had to be an “active muslim”. The author brings up a significant example showing the importance of the words “I want” for survival in the concentration camp. “Who thought another way, did not live. One night one of my colleagues, still in very good physical condition, confessed to me: I am fed up, this all is hopeless, and I do not want to live any longer. A couple of hours later we took his corpse out from the block.”

One should not forget that not so long ago, before World War II, the majority of psychiatrists and psychologists were of the opinion that free will did not exist. However, in a situation of maximal slavery and complete disregard of human dignity and ability to make a choice, the will to survive appeared to be decisive for survival.

It may seem paradoxical, but those who were in a terminal situation could say “I want” or “I do
not want”, while their perpetrators, who were in an incomparable better physical and moral situation, could not. In a concentration camp, the true living people were those put on the verge of death, while those who had death signs on their caps were not living people, but robots.

In spite of the abundance of literature on concentration camps, one who has not lived through the ordeal of the camp cannot envision how it was. Days and nights were filled with suffering beyond the limits of human imagination. However, the issue has been approached by even the best writers. Zofia Nałkowska, a member of the International Commission for Nazi Crimes Studying, visited the sites of concentration camps and mass murders, talked with survivors and witnesses, and composed her impressions in “Medaliony”[4]. The book has been regarded as an excellent, shocking, and synthesizing document of Nazi crimes, therefore playing a specific role in concentration camp literature. She realized that “what people went through [in Nazi concentration camps and prisons] could not be expressed in words”. Somebody trying to grasp the immense size of these crimes finds it difficult to get to them at all. In “Medaliony”, Nałkowska wrote: “Reality can be lived through, as not all is given in experience, or not all at the same time. It comes to us in fragments of events, scraps of realization. Our thinking of it is an attempt to bring it together, immobilize it and understand”.

That was a different world, as different from ours as the world of the psychotic person. Upon entering concentration camps, prisoners often experienced an acute derealisation state; what they were seeing seemed unreal, like a terrifying nightmare. The difference between what they saw and the ordinary human world was enormous. “I thought: all this cannot be true, it is a dream fantasy...” recollects Gawalewicz [3].

A psychosis, especially the schizophrenic type, leaves a mark; a person is changed. Similarly, people who went through the concentration camp became different people. In actuality, they found it difficult to adapt to normal, ordinary life afterward. The way they assessed other people had changed, at least for some time, as well as their hierarchy of values, life goals, and even personality. On the other hand, the concentration camp was a kind of test of their endurance. Within every person, there is a heroic portion, a need to check oneself: how much can I withstand, what are my abilities? Perhaps this is the reason why young boys go through tests of endurance in so called “primitive” cultures. They are recognized as adult men only after completing these tests. Those who survived the concentration camp had stood its trial. Maybe this is the reason for their alienation from other people and longing for a group of other survivors, as only they are capable of understanding.

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Regulations on the papers accepted to "Archives of Psychiatry and Psychotherapy"

INFORMATION FOR AUTHORS

Archives of Psychiatry and Psychotherapy accept experimental, clinical, theoretical papers, case reports and studies, which have not been published previously in other publications as well as specially selected and invited papers firstly published in Polish, that have been translated and suitably adapted. The editors accept also a) letters to the editor, concerning the articles printed in the journal as well as letters on important issues connected with the theme of the journal and, b) book reviews.

The papers should be submitted in 1 copy, printed one sided on the A4 paper size along with the file on a CD or sent by e-mail. The submitted paper written in English should not exceed 15 standard pages (1800 signs per page, spacing included), including illustrations and tables.

The first page should contain: the title (very brief, if necessary a subtitle may be used), name(s) of the author(s), their affiliation(s), correspondence address (address of the author to whom correspondence should be sent, telephone and fax number, and e-mail address, if possible) key words (3-5) and structured summary up to 100 words and any acknowledgements. The authors are obliged to mention also here if they have been supported by any grant in their research.

The length of the letters to the editor should not exceed 5 pages of normalized text, whilst the book reviews should not exceed 2 pages. The paper should contain a short introduction, subject or material and methods, results, discussion, conclusions and references (not necessary in case reports).

The papers not reviewed before (e.g. published in “Psychiatria Polska”), will be reviewed by at least two reviewers. If requested, reviews will be sent to the author nominated for correspondence. The corrected paper may be sent back to the editor via e-mail and in one single copy. The edited text could be forwarded again to the authors for proof-reading and acceptance before further processing.

The paper should be typed out in MS Word for Windows. The font should be Times New Roman 12, double-spaced; minimum margins: left 3.5 cm, right 1 cm, top 3.5 cm, bottom 3 cm. Pages should be numbered in the middle of the page heading. Main titles are supposed to be written in Capital letters while sub-titles should only be exposed separately from the main text. As regards numbers, decimal fractions should be separated from units with a period and not a coma. The text cannot include any special layout tools like double spacing, bold. If the author wishes to distinguish a fragment of the text, the selected words should be underlined with a pencil on the printout: continuous line for the words to be bolded, dashed - for the words to be spaced, sinuous - in case of italics. The layout of the mid-titles and that of the tables is selected by the Editor according to the homogeneous layout of the journal.

The authors are requested to use proper psychiatric vocabulary and international names of medicines (not trade ones). SI abbreviations should be used. Tables and drawings should be attached separately, numbered consecutively and their placement in the text should be clearly indicated.

Tables should be prepared in MS Word for Windows, graphs in MS Excel and drawings in Corel Draw. Tables should be saved on the disk as a separate file, in the format they have been created in.

Drawings and tables should not be wider than 13 cm and should be capable of reduction. Halftone drawings and illustrations should be saved as black and white (256 shades of gray) in the EPS or TIFF format, 300 dpi and the size in which they will be printed. Shades of gray or patterns should be used for filling the drawings and graphs. Colorful graphs will be accepted only if it is necessary for proper presentation of the material presented. High quality printouts of the drawings and tables should be attached to the text. Content of the tables and descriptions of...
drawings should be written in Arial Narrow 10. The number of tables and drawings should be reduced to minimum. The author must obtain a written permission from the copyright holder of the previously published tables, illustrations and figures.

The authors are requested to cite only necessary references, which are clearly referred to in the text. In the reference list, each item should start in a new line and be numbered according to the appearance in the text. For references with no author term “anonymous” may be used.

For papers published in journals the references should preserve the following sequence: surnames of the authors followed by their name initials, title of the article, name of the journal (according to Index Medicus), year, volume, pages; Example: Kowalski N, Nowak A. Schizophrenia-case study. Psychiatr. Pol. 1919, 33(6): 210-223.

For books: surnames of the authors followed by their initials, title of the book, place of publication, publisher, year of publication. Example: Kowalski ZG. Psychiatry. Warsaw: Press; 1923.


Be careful about punctuation (as in examples).

Manuscripts including the results of examination of patients involving a risk element must have a copy of the written approval issued by the ethical committee attached.