EVALUATION OF DEPRESSION IN PATIENTS UNDERGOING CHEMOTHERAPY

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Abstract

Depression is a common symptom in cancer patients, which is difficult to be detected and consequently to be treated. It deteriorates over the the course of cancer treatment, persists long after the end of therapy and influences negatively the quality of life .

Aim: The purpose of the present study was to evaluate the levels of depression that experience patients undergoing chemotherapy.

Method and material: The sample study included 159 patients with cancer, who received chemotherapy in one day-clinic department. Data was collected by using the self-completed questionnaire «Zung Self Rating Depression Scale» (SDS). Statistical analysis was carried out using t-test, Anova and SPSS-15.

Results: From the 159 patients studied, percentage of 34% was men and 66% women. According to the level of depression, 67,7% experienced normal levels of depression, 21,5% mild, 10,2% moderate and 0,6% severe depression. The statistical analysis showed that patients >70 years old experienced higher levels of depression, compared to those of <50 and 51-60 years old, p=0,025 and p=0,005, respectively. In regard to the occupation, it was found that, pensioners experienced higher levels of depression compared to employees, public or private and free lancers, p=0,014 and p=0,018 respectively, while, they didn't differ statistically significant from those of domestic duties, p=0,765. In regard to the educational status, patients of primary education experienced higher level of depression compared to those of secondary and higher/university education, p=<0,001 and p=0,012 respectively. Patients who received chemotherapy but with no response experienced higher levels of depression compared to those who received adjuvant chemotherapy, p=0,050. Patients who received antidepressant or hypnagogic medication experienced higher levels of depression compared to those who were not under medication or received symptomatic-alleviative medication p=<0,001 and p=0,001 respectively. Similarly, higher levels of depression experienced patients who were not nourished adequately, p=<0,001, as well as those who had a co-existing disease, p=0,029.

Conclusions: Health professionals should be fully informed about depression and its dimensions. Early diagnosis of depression consists a matter of great importance for a medical treatment and planning of care based mainly on the personal needs of each individual.

Keywords: depression – chemotherapy – one day clinic – nutrition – screening depression.

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Introduction

World-wide, the incidence of cancer is rapidly increasing and nowadays it consists a major cause of morbidity and mortality. Approximately, 500.000 people irrespectively of age and sex, die each year of cancer in the USA. In Europe, cancer is the second leading cause of death, while it is growing into the major cause of death in the elderly.

According to the recent literature, breast cancer in women is the second leading cause of death after lung cancer while prostate cancer is the second leading cause of death in men.[2,3]

Advanced diagnostic methods and new improved strategies of treatment have effectively contributed to the increase of life expectancy of cancer patients. [4]Cancer patients undergoing chemotherapy, usually experience a variety of symptoms as a result of their disease or as a result of treatments for their disease. These symptoms affect them, both physically and emotionally and furthermore exert a negative influence on the treatment, the prognosis of the disease and the quality of their life.[5]

The most frequently cancer related symptom is depression which consists a psychological disorder of great importance. It worsens during chemotherapy, persists for a long time after the end of chemotherapy, is also manifested in the recurrence of the disease and finally consists an independent prognostic factor for mortality. [6]

The review of current literature showed that, one in two patients with cancer reports psychiatric disorders and mainly depression. However, the incidence of psychiatric disorders varies from 9-60%, while, this percentage decreases in 10-30% in research studies planned without methodological errors. This factor encumbers the comparisons between cross studies. Despite the magnitude of the problem, a recurrent theme in the research literature is that depression is not assessed adequately and when it is assessed is undertreated for many reasons. [1,3]

The responsible risk factors for the manifestation of depression are many, such as the duration of treatment, the previous case history of depression, the years from the onset of disease, advanced age, the type of cancer, readmission in hospital, the fear of death and social isolation etc. Moreover, the financial difficulties arising from the disease, consist an additional source of depression, mainly when the patient is the one who maintains the family.[7-10]

During the last decades, the significance of screening, evaluation and treatment for depression in patients who suffer from cancer has received a great deal of attention by Oncology. More and more research studies are showing, an increased risk of psychological morbidity in this category of patients. Usually, the mental health of these individuals is usually missed and untreated because the care is focused on physical problems. As a matter of fact, depression is usually underestimated because the symptoms that may accompany depression, such as fatigue, loss of weight, nutritional disorders are widely accepted as a consequence of cancer. [7-12]

Unfortunately, many times, it is difficult to discriminate between pathological symptoms of depression and normal reactions of sadness to the illness. However, health professionals, who take care of patients with cancer, are able to detect mild or moderate depressing symptoms in 1/3 of cases, whereas they are unable to estimate the highest levels of depression.[7]

Aim: The purpose of the present study was to evaluate the levels of depression that experience cancer patients undergoing chemotherapy.

