DEPRESSION AND ANXIETY IN PATIENTS DIAGNOSED WITH ALZHEIMER'S DISEASE IN THE MILD COGNITIVE IMPAIRMENT STAGE

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Abstract: *The Mild Cognitive Impairment (MCI) represents a clinical concept defining an isolated disorder of memory preserving the daily activities performing capacity. MCI is identified within the first stage of the Alzheimer's disease. Sometimes, these can be related to depression and anxiety.*

Keywords: *Mild Cognitive Impairment (MCI), Alzheimer's disease, depression and anxiety.*

Rezumat: *Disfuncţia cognitivă uşoară (MCI–Mild Cognitive Impairment): constituie un concept clinic care defineşte o tulburare izolată a memoriei cu conservarea capacităţii de efectuare a activităţilor zilnice. MCI se identifică cu primul stadiu al bolii Alzheimer. Uneori acestea se pot asocia cu depresia şi anxietatea.*

Cuvinte cheie: *Alzheimer, depresie, anxietate*

RESEARCH OBJECTIVES

1. The quantitative interpretation of anxiety; MCI severity simultaneously with sex and age differentiation;
2. Establishing the percentage and the occurrence frequency of anxiety and depression in the patients within the MCI group.

WORKING ASSUMPTIONS

1. The level of anxiety will be positively correlated with the depression level within the patients' group.
2. The level of depression will be correlated with the cognitive impairment.

The group of patients: 34 patients diagnosed with the Alzheimer's disease and MCI hospitalized in the neurology and psychiatry hospital of Sibiu: The means used were: BDI (Beck Depression Inventory), HDRS (Hamilton Depression Rating Scale), MMSE (Mini Mental State Evaluation);

RESULTS AND CONCLUSIONS

Statistically speaking, the study assumptions were invalidated, bringing about the following clinical implications: we cannot afford saying that, for this group of patients, the increase of the anxiety level is in positive correlation with the increase of the depression level.

THEORETICAL APPROACH (key concepts)

Depression: the largest general definition considers depression as a breakdown of the basic mood, intensifying the unpleasant, sad and threatening feelings. The strong emotional participation, intensively experiencing this mood, the behavioural and consensual stimulation are as much arguments to consider depression as a negative hyperthymia; it represents the psychopathological phenomenon the most frequently encountered in practice. Almost half of the patients with dementia present major or minor depressive episodes.

Regarding the elderly, depression – called the geriatric depression – is characterized by certain specific features: "The old man feels sad, is indifferent, adynamic, and has an inexplicable physical weakness, psychical and physical asthenia. He also complains about the lack of interest and of preoccupations. Another characteristic is the depression somatic equivalents, especially of cardiovascular and digestive nature. The patients complain about palpitations, chest pains, they feel tired after small efforts or diffuse abdominal pains.

Another clinical important sign for the geriatric identification is the weight loss. Almost all depressive old people lose their appetite and grew weaker.

Insomnia is another major symptom. It is accompanied by psychomotor agitation or anxiety.

The patient is turning and whirling in the bed, is pacing around the house. Generally, the life partner confesses that the sick person does not sleep, is pensive, pessimist, feels he is a burden for those around him, and considers that it is best for him that everything ends, that he is no longer good for anything. More serious is the fact that the suicide rate is quite high to the depressive patients over 65.

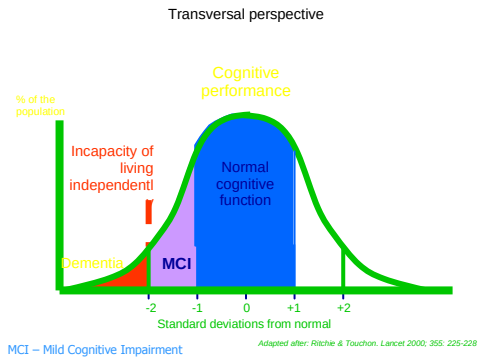
The anxiety is one of the attributes of the human existence, but not of those sustaining it, such as: the need for food, shelter, perpetuation, but as a corollary of these; a sort of a shadow companion of the human impulses and attempts. Anxiety involves subjective feelings (for example, the concern), physiological responses (for example, tachycardia, hypercortisolism), as well as behavioural responses (for example, the avoidance)

The anxiety becomes pathological when it occurs without any rational motivation and is frequently experienced or it becomes chronic. In such cases, it is no longer adaptive; it is felt as a suffering and becomes bearable only by renouncing to everything that is natural, pleasant, liming the individual's existence to avoidance or compensation strategies.

The MCI–Mild Cognitive Impairment: represents a clinical concept defining an isolated disorder of memory preserving the daily activities performing capacity.

It represents an early stage regarding the subsequent appearance of dementia (in particular, the Alzheimer's type dementia).

The modern concept of mild cognitive impairment was proposed by Petersen and his collaborators in 1997 and refers to a memory deficit greater than the one expected to a person of a certain age and education level. The MCI represents the transition stage between the normal cognitive impairment associated to the age and the pathological cognitive decline, characteristic to the Alzheimer's disease. This pathological cognitive decline affects, besides memory, the attention, the language, the judgment, the planning capacity, the reading and the writing.



The Alzheimer's disease: represents a neurodegenerative disease characterized by a progressive dementia generally affecting the elderly.

The Alzheimer's disease staging:

THE EASY STAGE

The affected cognitive function:

- Recalling / learning – memory disorders: difficulty in recalling previously learned information and the impossibility of gathering new information. The first lost are the recent events, while the old ones can be preserved.
- Finding the words: the sick person is no longer able to find the words, even for the simple notions.
- Problems solving: disorders of the daily activities organizing function, incapacity in taking decisions.
- Judgment.
- Computing capacity.

Functional deterioration:

- professional
- the use of money
- food preparation
- house cleaning
- reading / writing
- hobbies

Behaviour disorders:

- apathy: is an important source of distress for those around the sick person. It represents a motivation disturbance associated with the loss of interest, tiredness, motor retardation and reduced affectivity. The severity of these symptoms is correlated with the severity of the cognitive disorders and of depression.
- isolation
- depression
- irritability

THE MILD STAGE

The affected cognitive function:

- recent memory (or the distant memory)
- language (naming objects, syntax, aphasic phenomena)
- visual-spatial orientation
- temporal-spatial orientation

Functional deterioration:

- incapacity in performing the daily activities
- loosing things
- spatial disorientation
- difficulties in dressing up (in choosing the appropriate things to wear)

Behaviour disorders:

- incoherent ideas
- depression
- tendency to get lost
- insomnia
- anxiety
- aggressiveness / violence

THE SEVERE STAGE

The affected cognitive function:

- difficulties in accomplishing the usual activities (apraxia)
- severe language disorders (mutism)

Functional deterioration:

- loosing the capacity in performing the basic daily activities: dressing up, washing, taking a bath, eating, walking.

Behaviour disorders:

- anxiety / apathy
- insomnia/ reversing the nictemeral rhythm
- incontinence
- impossible walking
- other symptomathology

Arguments for choosing the theme:

The process of growing older is associated with certain loses of the "cognitive area", (memory, attention), similar to the loss of the muscular force by aging. The motivation for choosing the theme has as start point the need for identifying the decline associated with the mild cognitive impairment, as well as its relation with other symptomathologies (depression, anxiety) with a view to a positive prognostic for the patient diagnosed with the Alzheimer's disease. Once the mild cognitive impairment identified, the established treatment slows downs or even hinders the fall to the senile dementia of Alzheimer's type. More and more often, the specialists working with people with the Alzheimer's disease draw the attention in this respect, regarding the precocious diagnosis and of the establishment of the medical treatment, precisely for it was proved that caring a sick person in advanced stages of the disease costs society more human and material

resources. Within the natural extension of this objective, we chose focusing on the mild cognitive impairment, anxiety and depression, in order to identify their manifestation proportions or their possible correlations with the mild cognitive impairment.

RESEARCH METHODOLOGY

The general purpose of the paper represents the exploration of the interaction of the variables chosen within this study.

The research purposes – arise naturally as a result of choosing the research method, with "intrasubject" measured variables. Thus, we have the following:

The quantitative interpretation of the results for anxiety, depression, MCI severity, differentiated by age and sex;

Establishing the occurrence frequency of anxiety and depression to the group of patients with MCI and the Alzheimer's disease;

The working assumptions:

1. The level of anxiety will be positively correlated with the depression level within the patients' group.
2. The level of depression will be positively correlated with the cognitive impairment.

Characterization of the patients' group:

- Only the people diagnosed with the Alzheimer's disease in the stage of mild cognitive impairment, hospitalized in the Neurology and Psychiatry sections of Sibiu (between March and May, 2007) were taken into consideration within this study; these people were informed about being included in this study and expressed their consent to participate in it;
- 34 patients (19 men, 15 women), aged between 54 and 83 turned at the date of making the study. Presentation of the method and research conditions: the working method is the one specific to the clinical pathology and is based on the clinical interview, the observance and the implementation of the means chosen for psycho diagnosis. The patients' examination was made individually;

The variables followed within this study:

Sex (male/female)

Patients' age (54-83 years old)

Length of the Alzheimer's disease: represents the period of time elapsed from diagnostic establishment up to the study date and will be expressed in years.

The Mild Cognitive Impairment: established by the MMSE (Mini Mental State Evaluation)

Depression: BDI (Beck Depression Inventory)

Anxiety: is measured by using HAS (Hamilton Anxiety Scale)

The measurement instruments used were applied to all patients selected for this study.