Method and material: The sample study included 159 cancer patients, who received chemotherapy in one day-clinic. Data was collected by using the self-completed questionnaire «Zung Self Rating Depression Scale» (SDS). The Zung Self Rating Depression Scale (SDS) is a widely used diagnostic tool of psychological and physical symptoms which are related to depression. It is composed of 20 self-reported questions based on negative or positive responses. The expecting time of completing this questionnaire is about 10 minutes. Each

question is marked on a four point scale, from 1 to 4 Likert's type, with number 4 to represent the most negative answer.

The total score results by adding the mark of each question and it varies from 20 to 80. The total score is categorized in four levels in order to present a global clinical estimation of depression. A total score lower than 40 is estimated as a normal condition or the absence of depression, 40-47 as mild depression, 48-55 as moderate depression and 56-80 as severe depression. The «Zung Self Rating Depression Scale» presents a high credibility, internal cohesion, as shown from Crombach's alpha factor. (0,84). [8]

The statistical methods used were t-test, Anova and SPSS-15.

RESULTS

A. Descriptive Results

Of 159 patients who participated in the research, 54 was men (34,0%) and 105 women (66,0%).

According to the age of the patients, percentage of 25,8% was younger than 50 years old, 28,9% was 51-60, 20,8% was 61-70 and 24,5% was older than 70 years old. Percentage of 3,8% of women studied was in reproductive age, 16,3% in climacteric and 79,8% in menopause.

In regard to occupational status, 25,9% was private employees or public servants, 14,6% free-lancers, 25,9% pensioners and 33,5% was occupied in domestic duties.

According to the educational status, 25,2% was of primary education, 45,9% of secondary education and 28,9% of higher/university education. (Table 1).

Furthermore, 67,7% of patients had metastatical diseases.

As regards chemotherapy's line followed by the patients, the 39% was adjuvant chemotherapy, 32,1% was 1st line, 22% was 2nd line and 6,9% was 3rd line.

As far as the time from the onset of chemotherapy after diagnosis, is concerned, 29,5% was under 1 month, 20,5% was 2-4 months and 50% was more than 4 months.

In regard to the cycle of chemotherapy, during the admission of patients in the research, 26,4% was in first cycle, 15,7% was in second cycle, 11,9% was in third cycle, 10,1% was in fourth cycle and 35,8% was in fifth cycle.

According to the patients' nutrition during the last week, by the time they complete the questionnaire, 71,7% reported adequate nutrition while, 28,3% inadequate. Furthermore, 68,1% had a change in their weight, from which 33,1% a decrease in body weight and 35% an increase.

Of the 159 patients studied, 67,7% experience depression within normal levels, 21,5% experienced mild depression, 10,2% moderate and only 0,6% severe depression. (Table 2).

B. Statistical Results

The statistical analysis showed no statistically significant differences between the level of depression and sex or women's genital age.

On the contrary, statistically significant differences were found related to the age. The results showed that as age increases, the level of depression increases, as well. Specifically, people older than 70 years old differed statistically significant from those younger than 50 and those of 51-60 years old, p=0,025 and p=<0,005 respectively, whereas no statistically significant difference was found among the ages of 61-70, p=0,146. (Table 3).

According to occupation, pensioners and those of domestic duties experienced higher levels of depression, p=0,012. Specifically, pensioners differed statistically significant from public or private employees, p=0,014, and free-lancers p=0,018, whereas there was no statistically significant difference from those of domestic duties, p=0,765. (Table 4).

In regard to the educational status, patients of primary education experienced higher level of depression compared to those of secondary and higher/university education, p=<0,001 and p=0,012 respectively. (Table 5).

Table 1
Demographic data in accordance with the study sample.

Demographic characteristics	N	%
Sex		
Mail	54	34
Female	105	66
Genital age of women		
Reproductive	4	3.8
Climacteric	17	16.3
Menopause	83	79.8
Age		
<50	41	25.8
51-60	46	28.9
61-70	33	20.8
>70	39	24.5
Occupation		
Private/ public emploees	41	25.9
Free-lancers	23	14.6
Pensioner	41	25.9
Domestic duties	53	33.5
Educational Status		
Primary Education	40	25.2
Secondary Education	73	45.9
Higher/universuty Education	46	28.9
Marital Status		
Single/divorced /widowed	24	15.1
Married	135	84.9
Place of residence		
Small town	8	5.0
Big town	151	95.2

Table 2
Clinical characteristics in accordance with the study sample.

Clinical Characteristics	n	%
Coexistence of metastasis		
No	51	32,3
Yes	107	67,7
Time from the beginning of chemotherapy		
<1 month	46	29,5
2-4 months	32	20,5
>4 months	78	50
Chemotherapy's cycle during the admission in study		
1st	42	26,4
2nd	25	15,7
3rd	19	11,9
4th	16	10,1
5th	54	35,8
Number of previous forms		
No	72	45,3
1	50	31,4
2	37	23,3
Receipt systematic medicated regimen		
Antidepressants/ Hypnagogics	13	8,3
Non steroids/ opiates	16	10,2
Other/Iron / anti hypertentionals	52	33,1
No	76	48,4
Coexisted disease		
No	73	45,9
Metabolic	33	20,8
Cardiovasculars	48	30,2
Other	5	3,1
Nutrition during last week		
Adequate nutrition	114	71,7
Inadequate nutrition	45	28,3
Change in weight after the beginning of chemotherapy		
No	50	31,8
Decrease of weight	52	33,1
Increase of weight	55	35,0

Table 3
Average values of total scores of depression compared to age.

AGE	TOTAL DEPRESSION'S SCORE		
	n	$\overline{X} \pm SD$	
< 50 years old	40	34,60±9,29	P= 0,033
51-60 »	46	33,63±8,19	
61-70 »	33	36,00±8,20	
> 70 »	39	38,97±8,69	

Table 4
Average values of total scores of depression compared to occupation.

OCCUPATION	TOTAL DEPRESSION'S SCORE		
	n	$\overline{X} \pm SD$	
Private/public employees	41	33,25±8,81	P= 0,012
Free-lancers	23	32,60±5,71	
Pensioner	41	37,92±9,24	
Domestic duties	53	37,39±8,67	

Table 5
Average values of total scores of depression compared to educational status.

EDUCATIONAL STATUS	TOTAL DEPRESSION'S SCORE		
	n	$\overline{X} \pm SD$	
Primary education	40	73,92±42,39	P= 0,001
Secondary »	73	54,95±40,19	
Higher/University »	46	54,32±38,64	

The statistical analysis, showed no statistically significant differences according to marital status, place of residence, number of chemotherapy forms and time from the onset of chemotherapy.

On the contrary, statistically significant differences were found to individuals who received anti-depressant or hypnagogic medication, p=<0,001. Particularly, these individuals had statistically significant differences from those who received no medication, p=<0,001, or medicine for any other disease p=<0,001, whereas they had no statistically significant difference from those who were under analgesic, non steroids or opiate medicines, p=0,297.(Table 6).

Moreover, patients who were not nourished adequately, experienced higher levels of depression, p=<0,002 as well as patients who had a change in their body weight, p=<0,007. (table 7). Specifically, patients who had a decrease in their weight differed statistically significant from those who had no change in their weight, p=<0,001, whereas, they did not differ statistically significant from patients who had gained weight, p=0,062. (Table 8).

Table 6
Average values of total scores of depression compared to pharmaceutical therapy.

PHARMACEUTICAL REGIMEN	TOTAL DEPRESSION'S SCORE		
	n	$\overline{X} \pm SD$	
Anti-depressions /hypnagogics	13	43,00±10,49	P=<0,001
Non steroids/opiates	15	39,80± 7,51	
Other medicines	52	34,69± 7,44	
No regimen	76	33,77± 8,13	

Table 7
Average values of total scores of depression compared to nutrition.