The Mild Cognitive Impairment was analyzed by using the MMSE (Mini Mental State Evaluation): is an instrument easy to apply for the group of people selected for this study (aged people); the criterion used in choosing the group of patients, was the Alzheimer's disease within the mild cognitive impairment stage and for the present case, it represents a score between 21 and 30 points; the points are awarded for the right answer to the items of each area; it is the largest used test for the rapid screening of the cognitive function; 30 is the maximum score on this scale and represents the equivalent of the normal cognitive impairment; the cognitive functions identified by the MMSE are: attention and concentration, the temporal-spatial orientation, short term memory, the visual-spatial functions, the language and the reading/writing;

Depression was evaluated by BDI (Beck Depression Inventory): it contains 21 items differing according to the symptoms presence or severity and reflecting the intensity degrees in three stages: 0, 1, 2. Stage 0 defines the absence of the depressive symptoms; for each category, the patient must choose the variant which suits him best; the 21 categories (considered as items) represent actually those aspects which proved to be the most relevant in the case of the existing depression.

The most edifying are the following dimensions: sadness, pessimism, the feeling of failure, disgust for one's self, self-accusation, self –aggression, crying, dissatisfaction, guilt, the feeling of punishment, irritability, social isolation, indecisiveness, disorders of self-image, sleep disorders, tiredness, loss in weight.

It is to be noticed that the 21 dimensions make part of different spheres, one of them referring to the patients' attitudes and feeling towards themselves, others and towards future, others aiming at their behaviours and attitudes. The Back Depression Inventory allows the exploration of the depression state as well as its severity, the three categories of factors, respectively the affective, cognitive, the somatic factors, conferring scores which indicate the frequency and the intensity of the symptoms.

Thus, the affective factor comprises the items 1, 4, 10, 11 evaluating the mood, dissatisfaction, depression, sadness, crying and irritability. The cognitive factor aims at the items 2, 3, 5, 6, 7, 8, 9, 12, 13 envisaged for the evaluation of the verbal-cognitive functions, the third factor, the somatic one comprises the items 15, 16, 17, 18, 19, 20, 21, characteristic for the range of the neuro-somatic-psychic phenomena.

Anxiety was measured by using HAS (Hamilton Anxiety Scale): for the evaluation of the anxiety severity; this method was developed in the years 50's in order to evaluate both the cognitive symptoms and the somatic ones; the scale has 14 items, each of them being quoted from 0 to 4, comprising 56 points; the total final score gained by a patient on this scale is divided to 14 (the number of the items); a final score obtained through this method, of minimum 1 was suggested as the inferior limit of anxiety significant from the clinical point of view, that is: 1 – low level of anxiety, 2 – medium level of anxiety; 3 – severe level of anxiety; 4 – very sever level of anxiety.

PRESENTING AND INTERPRETING THE RESULTS

- the data were gathered in the interval March-May 2007, and their presentation is contained in annexes gathered in

a centralized table, each patient being identified with a code number, the rest of the variables can also be seen in this table.

Preliminary analysis of the data

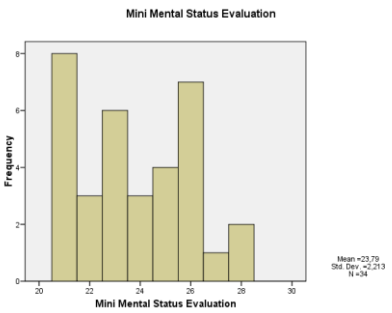
-here you can find the first groups of scores which are relevant from the clinical and non-clinical point of view, regarding depression and anxiety.

sex	BDI clinical	BDI non - clinical	HAM-ANX clinical	HAM - ANX non - clinical
men	7	8	5	14
women	7	12	6	9
Total	14	20	11	23

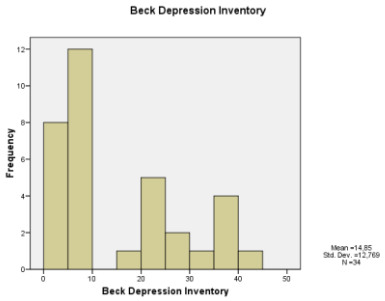
- Out of the 43 patients, 41% registered significant scores from the clinical point of view regarding depression, of which 20,5% were women and 20,5% were men, so the proportion distributed by sex was equal. In the case of the patients diagnosed with the Alzheimer's disease, mild cognitive impairment and depression, 59% did not have significant scores from the clinical point of view and the distribution by sex is the following: 24% men and 35% women; 32% of the patients registered significant scores from the clinical pint of view regarding anxiety, of which 15% were men and 17% women, the percentage of the cases distributed by sex which registered clinical scores for anxiety is slightly equal for women and men, while 68% of the patients diagnosed with the Alzheimer's disease, mild cognitive impairment did not have significant scores from the clinical point of view for anxiety, of which 27% are women and 41% men; here the proportion of the non-clinical proportion tends significantly towards the male gender.