NUTRITION	TOTAL DEPRESSION'S SCORE		
	n	$\overline{X} \pm SD$	
Adequate nutrition	113	33,96±7,93	P=<0,001
Inadequate nutrition	45	40,02±9,35	

Table 8
Average values of total scores of depression compared to weight.

CHANGE IN WEIGHT	TOTAL DEPRESSION'S SCORE		
	n	$\overline{X} \pm SD$	
No change	49	31,20±7,42	P=<0,001
Reduce of weight	52	39,17±9,25	
Induce of weight	55	36,18±7,85	

Discussion of the results

Depression experienced by patients undergoing chemotherapy, consists a pathological reaction to the loss of normality and their personal environment. The diagnosis of depression is defined when the symptoms of high sadness, which characterize depression, persist and are accompanied by the reduction of functional status, low self esteem and suicidal tendencies.[9-13]

The statistical analysis of the rerults showed that, according to the level of depression, 67,7% experienced normal levels of depression, 21,5% mild levels of depression, 10,2% moderate and 0,6% severe depression.

The level of depression, experienced by patients undergoing chemotherapy, depends on many factors and mainly to the stage of disease and the years from diagnosis. The evaluation of the level of the depression must begin from diagnosis and be continued throughout the progress of disease because the level of depression is frequently altered, due to the involvement of other factors.[8-13] According to Burgess C., et al.,[14] 50% of women with breast cancer in initiatory stage, experienced depression during the first year from diagnosis, 25% in the second, third and fourth year and 15% experienced depression during the fifth year from diagnosis.[10] Furthermore, according to Okamura's et al.,[15] study, 22% of patients with breast cancer experienced depression in the disease recurrence.

From the analysis of the results, and in regard to sex, it was found that women experienced higher levels of depression with

no statistically significant differences from men. Although the results of literature are conflicting, the incidence of depression can be related to sex. The results of Pandey's et al.,[8] study, showed that men experienced depression in higher percentage compared to women, whereas, according to Keller's et al.,[16] study, women are more likely to manifest depression compared to men. According to the review of the literature, these conflicting results are frequently attributed to the fact that health professionals evaluate the incidence of depression in relation to prescription of antidepressants, occurring after women's demand. [16-17]

The statistical analysis showed that patients who were >70 years old experienced higher levels of depression compared to patients <50 and 51-60 years old, whereas no statistically significant differences were found in the age group of 61-70. From epidemiological research studies, it was estimated that 60% of all malignancies in Europe and in USA occured in people aged over 65, a percentage, which is expected to reach 70% by 2020. Although, the administration of chemotherapy to patients with cancer typically decreases with the increase of age, in the literature is referred, that 1%-48% of women over 65 years old, receive chemotherapy according to their functional status and the stage of the disease.[18,19] A possible explanation of this result is, that the elderly patients with cancer after having lost their previous healthy status, often come along with situations able to change their lives, such as functional impairment, loss of spouse, poor network of social support and loss of interest for activities. Furthermore, since they suffer from cognitive disorders (poor memory or concentration difficulties), they find it hard to fully realise that they actually experience depression.[20] Another possible explanation of the same result is attributed to age - related factors such as poor absorption of medicine resulting from the loss of body mass, low metabolism etc.[20]

Furthermore, according to studies, elderly patients who suffer from cancer consist a high risk group to commit or attempt suicide, as a result of depressive syndrome.

Advanced malignancy, poor prognosis, sense of loosing control, physical disability, exhaustion, fatigue, pain, pre-existing psychiatric disorder, poor social support, are some of the main factors which increase the risk of the manifestation of depression and an imminent attempt of suicide. [20-22]

According to occupation, it was found that pensioners and those of domestic duties experience higher levels of depression compared to the working population. These higher levels are possibly attributed to the fact that pensioners have lost their self esteem due to their retirement and the reduced appreciation of social existence. [23,24]

The socio-economic status of patients with cancer is frequently responsible for the incidence of depression. According to Heilman MV., et al.,[23] a correlation was found between financial stress and depressive symptoms in patients with cancer. These results are in congruent with those of Ell K., et al.,[25] according to which 24% of women with cancer of low income, experienced severe depression. Other research studies showed that patients of low income experienced depression but unfortunately untreatable due to the lack of financial sources.[26-28]

In regard to educational status, patients of primary education experienced higher level of depression compared to those of secondary and higher/university education. One possible explanation of this result is, that patients of low educational status are frequently unwilling to report their depressive symptoms for the reason that the receiving chemotherapy and its side-effects are considered to be more significant. Individuals of low educational and economic status, usually seek for advice and care, only when the disease reaches in an advanced level. According to Bailey's et al.,[29] study, culture background affects the emotional expression and in many times, obstructs the detection and the treatment of depression.

Another important factor which leads to depression, but wasn't evaluated in the present study is the level of support which patients receive by their family and society. From research studies, it is shown that this factor exert a beneficial effect on the

symptoms of depression. Many researches refer that depression is needed to be examined, in combination with personality and the stage of disease.[9,29,30]

Patients who underwent chemotherapy with no response experienced higher levels of depression compared to those who received adjuvant chemotherapy. The type and the line of chemotherapy are related to the manifestation of depression. According to Miranda's et al.,[28] study, in which were studied patients with breast cancer or cervix cancer, patients who responded to chemotherapy experienced lower levels of depression. [31]

Patients who were administered antidepressant or hypnagogic medication experienced higher levels of depression compared to those who were not administered medication or symptomatic-alleviative medication and they had no statistically significant difference from patients administered pain killing drugs, non steroids or opiate drugs. A possible explanation of this result is that the administration of chemotherapy itself can cause changes of emotion and finally leads to depression. Moreover, according to literature explanations, previous substance use of medicine is considered to indicate a long term pre-morbid psychological sensitivity, which may lead to depression as well. The percentage of patients who receive antidepressants, varies in research studies and it is related to many other factors. According to Ell et al.,[25] only the 12% of cancer patients of low income, who experienced high levels of depression, were administered treatment, while on the contrary, from 10% of patients of average or high income who experienced depression, 80% received anti depressing treatment.

Whichever the explanation of this result might be, prescription of anti depressing therapy requires special attention, experience, knowledge and at the same time demands co-evaluation of other additional parameters.[9]

However, opinions concerning the treatment of depression by choosing administration of anti-depressant therapy are conflicting. According to Fisch's et al.,[32] study, patients and their family don't desire to receive anti-depressant medication because they consider that an active and spirited personality along with positive attitude towards the disease is much more effective and important for its progress. [33] Irrespectively of receiving anti-depressant medication, many researchers support that social support programs contribute effectively to the reduction of depression. [34-36]

In regard to the result of the present study that patients who receive antidepressants, had no statistically significant difference from patients who receive analgesics; many researches have shown that there is a correlation between the intensity of pain and depression. Many times, the relation between pain and depression is such, that chronic pain may lead some patients to depression; otherwise, depression may lead to the increase of pain's experience. Moreover, pain minimizes patient's sense of control, making the individual less capable of taking advantage of their family's and friends' support.[23]

Patients, who were not nourished adequately, experienced higher levels of depression. It is widely known, that patients with cancer have limited ability of food intake, due to a variety of factors such as the side effects of chemotherapy and the type of cancer, which result to the impairment of their immune system and their general functional status, predisposing thus, the appearance of depression. Another explanation of this result is, that in high level of depression patients are unwilling to consume food and consequently the treatment of cancer is temporary delayed until the treatment of depression. Finally, inadequate nutrition may directly affect the level of depression because it results in diminished concentration of alboumin, which increases the proportion of its free form or its active form of antidepressant medicine. [37,38]

The coexistence of another disease increase the levels of depression, because it worsens the total damaging condition of patient's health and results in higher level of depression. Additionally, depression is related to certain types of cancer such as pancreas, head and neck's cancer, because

these types of cancer directly affect the nervous system and as a result depressing syndromes, are more easily manifested.[9]

All the above factors, in combination with difficulties in diagnosis of depression due to lack of researching protocols and non existence of organized centers of screening and support, undermine the evaluation of the real dimensions of the problem. [39-42]

Conclusions

Nowadays, cancer is considered to be a chronic disease, causes emotional problems to the patient, induces important changes to the functional capability, the body image and the social or familial role.

Health professionals should be aware of the consequences of depression in all dimensions of patients' lives who undergo chemotherapy.

Early diagnosis of depression and the cognition of its impact, consist a matter of great importance for the evaluation, the medical treatment and the planning of personal care.

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