The analysis regarding the occurrence frequency of the scores from MMSE: We mention again that for the mild cognitive impairment, scores between 21 and 30 (where 21 means the limit between the mild cognitive impairment and the medium one = from 21 downwards) were taking into consideration.

The histogram for the frequency distribution for MMSE:



- Thus, the most of the cases (8 patients) had a score of 21 regarding the MMSE, followed by 7 patients with a score of 26 and other 6 with a score of 23; 4 patients had a score of 25 and for a score of 22 and 24, there were 3 patients.
- The histogram of the frequency distribution for the BDI scores.
  (BDI: 0-10 insignificant score from the clinical point of view; 11-26 mild depression; 27-42 medium depression; 44-52 severe depression, over 53 – major depression.



- The distribution of 22 patients can be noticed regarding the insignificant scores from the clinical point of view; also, for the group of patients under the study, extreme scores were not registered (there was only one patient which had a score of 45, as an extreme value)

Data analysis

We wished to identify the medium age of the patients of the sample and the medium age of the disease evolution, differentiated by sex (women / men); the estimation was made on a confidence interval for 95% of the sample averages.

The average age of the men with incipient cognitive impairment within the studied group was of 67,68 ± 4,12 and the average length of the disease was of 2,57±0,37 and for women, the average age was of 71,26 ± 4,52 and the average length of the disease: 2,8 ± 0,60

Testing the assumptions

Assumption no.1: The level of anxiety will be positively correlated with the depression level within the group of patients.

The evaluation of the association between depression and anxiety can not be made from the statistic point of view, because the number of cases with significant symptoms for both variables, as well as the number of pairs of scores are very low (only three patients registered significant clinical scores on both scales – depression and anxiety – as a result, we could not establish a direct relation between these variables (in two of the three cases, things went as follows: the registered level of depression was medium and the anxiety low and for another case – the depression level was medium and the anxiety level was moderate.

This makes us plead for the invalidation of the assumption no.1, we cannot afford saying that for this group of patients, the increase of the anxiety level is in positive correlation with the increase of the depression level;

Assumption no.2: The depression level will be correlated with the level of the cognitive impairment.

Although the variables are measured on interval scales, the BDI distribution scores deviate from normality; for this reason, we opted for a non-parametrical correlation.

The Spearman value r - 0,22 is not significant from the clinical point of view, yet. So, this assumption is also invalided from the statistical point of view: the level of the cognitive impairment is not in direct relation with the depression level (in other words, a higher score from the clinical point of view for depression does not influence the cognitive deterioration, significantly).

			Beck Depression Inventory	Mini Mental Status Evaluation
Spearman's rho	Beck Depression Inventory	Correlation Coefficient	1,000	-,227
		Sig. (2-tailed)	.	,198
		N	34	34
	Mini Mental Status Evaluation	Correlation Coefficient	-,227	1,000
		Sig. (2-tailed)	,198	.
		N	34	34

CONCLUSIONS, SUGGESTIONS AND DISCUSSIONS

Both assumptions of the study were invalidated. From the clinical point of view, this means that for the group of patients had in view:

- we cannot afford saying that the increase of the anxiety level is in positive correlation with the increase of the depression level;

- the level of the cognitive impairment is not in direct relation with the depression level (in other words, a higher score from the clinical point of view for depression does not influence the cognitive deterioration significantly);

-41% registered significant scores from the clinical point of view for depression (20,5% were women and 20,5% were men); so, the proportion distributed be sex is equal in the case of the scores of the patients diagnosed with the Alzheimer's disease, mild cognitive impairment and depression;

-59% did not register significant scores from the clinical point of view for depression and the distribution by sex is the following: 24% men and 35% women;

- (32% of the patients registered significant scores from the clinical point of view regarding anxiety 15% were men and 17 % women); the percentage of the scores distributed by sex which registered clinical scores for anxiety is lightly equal for women and men;

-while 68% of the patients with the Alzheimer's disease, mild cognitive impairment did not have significant scores from the clinical point of view regarding anxiety (27% are women and 41% are men); here, the proportion of the non-clinical cases tends significantly positively towards the male gender (that is, women are more affected by anxiety in this case).

The limits of the study: due to the fact that the sampling was not made taking into account statistical criteria, related to the entire group of patients diagnosed with the Alzheimer's disease and mild cognitive impairment, it is not possible to extend the results.

Suggestions:

-for the patient with the Alzheimer's disease in the first stage (but not only), support groups, discussion groups may be formed;

-the development of the occupational therapies in day centres could be another alternative for the repolarization of the elderly having health problems;

-offering advice to the caretakers, helping the patients and their families to know the disease better and developing coping strategies.

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